What you see is what you get!

A Micro-distribution of the Retail Function and the Influence from Spatial Structure and Visibility

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Abstract

Many studies on retail distribution often concentrate on the locational network of big retail organisations, i.e., intra-urban retail location. This research attempted to investigate the distribution of the retail function in a smaller scale: the micro-distribution of retail premises within an organic shopping area. The researches applied Space Syntax's spatial and visual study computer programme, together with an observation on pedestrians' shopping pattern, and a retail-type survey. It was found that visual configuration is almost as important a factor as spatial configuration on the micro-distribution of the retail location for their successful business. The spatial and visual configurations work intricately. This leads to an indication of the existing locational preferences for the retail function, as found in the intra-urban retail distribution. Hence, there is some logic in the micro-distribution of the retail function.

Keywords: Retail distribution, Spatial configuration, Visual configuration, Bangkok

1. Introduction

Many studies on retail distribution often concentrate on the locational network of big retail organisations, i.e., intra-urban retail location. Very few investigate the distribution of the retail function in a smaller scale: the micro-distribution of retail premises, particularly of an organic shopping area. As it is commonly understood that people tend to go where they can see and giving that movement flow is important for retail land-use type and that spatial structure is capable of influencing both movement flow (Hillier et al, 1992) and retail distribution (Hillier 1996; Kasemsook, 2003), to what extent does visibility involve in the process of spatial-movement influencing the micro-distribution of the retail function? What if retail locations within an area are spatially indifferent, how would visibility predict the pattern of retail distribution at a finer scale than spatial structure? And, how does rental price reflect the role of visibility in the process of retail distribution? If all these questions can be answered, it hope that the finding will lead to establishing 'types' of strategic location, spatially and visually, most beneficial for the retail function. As the retail function is an important factor of our everyday life, a better understanding of the micro-retail distribution would lead to a capability to create a 'liveability' of the city or the urban area which could possibly help generating a better socio-economy of both of them.

This paper is a report on a research of an investigation of the involvement of visibility in the process of retail distribution, particularly the one involving the space-movement relationship. The research was outlined to investigate five issues – spatial configuration, visibility, micro-distribution of the retail function, rental price and observations on pedestrians' shopping pattern, for their inter-relation ships. For the spatial configuration and visibility, Space syntax technique and computerisation were applied for the investigation. For the study of micro-retail distribution, rental prices, movement density and static activities a number of surveys and observations were made. The multivariate and graphic comparison analyses were later applied to study the initial findings of them.

2. Theoretical frame work and hypothesis

The research background was based on the argument of Brown (1992) which suggested that general studies of retail distribution were based on three approaches: the classic theory, the refined classic theory and the study of retail distribution based on the concept of accessibility and land-value theory. The key theory of the classic theory group is the 'Central Place Theory' by Christaller (1933). The key study of the refined classic theory is that of Berry (1959a, 1959b, 1967). The key study of the micro-distribution of the retail shops is that of Scot (1970). He argued that the classic theory is too broad, and it deals with the retail distribution on the scale of the intra-city, i.e., the hierarchical system of the cities in relation to trading scale. The refined classic theory on the other hand was proposed for a smaller scale, but it deals with the retail distribution on the scale of the intra-urban shopping centre, i.e., the distribution of the shopping centres within the city. It is only the example of Scot's study (1970) that involves what Brown called the micro-scale of the retail location. It is this scale that this research focuses.

Overall, the studies of retail distribution point out to the importance of accessibility in influencing retail-centre distribution and specialisation. However, the importance of accessibility has long been recognised in land-value theory, which suggests that accessibility is related to locations, whether it is the city centre as Berry (1959a, 1959b, 1967) suggested or the intersection of the streets as Scot (1970) indicated. Moreover, Scot (1970) also indicated that accessibility could be equated with movement flows, meaning the higher the accessibility the higher the movement flows, and that rental price is determined by accessibility. This means that certain site characteristics thought to assist that particular trade may be preferred by certain retail types when bidding for a location.

With these backgrounds we need a theory that would allow us to explore all the issues relating retail distribution. Three theories of Hiller let this to happen: the theory of 'natural movement' (Hillier et al., 1992), the theory of 'movement economy' (Hillier, 1996a) and the theory of centrality as a process (Hillier, 1996b). Overall he suggested that there is the relationship between the urban grid and

movement within the grid. Because people can move through or within the grid by it configuration which is independent of attractor, the natural movement within the grid therefore is generated and influenced by its configuration, and eventually influencing the development of attractors. Furthermore, while the grid configuration can have a direct effect on the pattern of movement and the distribution of attractors, both of them cannot have the direct effect on the grid configuration.

Accordingly, the urban grid, movement and attractors relate to each other through a 'feedback process', a process consisting of two related effects: an initial effect of the grid configuration on movement and the impact of movement on the distribution of attractors, and a subsequent effect of the attractors on movement. As the grid can have different patterns and layouts, grid pattern that can generates natural movement throughout the gird and its by-product of being to do some other things by going from an origin to a destination within such grid, it can economise movement. As a result, there will be different potential locations within the grid in relation to the configuration that the movement economy can occur, i.e., the grid capable of generating movement everywhere through the shortening of the trip lengths. Finally, grid configuration of the dominant land-use area that can maximise the process of movement economy will be favourable by some certain functional areas, for example, 'live centre', i.e., retail and entertainment area.

