CULTURE AND COMMERCE OF CHENNAI CITY – A spatial analysis of the relationship between temples and retail activity

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THEME: Urban Structure and Spatial Distribution

Abstract

Chennai, South India, is a city in which historicity and modernity are evident, both culturally and physically. It is a typical example of an Indian city which has many Hindu temples in its urban landscape. Each temple has a variety of commercial activity around it, often in the form of retail activity. This paper explores the spatial context of these varied functional patterns and whether they have any significance. The empirical case-studies examine the contemporary spatial context of 36 temples and establish how these exemplify the relationship between the temples and retail activity. The study uses Space Syntax analysis, land-use descriptions and figure-ground studies, at city and district levels. In conclusion, it presents five spatial typologies, a set of principles that illustrate the spatial relationships between the temples and retail activity. It becomes evident that there is a significant relationship between the historical evolution of the temple locations and the retail land use which occurs and therefore the spatial typologies which are found.
INTRODUCTION

Spatial proximity of retail activities to public places is common in most parts of the world, in the historical and the contemporary times. The location of Agora of Greece or Friday Mosques of the Middle-East or Cathedrals of the Medieval Britain, was at first public gatering place then later on transformed into commercial centres of the town. In the South Indian context, the religious public places exemplify this phenomenon at its most. The research investigated such spatial association between Hindu temples and the retail activities within the context of Chennai (previously called as Madras) city of Tamil Nadu state. This paper goes beyond the usual criticism on the urban studies, that the effects of urban configuration to pattern of function are ‘rarely observed beyond retail activities’ (Budiarto, 2007: 51.02); and the paper analyses the relationship across a) the location of the public places, namely the temples, b) the retail activities and c) the urban configuration. The aim of the paper is to examine the spatial attributes that relate the temples to the adjoining retail activity, in the city of Chennai. The study has two objectives of studying on the urban structure and what it is contained of, at both city (global) and district (local) contexts.

Tamils have a great association with the Hindu temple throughout history and until now and the temple has played a significant role in their cultural history. These masterpieces of architecture and urbanism, the South Indian temples, have been forgotten from the face of the country and it is important to realise that a careful attention has to be paid, in terms of conservation and urban planning for significances of and issues at these temple locations. The relationship between the public place and the retail activity, as far as the temple locations of Chennai are considered, is rather unplanned, a second-order design endeavour and chaotic. As Hancock (2002: 15) puts it, the traditional temples are threatened by unplanned contemporary developments rather than by any religious or political battles. Hancock (2002: 30) also mentions that the commercial shops around the temples are ancillary to worship but crucial to temple life. Prasad (1994: 24) states that commercial prospects, far more than tourism, had always been a part of these developments. He adds that the commercial aspect has overwhelmed the balanced relationship with the cultural aspect of the space; hence it has invaded the qualities of the socio-cultural character of this historic site of worship. The change in land use, has already had the following significant impacts: a) increased land values spiralling from the core, i.e., the temple locations, b) traffic congestion in the temple streets makes the temple zones into sheer urban transitory nodes and the integrity of inner peace and the spirit of innumerable old settlements are under threat (Prasad, 1994: 25), c) unmatched use of large-scale commercial development and the temple tank* can be seen as a western urban square or plaza, around which various economic activities share the space. d) poor design standards of new developments and the style of the buildings is appropriated from western influence and ‘not acknowledging the culture as a necessary dimension of development’ (Prasad, 1994: 25). e) poor environmental quality due to over congestion of population and traffic causes air and noise pollution and the temple tanks are ill-maintained, proven by the excess refuse disposal or the complete absence of water during the summer.

Such a phenomenon was presented in a more organised way during the history, at various parts of the world. A study on the Medieval period by Abu-lughod (1987: 156) notes ‘... it suggests that Islam shares with Judaism and Christianity the same quality of urbanity’ that is, the mosque was on a par with the church as ‘things essentially urban’. It is also mentioned that ‘when the church was also the temporal power, medieval European cities were also defined by the presence of the cathedral and the marketplace in front of it’. Contemporarily in the UK, the spatial relationship between the public places to the retail activity is procedural and planned, often presents a mixture of leisure, retail and employment, either at the town centre in linear type laid on streets or at the out-of-town territory in shopping malls/centres. At the town centres, the spatial articulation at the cathedral-locations presents a more organised relationship with retail
development. Hillier’s study on York clarified that the liveliness of the historic core of York is mostly brought by retail activity in a circular urban configuration from the centre (Hillier, 1999b: 06.14). Karimi’s analysis on Western (English) and Middle-east (Iranian) cities showed that the retail activity hold a strong dependence on the spatial integration of the urban spaces; in English cities, the historic centre remained a still active commercial centre and in the Iranian cities, there seemed to be a shift in the location of the retail activity from the historic core, to the modern spatial logic of the city (Karimi, 1999: 62.13). This paper will attempt to present the relevance of Chennai’s spatial context to this knowledge base.

