Study of Architecture and Planning of Madurai City in the context with Mansara Shilpashatra

Study of Architecture and Planning of Madurai City

[1]Nikhil V. Badrike, [2]Sangam Namwad, [3]Shravani Gurav

[1]Assistant Professor, Bharati Vidyapeeth College of Architecture, Navi Mumbai, affiliated with the University of Mumbai, India, ORCiD: 0000-0002-9555-2865

[2]Assistant Professor, Bharati Vidyapeeth College of Architecture, Navi Mumbai, affiliated with the University of Mumbai, India,

[3]Student (fourth year), Bharati Vidyapeeth College of Architecture, Navi Mumbai, affiliated with the University of Mumbai, India

Abstract: This research paper aims to understand the urban setup of Madurai city in context with the vastu shastra and analyse its town planning principles based on ancient scripture describing principles of design, layout, space arrangement, and spatial geometry which impact the overall urban development of the city. Vastu Shastra, the ancient Indian science of town planning and architecture, aimed at achieving a balance among functionality, bioclimatic design, and religious and cultural beliefs. (Ananth, 1998) Madurai city is one of the ancient historic and cultural cities with standing as the second largest in the Tamil Nadu district of India. It has been a major religious centre with settlements developed in a typical sense of fashion along the core temple which reflects some ancient religious town planning features. Therefore, our research aim is to analyse and compare the structure of cities designed according to Vastu, in the case of Madurai city.

Index Terms - Architecture, ancient town planning, development, historic city heritage, city growing

I. INTRODUCTION

Manasara is an ancient scripture on Indian architecture and design. Manasara Vastushastra is an elaborate treatise on town planning and architecture in ancient India. It is written by a sage named Manasara. It is a Sanskrit text organized into seventy adhyayas as in chapters and ten thousand slokas means paragraph description. It is a Vaastu Shastra or Shilpa sastra of very older era, probably of 1st millennium CE. The complete manuscripts have survived unlike other texts of ancient India. Manasara gives detailed guidelines for building Hindu temples, sculptures, houses, gardens, water tanks, laying out of towns and other structures. (emilsisla, 2020) (Seth, 2021)

Vastu Sastra has laid strong emphasis on the selection of a proper site for stablishing a new village, town or a city. A traditional city designed according to the principles of sacred geometry, was based on cosmological theories. Silpa shastra refers to four distinct categories of habitation settlements within the forts and fortified cities. Increasing urbanization and urban population resulted in the rapid growth of towns and cities. One of the cities with unique customs, traditions and art forms- Madurai is a classic example of urban locality wherein diversity is the source of strength in growth. This research paper describes the bridging of Madurai as an historic city by laying its foundation on ancient town planning principles, there correlation with each other in ancient and traditional planning strategies of the entire city and also the basic zoning of Madurai, the city's growth parameters and a small comparison between north and south Madurai.

II. UNDERSTANDING THE CONCEPT OF MANSARA VASTU SHATRA

The Manasara describes that site for establishing a city used to be determined from its smell, taste, shape, direction, sound and touch. It says that an ideal city should be placed in such a local geographical position where various kinds of trees, water bodies, rivers, plants, shrubs, green vegetation cover, including cattle should be present in great numbers. If a river adjoins the site it should run from left to right or West to East or South to North. Also, the site should have water table at a depth equal to a man's height with his arms raised above his head. The site should also comply with moderate temperature during summers and winters. If these parameters were not met with, the land would be rejected. Further there are eight types of the settlements. (emilsisla, 2020) (egyankosh, 2017)

2.1 Dandaka

Dandaka type of town plan provides for two main entrance gates and is generally adopted for the formation of small towns and villages, the village offices being located in the east. The female deity of the village or the chamadevata will generally be located outside the village and the male deities in the northern portion.
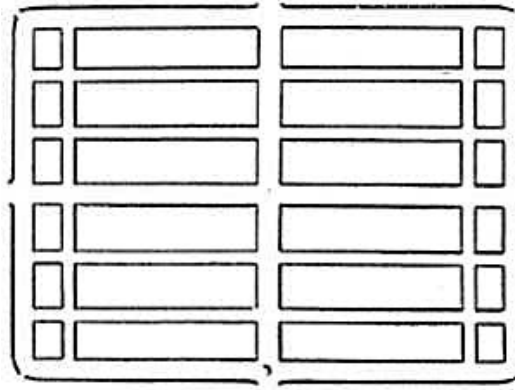