Hillier and his team also developed a set of methods and measurements to quantify the grid configuration. For them, the grid is represented as a system of axial lines and its configuration is measured using the 'integration measurement' of the 'Space Syntax method' (a configuration measurement of a topological distance). An axial line is the longest line of sight and accessibility when one moves through a series of convex spaces without changing any direction. (Hillier & Hanson, 1984) For each change in direction where a new axial line has to be drawn means that the new axial line has one-step depth in relation to the original one. The further two or three lines sequentially link to the original one means the further two or three-step depth.

The network of axial line will be computerised using 'Depthmap' programme, which will measured the relationships among the spaces in the system, i.e., the configuration of the axial lines, and structure them in relation to their accessibility. This structural accessibility is seen as the ability of the spaces to integrate with one another, i.e., 'integration'.

The configuration is normally measured on three scales. Connectivity is the most local one. On this scale, every space is measured for how many spaces it directly connects to. Global integration is the most global one. For this scale, each space is measured for its connection to all other spaces in the system (radius-n; thus, Integration RN), directly or sequentially. Local integration, or Integration R3 (radius 3), measures the direct or sequential connection each space has to the other three spaces from itself (Hillier & Hanson, 1984).

The integration is represented in two forms: numeric and graphic. The numeric representation is the integration value each space has in relation to the measurements themselves, i.e., connectivity value, global integration value and local integration value. The higher the value is, the more integrated the space will be. The lower the value is, the more segregated the space will be. Furthermore, these values are highly useful in the multivariate analysis. They can be used as independent variables against dependent variables occurring within the space such as number of users, rental prices, floor areas, and so on. For the multivariate analysis will show the degrees of association between the spatial factors and the other factors as well as the influence among them.

The graphic representation will show the spaces which have already been structured in relation to their integration values in a range of colours from red to blue. The closer the colour to red is, the more integrated the space will be. The closer the colour to blue is, the more segregated the space will be.

Gradually, Turner et al. (2001) developed a measurement based on Space syntax theory of Hillier and Henson (1084) and small world analysis of Watts and Stogatz (1998). Using a graph theory and a refined visual field, called isovist developed by Bendikt (1979), They create a measurement of visibility of

a location in relation to all other locations within an environment, i.e., visual integration. 'Depthmap' programme is also used to computerise this visibility. The representation of the visibility is similar to the graphic representation of the grid integration in term of colour but different in form, from axial lines to cells of the locations.

With all these studies, theories and methods, the hypothesis set here is that on the micro-scale spatial structure, initially, brings movement flow into the retail area. As a consequence, the micro-retail distribution within the retail area responds first to the spatial structure. Then, spatial structure and visibility, together, help circulating movement flow within the retail area, whilst visibility should have more influences on the shopping process, taking from a common understanding that majority of shoppers would compare prices among a number of retail premises selling similar products prior to buying. Thus, the multiplier effect as suggested by Hillier (Hillier, 1996) should be found where there is strong spatial structure, high density of movement flow and marked gathering of buying activities.

3. Studied area

Pratunam Market on Petchaburi Road is chosen as a studied area. For more than 50 years, Pratunam Market's business has continually flourished despite of the ups and downs of the country's economy and the diminishing of a number of retail areas in Bangkok. The boundary of Pratunam Market is the area within four roads: Petchaburi Road, Ratchaprarob Road, Soi Indra Hotel and Soi Petchaburi 19. Pratunam Market can be divided into nine sections (Figure 1). Each of them has its own local grid layouts, differences in pattern and scale. They are also occupied with many types of retail land-use and premises, for example, shops, stalls or cubicles.