On the other hand, from the retail activities point of view, several works by experts show that today the economic activities offer places of sociability (Madanipour (2003) & Moser et.al. (2002)) and that such places offer to the ‘liveliness’ of spaces between the buildings (Hillier, 1999b) and Gehl, (2004)), i.e., the ‘public space’ (Krier, 1979). It is also widely proven by the Space Syntax researchers that the spatial logic of the streets, determines the location of retail land use. This paper will clarify whether this is the case of Chennai city or not. Whilst the temples act important role in the ‘cultural landscape’ (Rapoport, 1977: 150) of the town, the retail land use becomes a major effect of globalisation (Srirangam, 2003) and commercialisation that pervade the city. In Chennai both religion and commerce act vibrantly in everyday life of the urban public. Therefore, it is important to capture the patterns of the phenomenon or in Sievert (2003: 23) words, ‘everyday life is put on the stage’ here.

**SOUTH INDIAN TEMPLES AS SOCIAL AND SPATIAL ATTRACTORS**

The South Indian temples are socially valid and eventful public places and offer an effective place of sociability in the everyday life in the context of Chennai city. Appadurai’s (1978: 48) defines the god of a Hindu temple as one who constitutes his own separate identity; who is made of stone, but who lives in a palace (the temple), eats, sleeps, processes, governs and blesses; people enshrine a stone

*The temple tanks (or kunds) are defined as* reservoirs and tanks with steps, and are associated with the temple. Tanks are water-bodies, usually 15'-20’ deep, and are protected by an enclosure or wall, with steps all around used for bathing and performing sacred rituals (Raman, 2002: 33); the embankment-walls are constructed usually of granite slabs or brick.

figure as a paradigmatic sovereign, and make it the focus of a complex and dramatic ritual and re-distributive process. An important difference in a Hindu temple, when compared to cathedral or mosque, is that the temple itself encourages ‘economic transaction’ (Appadurai, 1978: 63) as an act of ritual inside its premises in terms of offerings and re-distribution of the offerings. This aspect of the Hindu way of worship primarily demands economic activity to occur next to a temple in the form of selling religious commodities. Religious nexus therefore demands the minimal association or occurrence of retail activity next to the temple. Hancock (2002: 30) writes that ‘the temples can be regarded as a social space, a representation of space as cosmological wholes, icons of Hindu culture and that the temples exist as ensembles of spatial practices, acts of material, social and cultural production of space’. Such temples have distinct spatial configuration to aid the social practices as explained below.

The temple spatial planning (see Figure 1) is an axial composition of open spaces and built forms, the art of tropical place making (Bharne, 2004: 17). The temple is more than an architectural masterpiece and is a significant urban element. In the traditional worldview, every settlement was seen as a micro-cosmos with the temple at the centre (Srivatsan, 1994:1). Mostly, the temples have a particular urban configuration with
the central core with the temple and open space, a tank at a reasonably close location, four car-streets* circumferential to the temple and the four streets on cardinal directions* integrating the car-streets to the adjoining streets.

![Diagrammatic layout of the temple, tank and streets](image)

**Figure 1** Diagrammatic layout of the temple, tank and streets

**CASE STUDY: CHENNAI**

**Methodologies**

A variety of quantitative techniques, namely, Space Syntax, land use and figure-ground are used to determine objectives of the investigation (see Table 1). Case study is used as the research method here as it helps to ‘understand complex and social phenomena’ (Yin, 2003: 2) covering the contextual conditions. Whilst the city level analysis covers the city limits (as stipulated by the Chennai Metropolitan Development Authority, 2006), the district level analysis covers an area up to a walking distance, 600m (Katz, 1994: xxxi) radii from the case-study temple locations. Lastly, the findings from city and district level analyses contribute towards the final understanding, i.e., the spatial typologies, of the phenomenon.

