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CONSIDERING PATTERNS AND MECHANISM OF PUBLIC SPACE USE WITHIN COMMERCIAL MALLS IN CHANGSHA CITY, CHINA

A syntactic approach

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ABSTRACT

With recent studies beginning to establish a more quantifiable understanding of the qualitative properties of commercial areas, this paper presents a preliminary investigation into how spatial configuration and service provision may influence the behaviour of visitors to selected commercial malls located within the central area of Changsha City, China. Placing space syntax methodology at the centre of this approach, and supported with detailed ethnographic observations, data analysis and interpretation reveal a more in depth understanding of local consumer phenomenon and the significance of spatial configuration and service provision upon this. The cases presented here suggest that China's consuming mode is entering into a new stage, as where young people have become the prevalent visitor group, their focus has shifted from product per se to quality of experience. As spatial relations may afford the potential for varying degrees of co-presence and movement, the ability of these commercial malls to effectively adapt to this ongoing transition may have an impact on their long term popularity and performance.

KEYWORDS

Space syntax; commercial mall; spatial configuration; service provision

1. THEORETICAL BACKGROUND

In recent years new shopping behaviours have stimulated a rethinking towards the design of commercial space. With enriched methodologies, recent studies measuring urban design begin to establish a quantifiable understanding of the more qualitative properties of commercial areas (Ewing and Handy, 2009; Xiao et al, 2016). Central to this investigation is the idea of spatial configuration and service provision, as configuration and network connectivity have been shown to have a strong influence on human activities –from movement to co presence and way-finding (Hillier and Hanson., 1984; Chiaradia et al., 2012; Porta et al., 2012). Spatial configuration, combined with service provision and people's perception based on it are perhaps more important for commercial malls as dense activities have agglomerated in a small place and are potentially influenced by the artificially designed space. The potential of these

configurational relations both at an urban scale and within a spatial layout of a commercial mall to influence movement, co-presence and accessibility, coupled with other socio/ economic factors require more critical inquiry.

2. RESEARCH FRAMEWORK

2.1 STUDY AREA

The study draws upon empirical research and ethnographical observations taken from three commercial malls located within the Wuyi Commercial Area of Changsha city, China. Changsha is the provincial city of Hunan province and has long been famous for its centred retail facilities, with the Wuyi Commercial Area being one of the largest retail areas in the country. The selected malls within this area are: Yue Hui Mall, ID Mall and La Nova Mall, which although are located in close proximity to each other (Figure.1), all have differing structures of service provision.



Figure 1 - Wuyi Commercial Area and location of selected malls

2.2. DATA AND METHODOLOGY

2.2.1. PART 1: RECORDING USE PATTERNS OF PUBLIC SPACE IN COMMERCIAL MALLS

Gate counts were taken twice every two hours, over a 12 hour period (See Figure 2). To record visitors' movement and co-presence, static snap shots were taken respectively in the midday, afternoon and evening on a Saturday. Individual patterns of visitor's movement from selected entry points into each building were recorded as movement traces for a duration of 10 minutes. For a semi-structured survey, 100 questionnaire forms were delivered in each commercial mall on Sunday 19th June, 2016, seeing 95 valid questionnaires returned for La Nova Mall, 88 for Yue Hui Mall and 99 for ID Mall. These different data sets offer a quantized description of the patterns of use of public space in the selected cases.

2.2.2. PART 2: MECHANISM OF USER PATTERNS OF PUBLIC SPACE IN COMMERCIAL MALLS

Space syntax techniques are utilized as the principle methodology to investigate which factors may impact upon the user patterns throughout the public spaces. To begin to understand the configurational relations of these selected malls, the spatial layout of each has been divided into convex spaces: 36 for YueHui, 169 for La Nova and 187 for ID Mall, allowing different measures to then be highlighted (Figure.2). Static snap-shots give an indication of the number of visitors within the convex spaces of all public areas.