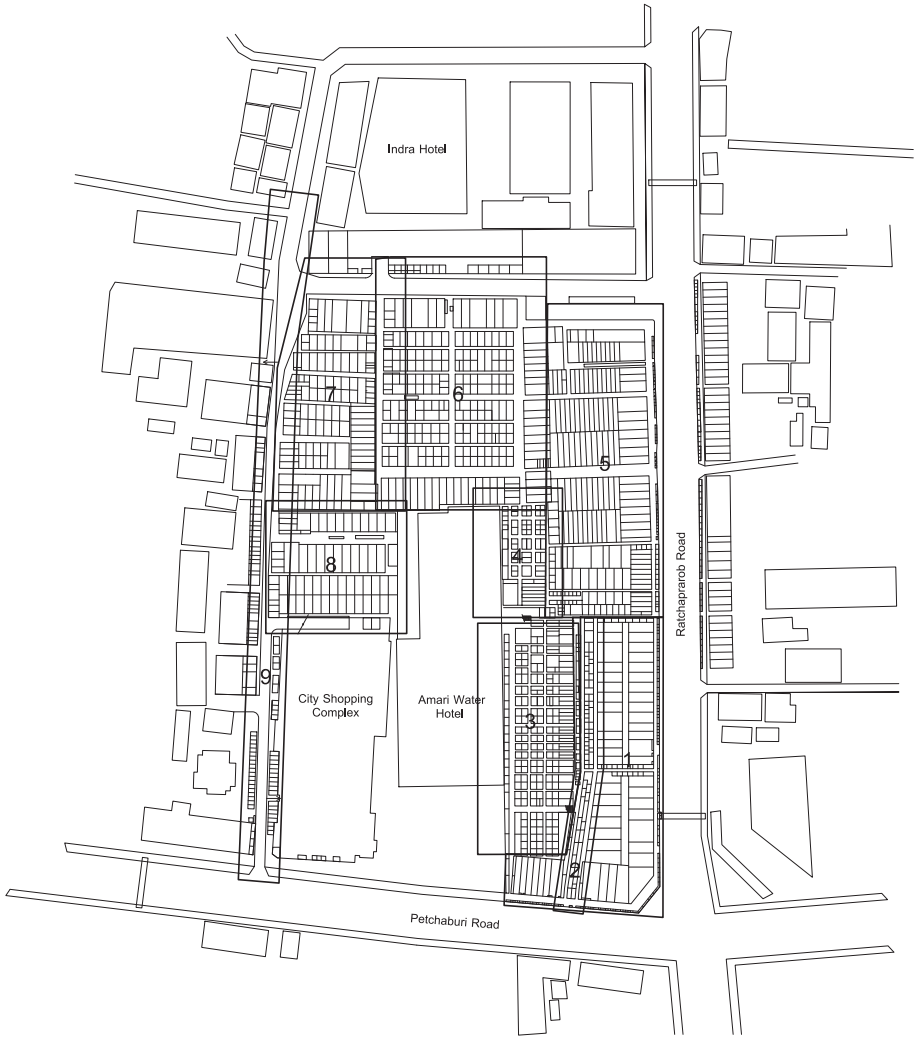

Figure 1
A map of Pratunam Market divided into nine sections

4. Initial studies

Initial studies were carried out to establish: what kind of the area was it, spatially, visually and functionally; how many people, particularly shoppers, were in there; where did people (shoppers) go inside the market; and, where did they shop?

Three spatial systems of the market were examined and compared for their configurations and performance within the city grid: an individual spatial system, an embedding spatial system within the city's grid at two kilometres distance from itself market (2-km embedded system), and an embedding spatial system within the city's grid at ten kilometres distance from itself (10-km embedded system). The findings show that market has a strong edge, i.e., globally integrated perimeters, as well as strong internal structure, i.e., locally integrated internal grid. Among the three systems, the market's structure works best within the catchments area of two-kilometre distances from itself.

For visibility, a similar pattern of integration was found compared to that of the grid configuration. The perimeters are globally and visually integrated, and the internal area in general is also locally and visually integrated. A difference, however, is that internally the most locally integrated area, Section 3, is not the most visually integrated, Section 6.

The survey of the detailed land-use distribution shows that there were 1,296 commercial units. Of these, 1,058 were commercial cubicles or shops, and 238 were stalls. There were three hotels found in the vicinity of the market, but they were excluded from the study. There also were 128 storage units, 32 vacant units, 23 residential units, three under construction unit and four cultural-relating units. For all the land-use types occupying shop-houses, cubicles or buildings, they could be classified into twelve types, some of which could also be further sub-classified. As the market is well-known as one of the country's two central markets of the wholesale clothes industry, fabric and fashion retail types had the highest number of premises at 967 units. It could also be sub-classified into eleven types. They were: general apparel (being the sub-types with highest number of units at 778), bag/handbag, sport apparel, cosmetics, gold jewellery/ jewellery, fabric, school uniform, traditional dress, apparel accessories, shoes/ hat/umbrella and tailor/dressmaker (being the sub-type with second highest number of units at 41). These retail types spread out throughout the market's grid, except in Section 3 which was occupied mostly by storage.

As for rental price, please be noted here that the study of the rental prices are of certain limit due to the fact that some retail premises were own but not rent. The rental prices per month per retail premise in Pratunam Market could be ranged into 15 ranges, from owning to 210,000.00 baht. The lowest price was of 15,000.00 baht per month, where as the highest price was of 200,000.00 baht per month. It was found that retail premises with low rental price per month were in the internal area, whereas the premises located along Soi Petchaburi 19, the only perimeter that the rental prices could be obtained, had high rental prices. The retail premises located along the lanes directly connecting to Soi Petchaburi 19 also had high rental prices.

The observations for people (shoppers) pattern were made for three types: movement density, people following and static activities. Each observation was carried out for every hour of six working hours and for a weekday and a weekend.

The observation of the movement density used the gated methods, which create a series of imaginary lines to cover where there are topological changes in the observed area and when a passer-by pass through he/she will be count as one. There were 260 observed gates, each of which was observer for three minutes. The people following observation was made for the first fifteen minutes when an observed target came into any of the 22 starting points. There were 1,584 people followed. The static observation was carried out for 19 activities and then re-classified into two shopping-relation types; buying activity and browsing activity. In total there were 612 observed hours for all the observations.

It was found that movement density was relating high in the perimeters, particularly on Soi Petchaburi 10, and low in the internal areas, very low in Section 3. In the first fifteen minutes, people tended to go everywhere, except Section 3 again. The buying activities were found to spread out almost through out the market. They were more likely to cluster along the perimeters than within the internal area. Among the four perimeters, the highest number of buying activities was found in Soi Petchaburi 19. In contrast, the browsing activities were found to cluster within the internal area, particularly in Section 6.

By far, all the observation patterns – the pedestrian movement density, the people following and the static observation – were more similar than different. People, their preferable routes and their activities were found throughout the market, except in Section 3. It is only when the details of the two shopping-relating activities were investigated we can begin to see a clear difference of the distributions of the buying and browsing activities, which mattered the most for the economics of the market. This difference could be an indicator of the strategic location for the micro-distribution of the retail function.