*Car-streets* - During the car festival, the deity ‘sits; in the temple-car or chariot, (the car is tied with a rope which the devotees pull to move the car), and ‘sees’ and ‘protects’ the people by travelling through the residential streets

*Cardinal streets are axially located and used as streets to reach and enter the temple.*

Almost every traditional temple of south India has a tank, streets running around the temple, and sometimes streets on four cardinal directions (see Figure 1). The spatial combination of the architectural masterpiece of a temple, together with its car and cardinal streets and tanks, form a distinct urban configuration at the temple locations.
### Table 1 Spatial study method

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Tools used</th>
<th>Levels of investigation</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>To analyse the structure</td>
<td>Space Syntax (Hillier, et al.)</td>
<td>City and district</td>
<td>1) Global and 2) local integration of the urban street configuration</td>
</tr>
<tr>
<td></td>
<td>Figure-ground study</td>
<td>District</td>
<td>Relationship between the 1) Temple-tank and street 2) Temple and the street</td>
</tr>
<tr>
<td>To analyse the content.</td>
<td>Land use study</td>
<td>City and district</td>
<td>1) Land use (city and local). 2) Function of the temple streets. 3) Location of temple on the street. 4) Local landmarks.</td>
</tr>
</tbody>
</table>

### Chennai City

Chennai, the case-study city, is the fourth largest metropolitan city of India and is the capital of the state of Tamil Nadu. The Chennai city area is 172 square kilometres and has a population of about 4.5 million. Chennai’s landscape origins can be best illustrated by using the generic definition of urban origins by Gosling and Maitland (1984: 25). The city is a mix of ‘natural and scientific’ models. To elucidate, i) natural models: a) the ‘steady-state origin’: created by the needs of a society grew gradually, e.g., the traditional settlements at Mylapore, Vadapalani, Thiruvanmyur, b) the big-bang origin: the British created a settlement, in a place gifted by the then rulers, the Naiks, George Town for the local worker groups, and the cantonment settlements, like CIT Nagar and T Nagar and ii) scientific model: the city is more recently based on an ‘arts and science model’ where contemporary ideas, mostly borrowed from the West, have been transplanted into the city.

### Case-Study Temple-Locations

The researcher identified all the city temples that have tanks, (36 in total) as the case-study temples for the following reasons: a) these temples are mostly historical and therefore, were classified as ‘important temples’ in the 1961 Census b) these temples have a minimum cluster of four streets relating spatially to the temple because of the tank’s presence and c) these temples are located in diverse city locations and have various degrees of retail activity around them (see Table 2). The case-study temples are classified into three groups, accordingly to high, medium and low scales of retail activity around them. Scale-1 case-study temples have more than one commercial street with more than 80% of the street frontage with retail development on the ground-floor level. The scale-2 case-study temples have one commercial street with 60-80% of the street frontage with retail development on the ground-floor level. Scale-3 case-study temples have less than 60% of the street frontage with retail development on the ground-floor on one street. Of the 36 case-study temples, the distribution of retail activity scales is listed in Table 2.
THE CITY LEVEL STUDY

Space Syntax

The Space Syntax study shows that Chennai city has low connectivity (3.2375) and global integration (0.465) values (see Figure 2). It is also evident that compared to other parts of the world, Indian cities ostensibly, have lower syntactic values (see Table 3). In the spatial context of Chennai, the lower syntactic value is due
to the non-orthogonal grids, larger area coverage and a broken line structure mainly due to railway lines and rivers.

<table>
<thead>
<tr>
<th>Number of cases</th>
<th>Connectivity</th>
<th>Local</th>
<th>Global</th>
<th>Intelligibility Global/Conn.</th>
<th>Synergy Global/local</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>12</td>
<td>5.835</td>
<td>2.956</td>
<td>1.610</td>
<td>0.224</td>
</tr>
<tr>
<td>Europe</td>
<td>15</td>
<td>4.609</td>
<td>2.254</td>
<td>0.918</td>
<td>0.137</td>
</tr>
<tr>
<td>UK</td>
<td>13</td>
<td>3.713</td>
<td>2.148</td>
<td>0.720</td>
<td>0.124</td>
</tr>
<tr>
<td>Arab</td>
<td>18</td>
<td>2.975</td>
<td>1.619</td>
<td>0.650</td>
<td>0.231</td>
</tr>
<tr>
<td>India (average of Ahmedabad and Chennai)</td>
<td>2</td>
<td>3.104</td>
<td>1.674</td>
<td>0.633</td>
<td>0.129</td>
</tr>
<tr>
<td>a. Ahmedabad</td>
<td>-</td>
<td>2.970</td>
<td>1.747</td>
<td>0.801</td>
<td>0.115</td>
</tr>
<tr>
<td>b. Chennai</td>
<td>-</td>
<td>3.2375</td>
<td>1.573</td>
<td>0.465</td>
<td>0.143</td>
</tr>
</tbody>
</table>