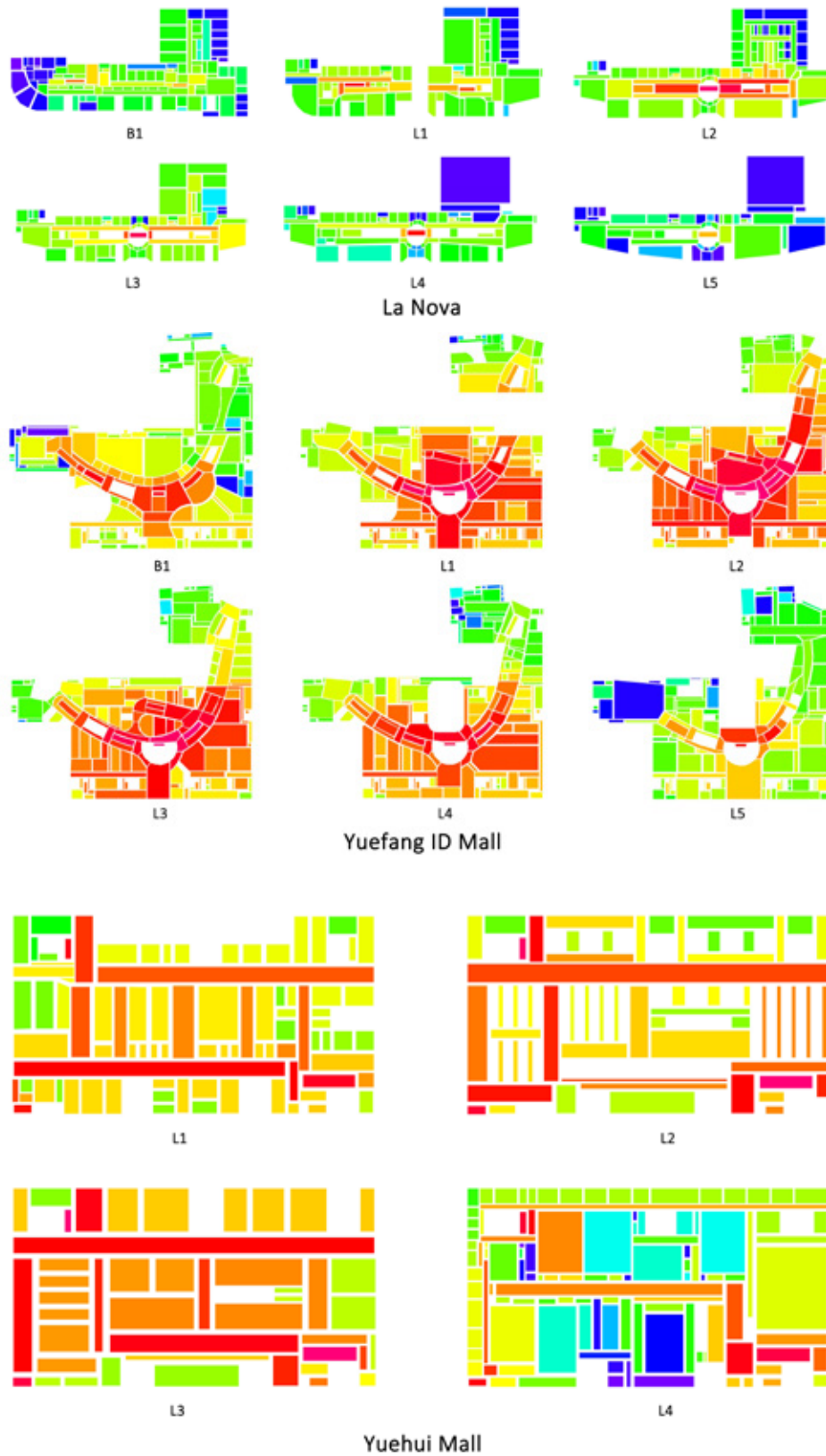


Figure 2 - Convex analysis showing measures of integration (HH)

The model is built to simulate the impact of spatial configuration and services provision on the visitor number within each convex space, with the following variables being highlighted and analysed through a multiple stepwise regression method (Table 1).

Category	Variable	Quantification
Link to other parts of the commercial mall	integration	convex analysis measuring integration (HH)
	mean depth	convex analysis measuring mean depth
	choice	convex analysis measuring choice
	step depth to nearest gate	number of spaces between the target space and the nearest gate
Service provision	step depth to nearest anchor shop	number of spaces between the target space and the nearest anchor shop
	step depth to food centre	number of spaces between the target space and the food centre
	step depth to recreation centre	number of space between the target space and the recreation centre
	spatial size	standardized area of the convex space
Structure	shops directly connected	number of shops attaching with the target space

Table 1 - Variables and their Quantification

3. ANALYSIS AND RESULTS

3.1. USE PATTERNS OF PUBLIC SPACE IN COMMERCIAL MALLS

3.1.1. GATE COUNT

Similar total visitor numbers were recorded for gate counts from all three malls: 40124 for Yuehui, 49416 for La Nova and 34570 for ID mall. However, the number of visitors for each gate within the same mall varies significantly.