5. The multivariate analysis

The multivariate study was carried out to establish two issues. Firstly, is there any spatial factors associating with the pedestrian movement density, as found in many studies applying the Space Syntax technique, one of which is the study by Kasemsook in 2003? If so, which spatial factor strongly associate with the pedestrian movement density? Secondly, which is the spatial factor most associated with the rental prices?

Nine spatial factors were assigned as the independent variables in the regression analysis. They were: global integration of the independent system (integ Rn-ind), local integration of the independent system (integ R3-ind), connectivity of the independent system (conn-ind), global integration of the 2-km embedded system (integ Rn-2-km emb, local integration of the 2-km embedded system (integ R3-2-km emb), connectivity of the 2-km embedded system (conn-2-km emb), global integration of the 10-km embedded system (integ Rn-10-km emb, local integration of the 10-km embedded system (integ R3-10-km emb), and connectivity of the 10-km embedded system (conn-10-km emb). Two dependent variables were: pedestrian movement density per hour and rental price per square meter per month.

The multivariate analysis of the movement density was carried out on two scales. The first was the scale of the observation gates where all the observed gates were assigned with their own pedestrian movement density per hour. To cross check the findings, the study at the scale of the axial lines was also

made. For this analysis, all the movement densities of the gates locating on an axial line were averaged and assigned as the density of that line.

For the association between the spatial factors and the pedestrian movement density at the gate level, a simple regression showed that the global integration of the independent system (integ Rn-ind) is the most associated spatial factor with the movement density, with an r-squared value of .391, and a p-value of .0001 in the multiple regression (Figure 2). This factor was also depicted in the stepwise regression. The second and the third most associated spatial factors with the movement density were the global integrations of the 2-km embedded system and of the 10-km embedded system, respectively. In contrast to the global integration, the local integration and connectivity of the independent system almost did not associate at all with pedestrian movement density. Similarly, the local integration and connectivity of the two embedded system had a very poor association with the movement density.

The findings from the line-level analysis confirmed those found form the gate-level analysis. The global integration of the independent system was the spatial factor most associated with average pedestrian movement density (Figure 3). A simple regression gave an r-square value of .361, with a p-value of .0001 from the multiple regression. It was the only spatial factor picked up in the stepwise regression. The global integrations of the 2-km embedded system and of the 10-km embedded system were the second and the third most associated spatial factor, respectively. However, their r-squared values were very low, lower than .3. This means that they poorly associated with the movement density. Moreover, the local integration and connectivity of all the systems studied even had a poorer association to movement density than the global integration of the two embedded systems had. All these mean that the global integration of the independent system was the strongest spatial factor for the pedestrian movement density of Pratunam Market.

As for the rental prices, the multivariate analysis was carried out only on the scale of the axial lines. To be used in the multivariate study, the rental prices per month of all the retail premises locating along an axial line were averaged

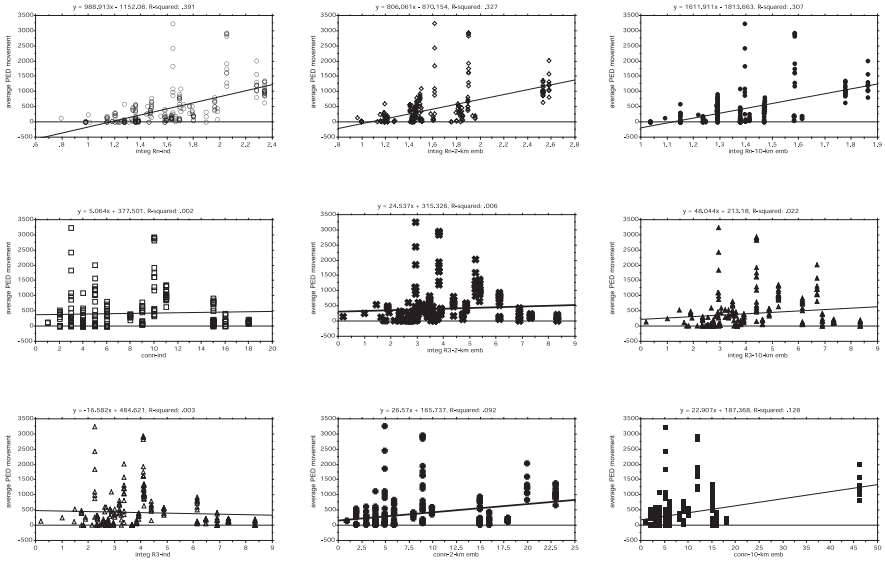

Figure 2

Scattergrams of the gate-level multivariate analysis of the nine spatial factors and average pedestrian movement density/hour