The most integrated core comprise of Anna Road, one of the radial roads out from George Town. The streets in the areas of Nungambakkam, Chindadripet, Purasaiwalkam, Choolai and Triplicane form the highly globally-integrated core of the city. The streets that connect this most integrated core to the historic quarters of the city acquire medium (Mylapore, Villivakkam, Vysarpadi and Royapuram) and lowest (Thiruvanmyur, Velacherry, Saidapet and Thiruvetriyur) syntactic values (see Table 4). For the sake of explanation the highest integrated core is referred as Zone A, the medium integrated ring as Zone B and the lowest integrated ring as Zone C.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Level of Integration</th>
<th>Number of case-study temples</th>
<th>Case Study temples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High (Zone A)</td>
<td>8</td>
<td>Temple 5 of T.Nagar, Temple 8 of Vadapalani, Temple 14 of Triplicane, Temple 16 of Chindadripet, Temple 17 of Purasaiwalkam, Temple 18 of Choolai, Temple 19 of Kosapet, and Temples 20 of George Town.</td>
</tr>
<tr>
<td>2</td>
<td>Medium (Zone B)</td>
<td>21</td>
<td>Temple 3 of Saidapet, Temple 7 of Valasarawalkam, Temples 9, 10, 11 and 12 of Mylapore, Temples 13 and 14 of Triplicane, Temple 15 of Nungambakkam, Temples 21, 22, 23, 24, 25, 26 and 27 of George Town, Temples 28 and 29 of Ayanavaram, Temples 30 and 31 of Villivakkam, Temple 32 of Royapuram and Temple 33 of Vyasarpadi.</td>
</tr>
<tr>
<td>3</td>
<td>Low (Zone C)</td>
<td>7</td>
<td>Temple 1 of Thiruvanmyur, Temple 2 of Velacherry, Temple 4 of Saidapet, Temple 31 of Villivakkam, Temple 34 of Tondaiyarpet, Temple 35 of Kaladipet and Temple 36 of Thiruvetriyur,</td>
</tr>
</tbody>
</table>
Figure 2 Chennai City – The global integration map and the case study temple locations
Land Use

The land-use study was undertaken by using the Chennai City Land Use Map prepared by the Chennai Metropolitan Development Authority (2004). The city level study shows that the city is a combination of many land-use models, i.e., concentric, sectoral and multi-nucleated: concentric, in having the Central Business District (CBD) and peripheral residential land use; sectoral, by the radial roads dividing the land-use boundaries; and multi-nucleated, in the mix of having dense multi-land use close to the CBD. The residential land use has spread everywhere in Chennai, as in any other city (see Figure 4). The southern part of the city mostly has institutional land use and the northern, mostly industrial land use (see Figure 3). The rivers, canals and railway lines, once again, are natural barriers or dividers of land uses. The following points show that the historical aspect of the city is a key element in deciding its land use:

- The Central Business District – is the traditional British period settlement of Black Town.
- The zones with multi-land uses – are mostly the traditional village settlements of Triplicane, Mylapore, Thiruvanmyur, Saidapet, Vadapalani, Purasaiwalkam and Thiruvetriyur.
- The main connecting commercial route is the Anna Road – historically, the first longest road laid by the British, connecting Fort St. George (official headquarters in 19th century) to T. Nagar (a busy commercial node today) and St. Thomas Mount (a suburban space today).
- Most of the recently developed zones are residential, whilst the connecting streets of these zones are commercial.
- In the attempt of understanding the commercial land use and the locations of the case-study temples, Figure 4 shows that:
  - The routes connecting to the historic temple locations are the main commercial corridors of the city.
  - The case-study temple streets located in the CBD and T. Nagar mostly have commercial land use made of them.
  - The case-study temple streets located in the multi-land use zones, typically the traditional settlements, of Triplicane, Mylapore, Thiruvanmyur, Saidapet, Vadapalani, Purasaiwalkam and Thiruvetriyur, have mostly multi-land uses made of them.
  - The case-study temple streets located in the residential land use zones, may or may not have commercial land use made of them.
Figure 3 – Chennai city – Relationship of residential and commercial land uses (left) and relationship of institutional, industrial and commercial land uses (right)
Figure 4 Chennai city – Relationship of commercial land use and the case study temple locations
The relationship between the temple locations and the commercial land use, have two distinct patterns accordingly to the syntactic values. On one hand the scale of commercial land use directly co-relates with the syntactic values, i.e., the higher the syntactic value the higher the scale of commercialisation. On the other hand, surprisingly, they do not co-relate with each other, i.e., although lower the syntactic values, few temples have higher the scale of commercialisation. The commercial land use of ten case-study temple streets (groups A and B, as mentioned in the table above) do not co-relate with the global syntactic values (see Table 5). To explain, the four temples (group A) with low global integration values, yet with high scales of retail activity, are the temples of Thiruvanmyur (Temple 1), Tondaiyarpet (Temple 34), Kaladipet (Temple 35) and Thiruvetriyur (Temple 36). These temples are located at the southernmost and northernmost part of the city or the outermost ring of the city and the streets connecting to these settlements are the major commercial routes of the city (see Figures 3 and 4). The six temples (group B) with medium global integration values, yet with high scales of retail activity are the temples of Saidapet (Temple 3), Mylapore (Temple 10), Valasarawalkam (Temple 7) and George Town (Temples 21, 22 and 23). All these temples are located at the second or the middle ring of the city and from the land-use map (see Figures 3 and 4), it is clear that the streets connecting these (groups 1 and 2) temples to the city’s core (Zone A), i.e., Anna Salai, are the major commercial routes of the city (see Figure 4). It is important to note that out of these ten temples, 7 belong to the pre-British and 3 belong to the British periods.