Gate	1	2	3	4	5	6	7	8
Yuehui Mall	3582	1986	3854	1368	3778	8492	5010	12054
La Nova	7080	6515	11004	12156	4188	6792	1392	288
ID Mall	1440	3825	5180	7250	2920	5575	4745	3635

Table 2 - Gate counts for three commercial malls

3.1.2 SNAP SHOTS AND MOVEMENT TRACE

Compared with all visitors, groups of three people or more are less than 10% in all malls. Visitor's behaviour changes throughout the day, seeing higher numbers to area of service provisions at midday and evening. Larger convex spaces correlate to higher numbers of visitors in particular where these area are utilized as event spaces. The first floor of Yue Hui acts more as a transition space, seeing higher number moving towards the main circulation core, and significant numbers of visitors concentrated at the entrance of the cinema on the 4th floor.

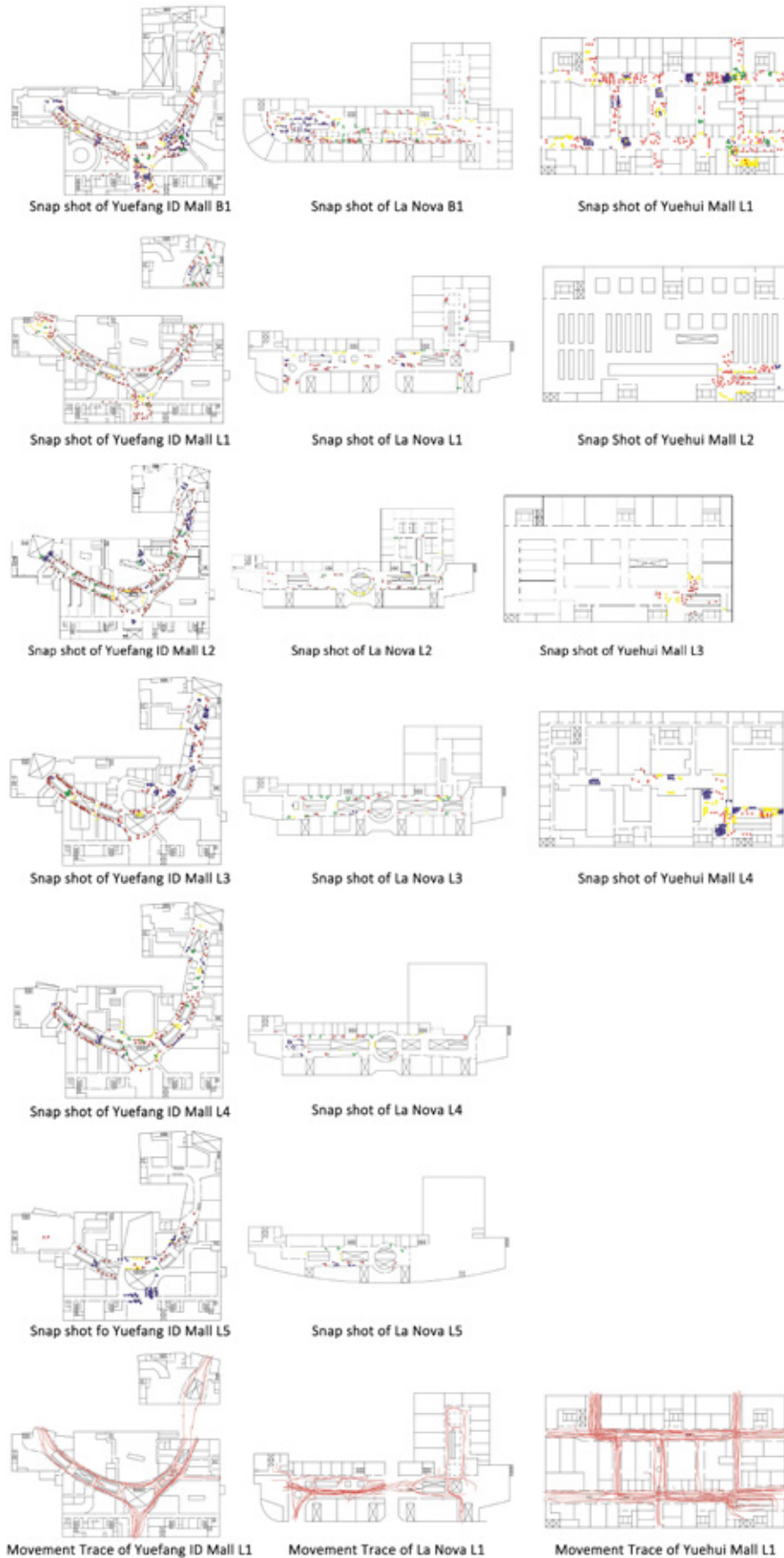


Figure 3 - Static snap shots and movement traces within the three malls

3.1.3 QUESTIONNAIRE

Evidence from the survey reveals a higher proportion of the visitors are female, young (under 35) and highly educated, although Yue Hui appeals to a younger group, with targeted entertainment facilities. Reasons given to visit vary significantly for each mall.