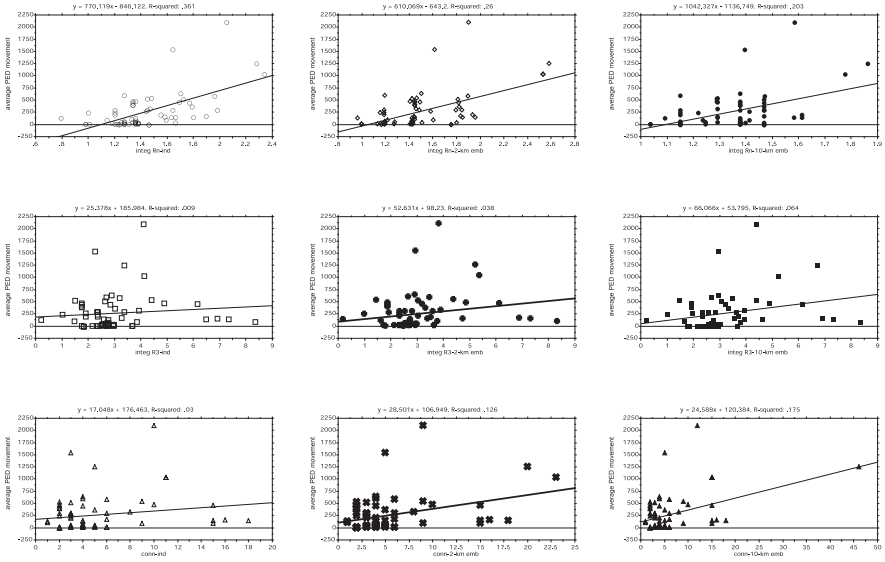

Figure 3

Scattergrams of the line-level multivariate analysis of the nine spatial factors and average pedestrian movement density/hour

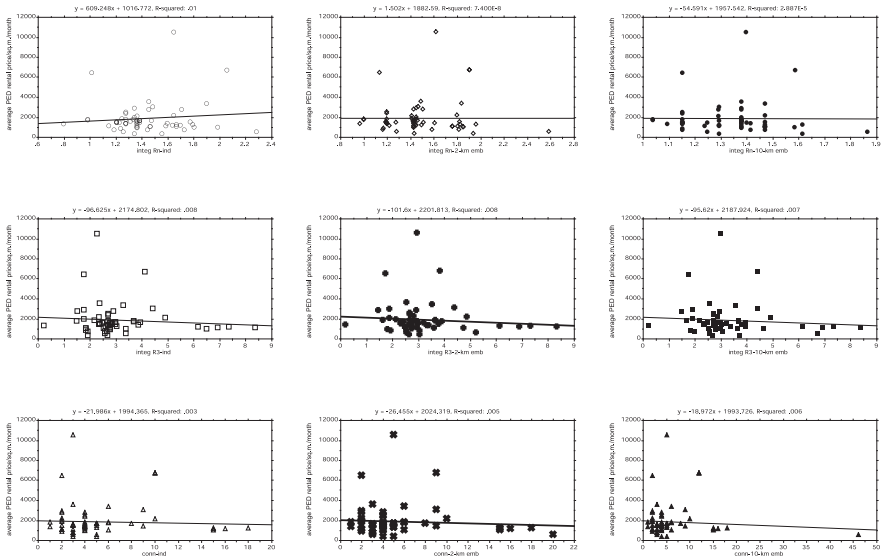

Figure 4

Scattergrams of the line-level multivariate analysis of the nine spatial factors and rental price/ sq.m./ month

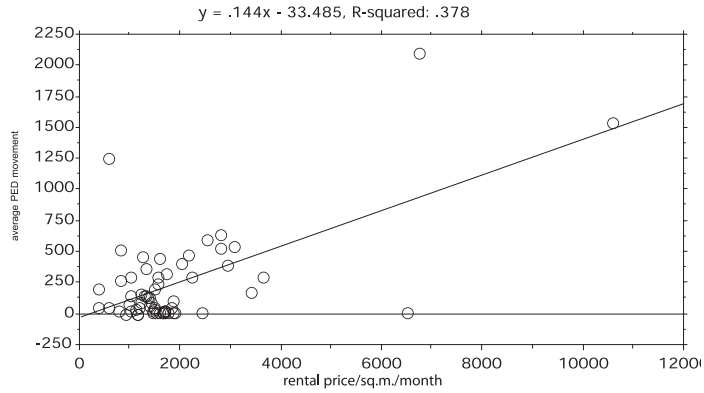

Figure 5

A scattergram between average pedestrian movement density and rental price/ sq.m./ month

to be the rental price per square meter per month. It was then assigned to the rental price of the line. Pedestrian movement density was also added as another independent nine spatial variables in this analysis. Rental price per square meter per month was the only dependent variable. It was found that all of the spatial factors did not associate at all with rental price per square meter per month (Figure 4). It was only the average pedestrian movement density that had any association with the rental price. A simple regression of the two variables showed an r-squared value of .378, with a p-value of .0001 in the multiple regression. (Figure 5)

The findings of the multivariate analysis indicate that similar to the other studies by the Space Syntax approach, there has been found a spatial factor strongly associating with pedestrian movement density. However, this spatial factor and the other spatial factors of the analysis did not associate with the rental price. This means that movement density became the strong factor for the rental price. Again, the study of the rental price here has some certain limits.

6. The graphic comparison

The graphic comparison attempts to establish any relationship among spatial structure, movement density and the two-shopping relating activities as well as to investigate how visibility involved in this relationship. As pointed out in the multivariate analysis, the spatial factor most associated with movement density was the global integration of the independent system, and second to it was the global integration of the 2-km embedded system. In contrast, the local integration and connectivity made a poor association. Accordingly, the spatial factors selected for the graphic comparison were the global and local integrations of the independent and the 2-km system. Figures 6 and 7 are the comparative maps of the integration, the visibility, the detailed land-use distribution, the rental price, the movement density observation, the distribution of the buying activity and the distribution of the browsing activity, of the independent and of 2-km embedded system, respectively.