The three temples with high global integration values and high retail activity are T.Nagar (Temple 5), Vadapalani (Temple 8) and George Town (Temple 20). All these temples are located on the best-integrated parts of the city (Zone A) and are built during the British period. It is usually the case that a temple street which has medium global integration values has medium retail activity. There is no evidence of a temple with low retail activity and high global integration values. Very importantly, most of the temples (21/36) have medium syntactic values but varied scales of retail activity.

### Table 5 Global integration values and the scale of retail activity of the temples

<table>
<thead>
<tr>
<th>Scales of retail activity</th>
<th>Global integration values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Scale 1</td>
<td>3 (Temples 5, 8 and 20)</td>
</tr>
<tr>
<td>Scale 2</td>
<td>5 (Temples 14, 16, 17, 18, and 19)</td>
</tr>
<tr>
<td>Scale 3</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
</tr>
</tbody>
</table>
SUMMARY OF THE CITY LEVEL STUDY: ‘CITIES WITHIN THE CITY’

At first sight, the spatial organisation of the commercial land use of Chennai looks chaotic, however, the Space Syntax analysis has added to the knowledge of the city’s growth pattern. The land use of the city shows two interesting logics to the organisation of the districts within the city: on the one hand, the city has a central core, which comprises dense commercial land use and includes George Town, Purasiwalkam and the Anna Road areas; on the other, the historical temple zones at the periphery, like Mylapore, Thiruvanmyur, Saidapet (route further extends to Velacherry), Vadapalani, Nungambakkam, Villivakkam and Thriuvetriyur have multi-land uses. While the first set of districts form today’s city centre, the latter ones are micro-cities, yet they are part of Chennai and as such, can best be described as ‘cities within the city’. In other words, the best integrated streets of the city centre comprise the major commercial zone of the city, corresponding to their structural complexity measured by the Space Syntactic values; and when the Syntactic values are low at the periphery as an ‘edge-effect’ (Hiller, 1999a: 121), the routes connecting the city centre to those fore-mentioned micro-cities are the major commercial corridors of the city (see Figure 5).

The city is ‘organic’ and forms a ‘whole’ (Alexander, 1987: 10). It has grown in a piecemeal way, however, the study established that these multi-districts are growing exponentially and are emerging from the peculiar structural nature of the city’s past. Chennai is coherent, in that these multi-districts do contribute to
the whole. The historic temple settlements induce a multi-centre effect in the city therefore, the city’s organisation is a combination of pre-British morphological units and the over-layered, street-structural pattern of the British and contemporary phases.

The District-Level Study

The area delineation for the district-level study is 600m radii from the case-study temple locations. This distance is an insight from the Transport Oriented Development (Katz, 1994: xxxi) for an objective of obtaining the data within a walking distance. This part has three phases of evaluation namely, a) Space Syntax local integration map, b) land use, c) figure-ground (See also Table 1). Whilst the Space Syntax evaluation is described below and latter ones are best described in Table 7.