Attribute	Type	Proportion		
		Yue Hui	La Nova	ID Mall
Gender	male	38.64%	35.79%	64.65%
	female	61.36%	64.21%	64.65%
Age	<20	38.64%	30.53%	31.31%
	20-35	56.82%	61.05%	59.6%
	36-50	3.41%	6.32%	9.09%
	51-65	1.14%	1.05%	0
	>65	0	1.05%	0
Education	college and above	51.14%	81.06%	80.81%
	high school and below	48.86%	18.94%	19.19%
Purpose	shopping	29.55%	54.74%	53.53%
	food services	31.82%	16.84%	28.28%
	entertainment	53.41%	45.26%	41.41%
	bypass	7.95%	8.42%	5.05%

Table 3 - Attributes of the questionnaire's respondents

3.2 MECHANISM OF USE PATTERNS OF PUBLIC SPACE IN COMMERCIAL MALLS

Literatures have highlighted that location, development densities, services types and scale are all influential to the popularity of a commercial mall (Kim & Sohn, 2002; Nie & Jia, 2011), but in a descriptive way. To quantize spatial configurations and services provision and then to explain what factors may influences the number of visitors in convex space, all quantized variables have been analysed utilizing a multiple stepwise regression method in SPSS with table 2 illustrating the modelling output of the linear regression model for all three commercial malls. In addition to the size of the convex space which significantly influences visitor numbers for all three commercial malls choice, step depth to the nearest gate, step depth to the nearest anchor shop have also been observed to be influential in two of the three malls. Interior spatial design and service provision is arguably weaker for the La Nova Mall seeing visitors concentrate in the north and middle part of the mall, as integration and mean depth become key elements to attract visitors. For Yuihui Mall key attractors are the cinema and Superplay Game Centre located on the 4th. Floor.

Variable	Yuehui Mall		La Nova Mall		ID Mall	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Constant	1.138	0.752	-4.283	0.305	6.333	0.000
Integration			17.077***	0.000		
Mean Depth			-0.882***	0.005		
Choice			-14.074***	0.000	23.751***	0.003
Step Depth to the Nearest Gate	-3.746**	0.014	-0.478**	0.019		
Step Depth to the Nearest Anchor Shop			0.912***	0.000	-0.613***	0.000
Step Depth to the Nearest Food Centre	4.098**	0.015				
Step Depth to the Nearest Recreation Centre	0.95**	0.012				
Spatial Size	6.449***	0.00	5.076***	0.000	1.213***	0.000
Shops Directly Connected			0.515**	0.02	0.98***	0.006
N	35		168		168	
R ²	0.78		0.627		0.288	
D-W	1.910		1.800		1.471	

*** Sig.<0.01 ** Sig.<0.05 * Sig.<0.1

Table 3 - The multiple regression coefficient analysis

4. CONCLUSION AND DISCUSSION

In brief, a possible interpretation of the evidence presented here suggests that China's consuming mode is entering into a new stage: as people under 35 years old became the predominant group to visit these particular commercial malls. It would appear as people's habits and methods of consumption evolve to suit global and local retail trends both old and new spaces have to adapt to afford maximum provision of service and user experience of these facilities. Anchor stores are situated at a relatively shallow location within the layout, as integration is perhaps even more essential to generate higher levels of footfall through these retail spaces. However the draw of attractors – from global cinema brands to local entertainment and food services– sees these located in less integrated and deep spaces within the spatial complex. For the younger generation, as shopping is not the only or even the primary reason to visit commercial malls, their focus has shifted from product per se to quality of experience. Commercial malls without big retail stores also attract similar amounts of visitors when food and recreational services are a significant draw to this sector.

Taking the methodologies applied in this research and extending the study to encompass a wider range of malls within this area, would allow a more accurate statistical analysis of the impact of factors on the popularity of these commercial spaces. Data from which would support an evidence based approach to delivering effective design and operational management that responds effectively to ongoing changes in retail trends.

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