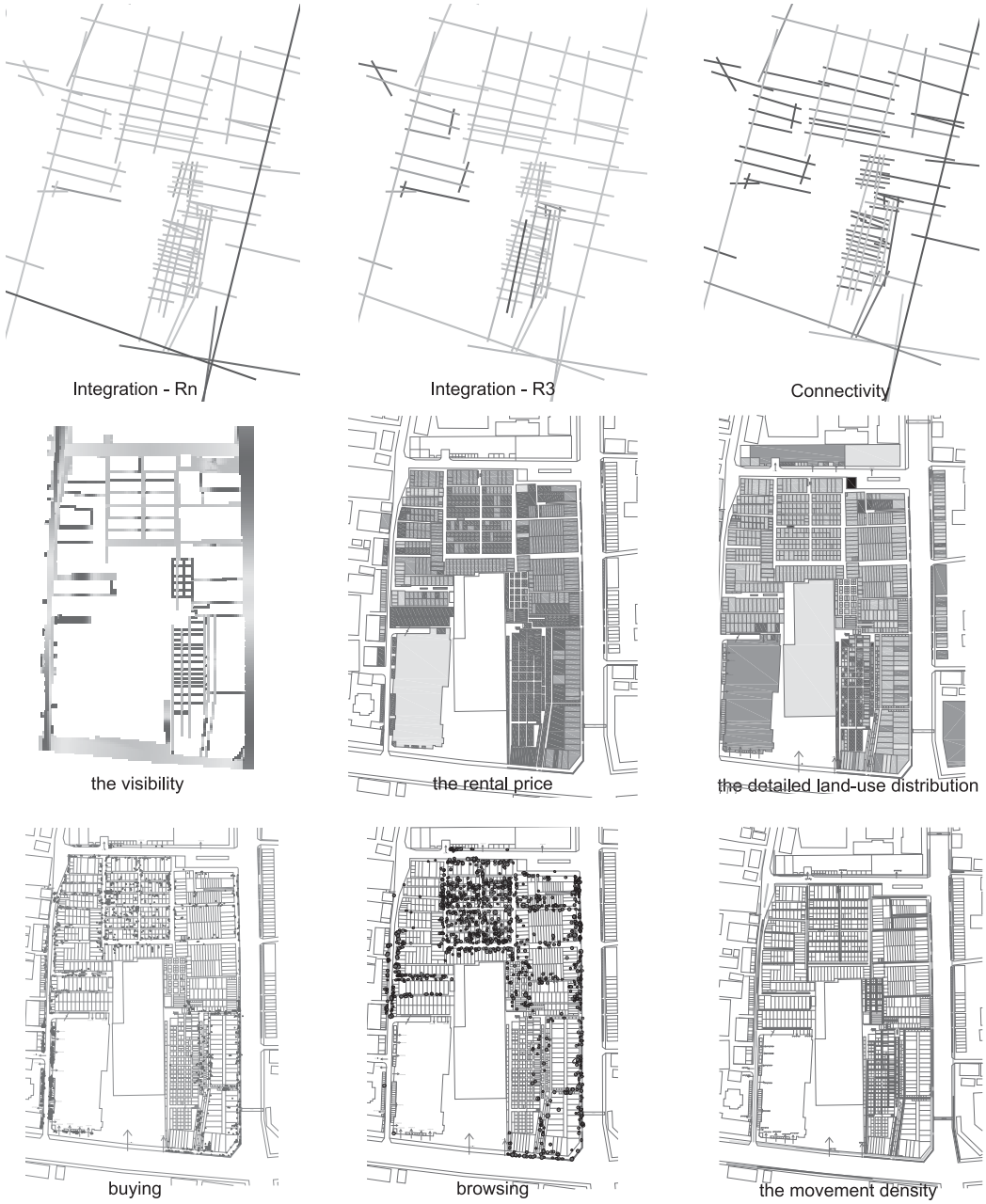

Figure 6

A comparative map of the 2-km embedded system's integration, the visibility, the detailed land-use distribution, the rental price, the movement density observation, the buying activity observation and the browsing activity observation