SPACE SYNTAX EVALUATION

The Temples, The Local Integration Values and Retail Activity

Because of the less connectivity of Chennai city (see Table 3), similar to Raman’s (2003; 74.11), findings on Ahmedabad, Chennai city structure also showed better integration pattern for a radius of 4 and did not show any significance for a radius of 3 at the local level analysis. The mean local integration value is 1.573, which is lower than that of any other cities (see Table 3). The orthogonal layouts of both the British and the contemporary periods have the best locally integrated cores. George Town, Anna Nagar and KK Nagar exemplify this. All the other zones vary in their configurations, i.e., they have either radial or concentric or grid-iron or a combination of all these patterns.

In the local integration map (see Figure 6), it is interesting to note that the best integrated streets are mostly the ones that connect the traditional temple streets to the city centre. In the traditional worldview, the temple is situated at the centre with concentric roads around it. It is mostly the roads which connect the temple villages to the longest roads of the city which are the best locally integrated, rather than the temple streets, which are usually the last to be reached. It should be noted, therefore, that these temples are usually found located a few ‘depths’ (usually 3, but rarely up to 6) away from the closest street with a better integration value. In other words, the longest streets of each of the traditional villages have high local integration values; these are mostly the ones that connect the traditional villages to the globally integrated routes.

The temples of George Town, T.Nagar, Purasaiwalkam, Nungambakkam and Vadapalani are directly connected by the best locally integrated streets (see Table 6). The traditional village temples of Mylapore, Thiruvettiyur (Thiruvottiyur) and Saidapet are located on streets with low local integration values but with high retail activity around them. All the other temples vary, both in the degree of their integration values and retail activity.
Further, it is also useful to note that the majority (21/36) of the temples have medium global integration values. Temples with medium integration values (17/36) have retail activity around them, but with varied scales. Most of them (14/17) are with medium integration values and medium scale of retail activity. Apart from the traditional temple locations, the lower the local integration values, the lower the scale of retail activity.
Figure 6 Chennai City – The local integration map
<table>
<thead>
<tr>
<th>Spatial characteristics</th>
<th>Scale of commercialisation</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scale 1</td>
<td>Scale 2</td>
</tr>
<tr>
<td><strong>A. Space Syntax Local Integration value</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Typology 2</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>Typology 1</td>
<td>Typologies 3 and 4</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td>Type 5</td>
</tr>
<tr>
<td><strong>B. Land use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed</td>
<td>Typology 1</td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td>Typology 2</td>
<td></td>
</tr>
</tbody>
</table>
### C. Function of the temple streets

| Connecting major and local roads | Type 1 | This section of the investigation has a close relevance to the space syntax findings because there is a match between them in terms of the hierarchy of road connectivity. |
| Major arterial road | Type 2 | The main roads are Typology 2 and have a high scale of retail activity. The next hierarchy of connecting roads to the local roads are Type 1 but still have a high scale of retail activity. The Type 3 and 4 temples, which are in between two local streets, have a medium scale of retail activity and Typology 5, which is where the street ends at the temple without any further connectivity, has a low scale of retail activity. |
| Connecting two local streets | Types 3 and 4 | |
| Connecting to a local road and ending at the temple | Type 5 | |

### D. Figure ground relationship between the temple, its tank and the streets
<table>
<thead>
<tr>
<th>Scenario</th>
<th>Typology 1</th>
<th>Typology 2</th>
<th>Typologies 3 and 4</th>
<th>Typology 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank squared by streets all round</td>
<td><img src="image1" alt="Diagram" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- T junctions and tank inside the temple boundaries</td>
<td><img src="image2" alt="Diagram" /></td>
<td><img src="image3" alt="Diagram" /></td>
<td></td>
<td><img src="image5" alt="Diagram" /></td>
</tr>
<tr>
<td>On the sides and the tank is inside the temple boundaries</td>
<td><img src="image4" alt="Diagram" /></td>
<td><img src="image6" alt="Diagram" /></td>
<td><img src="image7" alt="Diagram" /></td>
<td><img src="image8" alt="Diagram" /></td>
</tr>
<tr>
<td>Ends at the temple and the tank is inside the temple boundaries</td>
<td><img src="image9" alt="Diagram" /></td>
<td></td>
<td></td>
<td><img src="image10" alt="Diagram" /></td>
</tr>
</tbody>
</table>

The insights into spatial characteristics that are found in relation to this attribute are as important as those discovered by Space Syntax.

It is interesting to note that the connections of the commercial streets are determined by the positioning of the temple and its tanks on the street.

The tank becomes an important urban element in the articulation of the commercial streets at the temple locations of the city.

This aspect also gives an insight into the organisation of the shops, based on the commodities they sell. So far, the temple has a centrifugal way of organizing these shops; religious commodities are closer to the temple, grocery and vegetable products, a bit away, yet closer to the temple than goods such as alcohol or meat.

Grey code

- Temple
- Tank
- Retail
- Road
Spatial Evaluation of the temple locations

Figure 7: Temples 5 & 6 T Nagar

A. Land Use Study

B. Space Syntax Study

C. Local use and figure-ground Study

Figure 5.12
Location 4: T. Nagar
SUMMARY OF CITY AND DISTRICT LEVEL STUDIES

Spatial Typologies

There is a set of spatial relationships where the temple locations overlap with retail activity. The city-level study showed the importance of nine temples in mapping the commercial routes of the city, while the local-level study further clarified the details of the spatial relationships of the retail activity with the temples. Space syntax, land use and figure-ground studies were undertaken for all 36 case-study temples (for sample of illustrations see Figures 8). The spatial characteristics which relate the temple to retail activity are of five types (see Table 8).

<table>
<thead>
<tr>
<th>Typologies</th>
<th>Scale of retail activity</th>
<th>Spatially noticeable at the:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typology 1</td>
<td>High</td>
<td>City level</td>
</tr>
<tr>
<td>Typology 2</td>
<td>High</td>
<td>City level</td>
</tr>
<tr>
<td>Typology 3</td>
<td>Medium</td>
<td>Local level</td>
</tr>
<tr>
<td>Typology 4</td>
<td>Medium</td>
<td>Local level</td>
</tr>
<tr>
<td>Typology 5</td>
<td>Low</td>
<td>Temple site</td>
</tr>
</tbody>
</table>

Of these five, two belong to the high scale of retail activity; two to the medium scale and one belongs to the low scale. Whilst the city-level study directly gives insight into the high scale of retail activity, the local-level study provides a detailed set of characteristics for all five spatial typologies. According to the scale of retail activity, the spatial characteristics are illustrated in Table 8, with a brief discussion. Additionally, the diagrammatic representations of the typologies are illustrated in Figures 8 to 12. Each typology is a diagrammatic expression of its spatial characteristics, which are listed below the illustrations.
**Typology 1**

Scale of retail activities: high

Spatial characteristics
- Mixed land use.
- Tanks facing the major streets of the locality.
- Streets connect the major arterial roads and the local streets.
- Temple is squared by streets and/or ‘T’ junctions.
- Presence of transportation and associative landmarks.
- Medium global and local integration values.

*Figure 8 Typology 1*

Case-study temples: Temple 1 (Thiruvanmyur), Temple 3 (Saidapet), Temple 8 (Vadapalani), Temple 10 (Mylapore) and Temple 36 (Thiruvetriyur).

**Typology 2**

Scale of retail activity: high

Spatial characteristics
- High global and local integration values.
- Predominant land use is commercial.
- Tanks are inside the temple premises.
- Streets are the major arterial roads of the city.
- Temple is on the sides.
- Presence of transportation landmarks.

*Figure 9 Typology 2*

Case-study temples. Temple 5 (T.Nagar), Temples 20, 21 and 23 (George Town) and Temple 34 (Tondaiyarpet).
**Typology 3**

Scale of retail activity: medium

Spatial characteristics
- Medium global and local integration values.
- Predominant land use is residential.
- Tanks face local streets or are inside the temple premises.
- Streets connect two local streets.
- Temple position at ‘T’ junctions or on the sides
- Presence of associative landmarks.

![Figure 10 Typology 3](image)

Case-study temples
Temple 13 (Triplicane), Temple 15 (Nungambakkam), Temple 17 (Purasiwalkam), Temple 35 (Kaladipet), Temple 16 (Chindadripet), Temple 33 (Vysarpadi), Temple 19 (Kosapet) and Temple 25 (Peddanaickanpet).

**Typology 4**

Scale of retail activity: medium

Spatial characteristics
- Medium global and local integration values.
- Predominant land use is residential.
- Tanks are mostly inside the temple premises.
- Streets connect two local streets.
- Temples positioned on the sides of the street.
- Associative temple is close by.

![Figure 11 Typology 4](image)

Case-study temples. Temples 9 and 10 (Mylapore), Temple 30 and 31 (Villivakkam) and Temple 18 (Choolai) to other local temples.
Typology 5
Scale of retail activities: low

Spatial characteristics:
- Low local and global integration values.
- Predominant land use is residential, along with industrial or institutional.
- Tank is inside the temple premises.
- Street ends at the temple.
- Absence of any associative landmark.