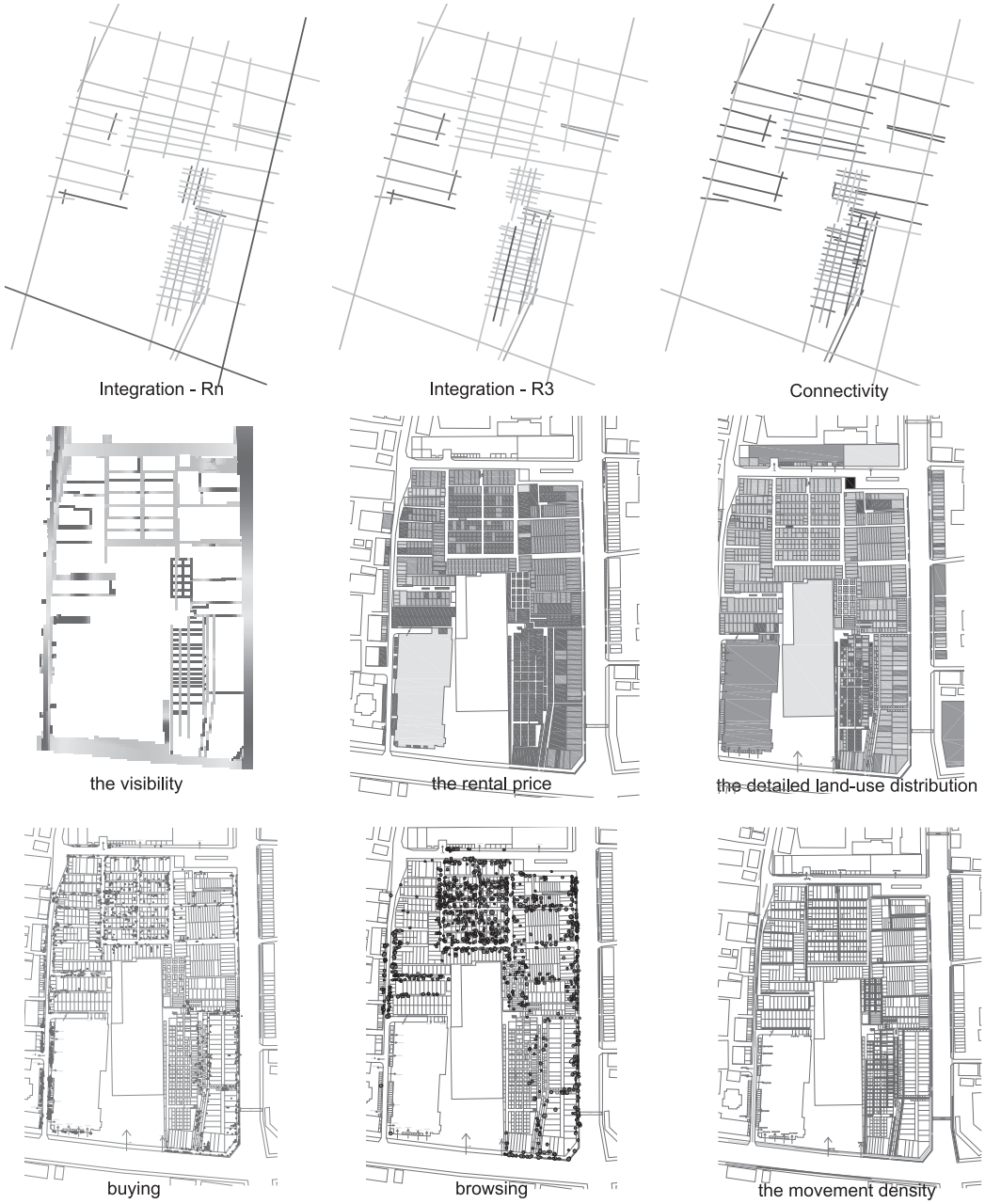

Figure 7

A comparative map of the independent system's integration, the visibility, the detailed land-use distribution, the rental price, the movement density observation, the buying activity observation and the browsing activity observation

Let us now try to find the answers for the two questions set for the analysis. There are two relationships among the integration, the movement density, the buying activity and the browsing activity. Firstly, the globally integrated spaces were more likely to have high pedestrian movement density and were clustered with the buying activity. This relationship was also pronounced for the space directly connecting to the globally integrated space, particularly the perimeters (one-step depth space from the globally integrated spaces). Secondly, the locally integrated space would be more likely to have low pedestrian movement density but could also be more clustered with the browsing activity than the buying activity, though the buying activity itself tended to spread out through the globally and locally integrated spaces. Internally, the clustering of the browsing activity could be within the two-step depth spaces from the perimeters (the space connecting to the perimeter through another space), of the orthogonal grid structure.

When the visibility (visual configuration) was considered, finer details emerged. All the two shopping-relating activities would occur where there were both spatially and visually integrated. The buying activity tended to cluster where there were globally and visually integrated, internally or peripherally. The one-step depth space to the globally and visually integrated perimeter space could have a significant number of the buying activity. However, the space needed to be visually integrated although it may not be highly integrated. The browsing activity on the other hand were more likely to cluster where there were locally and visually integrated. Even if the spaces connected at two steps from the globally and visually integrated perimeters. The spaces being locally integrated but visually segregated were unlikely to have the buying activity although the browsing activity could occur.

These findings suggest that the global integration instigates the movement density, and together with the visually integration they can trigger the buying activity. Where there is a poor visibility, the buying activity will never occur, generally. The local and visual integrations allow the browsing activity to take place. But when the buying decision are made, it could be either at

the globally or the locally and visually integrated spaces. To sum up, visibility is highly important for the buying activity, providing that it is made in a highly accessible space.

The findings are partly reflected through rental prices of the retail premise (be reminded of the limit of the rental price study). The rental prices of the retail premises within the globally and visually integrated space where high movement density and the buying activity can mostly occur will be relatively high when they are compared with the rental prices of the other retail premises locating somewhere else in the area. The rental price of the locally and visually integrated spaces where some movement density and the buying and browsing may conveniently occur will be substantial. The rental price of the locally integrated but visually segregated space will be very low because the two shopping-relating activities will unlikely to occur. It seems that the strategic locations for the micro-distribution of the retail function and the mechanisms of how visibility works with spatial structure to influence the distribution cab be established.

7. Discussion

From the finding we can suggest that visibility involves as a second helper to the spatial-movement relationship, to influence the micro-distribution of the retail function. The process within which the visibility works is more subtle than the process of the spatial-movement relationship. Here is how it works.