CONCLUSIONS

The findings illustrate that a temple can be related to its surrounding retail activity by using five spatial characteristics, which are found to be producing five spatial typologies amongst the case study temples (see Figures 8-12). These spatial characteristics are listed in descending order of priority:

A. The location of the temple and tank on the street

It tends to be the case that the highest scale of retail activity occurs when the tank is outside the temple facing the major roads of a locality and when the temple is located at the intersectional node of the streets (either a 'T' junction or 'squared by streets') (see Table 8 – Data under D). Conversely, the lowest scale of retail activity occurs when the tank is located inside the temple and the temple is located at the end of a street.

B. The Space Syntactic values

Apart from the typology 1 temples, the scale of retail activity on the temple-streets tends to have a direct co-relation to the global and local syntactic values of the temple-street (see Figures 2, 4 & 6) because the typology 1 temples’ retail activity occurs, based on a) the point mentioned in the paragraph above (A) and b) the function of the temple-street as described below (D).
C. The local land uses

The temples located in the CBD and in the locations of mixed-use tend to have the highest scales of retail activity while the temples located where the predominant land use is industrial and institutional, have the lowest scales. It is noteworthy that the temples in the residential quarters of the city have varied scales of retail activity (see Table 8 – Data under B).

D. The function of the temple street

Where the temple-streets connect major and/or local roads, then they tend to have the highest scale of retail activity (see Table 8 – Data under C). This characteristic also has a close relationship with local land use, in that where the temple-streets connect the residential layout to an adjoining major road, the highest scales of retail activity tend to occur. This is typical of the typology 1 temples.

E. The local landmarks

When the temple-street is connected to a greater number of local landmarks, it tends to be the case that a higher scale of retail activity occurs. It is very important to note that when a street connects two temples, the tendency is for that street to become an interesting retail route of the locality (see typology 4, Figure 11).

Therefore, the relative location of the temple is central to an understanding of the relationship between the temple and retail activity. Based on which this paper has also developed the typologies (see Figures 8-12) which are the ways of looking at spatial heterogeneity, a set of principles that ensemble the relationship between the temple and retail activities spatially throughout the city.

In an attempt to compare the phenomenon to the rest of the world, the temple-locations are found to be mostly facing similar scenario of the Middle-eastern context; i.e., other than those of Type 1, the temple-locations hold the scale of retail development accordingly to the spatial logics of the modern city. It can also be said that there is a great deal of learning needed in terms of spatial conservation and planning standards from the Western (English) towns in order to strike a balance between the conservation and contemporary developments at the temple locations of Chennai. Further, it is interesting to note that the Type1 locations present a particular order in which the centre is formed by combining the communal (the temple) and commercial facilities around which the residential clusters and streets occupy. This, although a self-organised pattern, is very surprisingly similar to the urban design practices of a Chinese residential neighbourhood (Ye, 1999: 61.1).

It is evident that in order to understand the contemporary city, it is essential to study not only the urban configuration but also the historical development of the urban form. Surprisingly, there are two correlations between the spatial typologies and the historic periods of the temples: a) the typology 1 temples are those of the pre-British settlements; and b) the typology 2 temples are mostly those of the British period. The pre-British temples were at the core of a settlement (e.g. Mylapore and Thiruvetriyur) and have the medium or low spatial integration at the city level; they create images of ‘districts’ (Lynch, 1960). The British-period temples were on a main route of a settlement (e.g. George Town and Tondaiarpet) and have formed the highly integrated city centre; they create images of an object on the ‘paths’ (Lynch, 1960). These points raise the interesting idea that, evidently, a change occurred in the spatial articulation of the location of the temple with respect to the settlement in the British period. The reasons for such a shift in the location of the temples could be the concept of building the temple itself, which was during the pre-British times the
temple was a core of the micro-cosm and during the British period the temple was an icon of a dominant merchant of the town. In the pre-British phase, a temple was built by a king or a community and was located at the settlement’s core; whilst in the British phase, the temple was built by the local merchants on the main routes of the residential quarter of the dominant business groups. Whilst the British period temples occupy today’s city centre, the pre-British temple locations a) determine the major commercial routes of the city, b) offer places of attraction and c) often present multi land use and therefore become cities within the City of Chennai.

**BIBLIOGRAPHY**


Budiarto, (2007), ‘Senses of Place: understanding urban location as an organisation of places’, *Space Syntax Sixth International Symposium, Istanbul*, Pages: 051.1-051.14