We have seen that in Pratunam Market there is a relationship between spatial configuration and movement density. This relationship is very clear between the global integration and the pedestrian movement, and it is less pronounced with the local integration. This means that the shoppers come into the market via the spaces that are well connected to the city network. When they arrive at the market, they disperse. It is here that the ‘theory of movement economy’ of Hillier (1996) set in.

In the case of Pratunam Market, the local grid is strong structurally. It can also be broken up into five sub-grids, three of which even have a stronger structure

than the local grid of the market itself. With this strong local grid configuration, shoppers can easily go anywhere within the market, particularly within the three sub-grids. This is the reason we find the pedestrian movement densities along the axial lines of the internal area were almost equal to each other, i.e., having the densities in the same range. From the spatial configuration point of view, the internal area of Pratunam Market has no significant spatial advantage, except from those spaces directly connecting to the city spaces. This suggests that the 'movement economy' can fully operate within the internal area of the market because every space almost connects to all other spaces. This allows several choices of the shopping routes to be preferably selected and shortening the length of the shopping trip. Therefore, we should find the buying and browsing activities throughout the internal area of the market. Nevertheless, this is not the case as the static observation of the buying and the browsing activity shows the clustering of the activities. It is here that the visibility comes in to the process.

Pratunam Market is the case to the point. It is a market where most of tits retail premises sell products from the same category, i.e., fabric/fashion. From the business point of view, the shops compete among their very immediate neighbours, making their locations to be critical for the business, adding to the competition of the product quality. It is also a market with a strong internal grid configuration which minimises the locational advantage within the market. It is here that the visibility can help generating the locational advantage for the retail function within the market on a finer scale. This is why we tend to find the clustering of the buying and browsing activities in the visually integrated space. Moreover, while the browsing activity can occur within the internally strong configuration and the less visually integrated space, the buying activity would be unlikely to occur in such space. The buying activity will likely to occur within the space where it is spatially and visually integrated.

The reason why the visibility is the second help in the process of spatial-movement relationship influencing the micro-distribution of the retail function is that without the strong spatial configuration the shoppers will not come into the market. If we can see but cannot get there, how can we shop? In contrast, we can easily shop if we can get there and can easily see the shop and the product.

As for rental price, it has not reflected the structure of visibility in relation to the micro distribution of the retail function alone in Pratunam Market. It does reflect the inter-relationships among the spatial structure, the visibility, the movement density and the shopping-relating activity. Where there is a strong inter-relationship among the four factors, the rental price tends to be high. Where there is a weak inter-relationship among them, the rental price tends to be low.

However, it has been found out by Kasemsook (2003) that among these factors, it is the spatial factor that initiates the land value distribution, which in this research rental price was chosen to study instead. The spatial factor sets out the process by influencing the movement density, and together with the movement density they influence the distribution of the retail function in the urban areas, in general. For a highly concentrated retail area such as Pratunam Market where many variables involve, the rental price distribution, therefore, is a reflection of the inter-relationships described.

Finally, there are both a strategic location and a favourable location for the retail function. The strategic location means a location where the retail function can take a full advantage of such location for its business. It is the most preferable location for the retail function in normal circumstances. This strategic location must be highly accessible and clearly visible, i.e., spatially and visually integrated. It can get the shoppers in and move through and around as well as to see and compare the products and theirs prices so that the business can benefit from the regular customers and attract the passer-bys.

The favourable location is a location which is less strategic to the retail function, but still capable of generating some opportunities for the retail business. For example, the spatially integrated but visually segregated location can get the shopper into to browse the product although they may or may not buy it. This is because the movement economy can operate in such location even though the poor visibility can deter the buying activity. Such location can be better used for the specialty shops. In the case of Pratunam Market, we see this in Section 2 of the internal area where the dressmaking/tailor shops locate. It is a location where shoppers will go for the need of some particular products

or services whose business does not need to compete for the passer-bys or the comparison of prices.

It is therefore obvious that the unfavourable location for the retail function is the location which is inaccessible and invisible. First, shoppers cannot get in, or cannot see the location to get in. Second, even if they can get in, they cannot move through. The movement economy is incapable to operate in such location. As a result, the retail function cannot take advantage for their business from any passer-by.

In conclusion, the research achieves what has been set out in the beginning: to try to find a spatial and visual mechanism that can benefit the retail function. It is viewed that the properly working of the retail function for its business can instigate the liveability of the city or the urban area. Moreover, it can also help generating a proficient socio-economy of the city.

This research is an extension to the previous study by Kasemsook (2003). The former focuses to the distribution of the retail function in the urban areas in general; the latter concentrates on the distribution of the retail function in the retail area. Together, their findings could be used for any urban planning or urban design development project in Thailand or else, depending on the scale of the development. The development project does not necessarily to be the new one. It can be of the conservation area development, which is more challenging, to bring back the live to the once prosperous area. Perhaps, the historical areas in many provinces of the country can benefit from this research.

However, like all other researches, there are rooms to be further study. For example, this study was carried out on the unplanned shopping area, what if it is applied to the planned shopping area or complex. What would be the out come of the same process? Another example is that of the rental price. For this research, the rental prices of some premises could not be obtained. If all the rental prices of all the premises in the studies area can be obtained, we will be able to get a clearer picture of how the visibility works with the spatial-movement relationship influencing the micro-distribution of the retail function.

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