Figure 1 Dandaka

2.2 Sarvathobhadra

This type of town plan is applicable to larger villages and towns, which have to be constructed on a square site. According to this plan, the whole town should be fully occupied by houses of various descriptions and inhabited by all classes of people. The temple dominates the village.
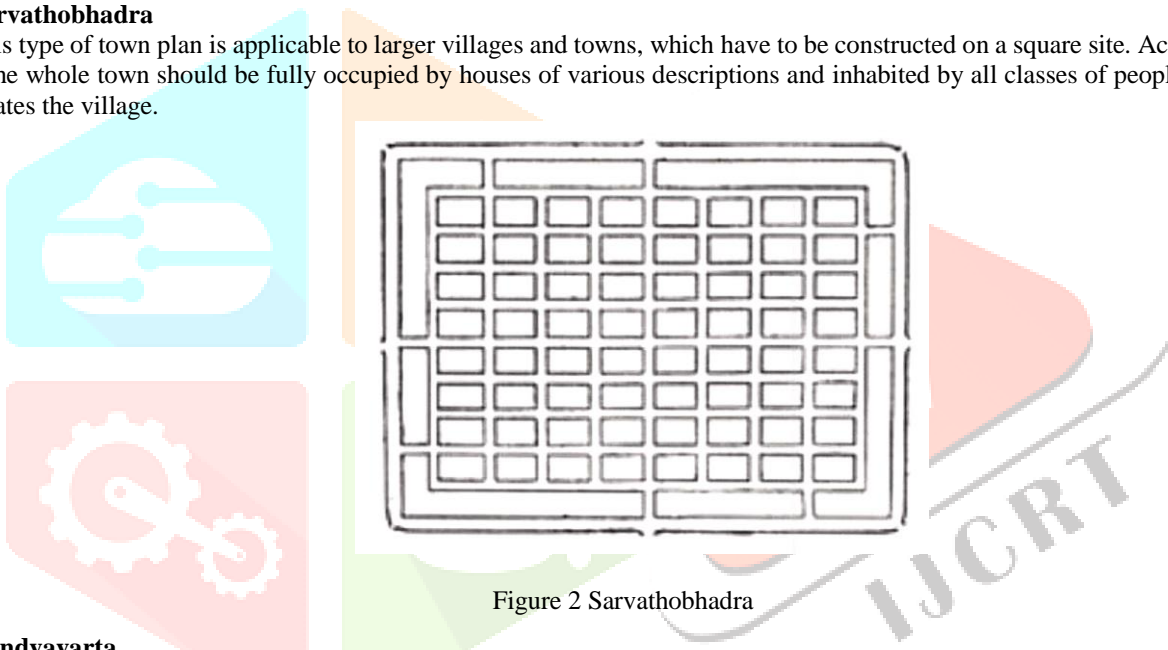

Figure 2 Sarvathobhadra

2.3 Nandyavarta

This plan is commonly used for the construction of towns and not for villages. It is generally adopted for the sites either circular or square in shape, with not less than three thousand houses, but not more than four thousand. The streets run parallel to the central adjoining streets with the temple of the presiding deity in the center of the town. "Nandyavarta" is the name of a flower, the form of which is followed in this layout.
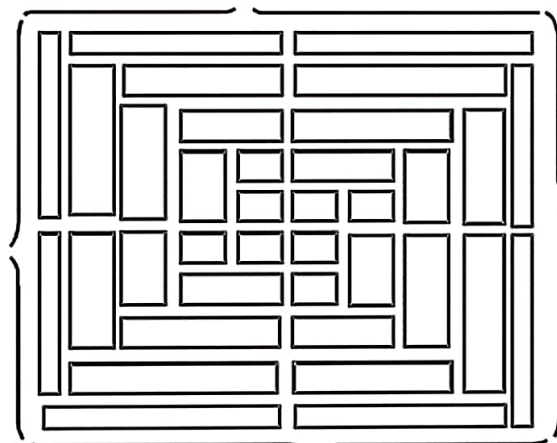

Figure 3 Nandyavarta

2.4 Padmaka

This type of plan was practiced for building of the towns with fortress all round. The pattern of the plan resembles the petals of lotus radiating outwards from the center. The city used to be practically an island surrounded by water, having no scope for expansion.
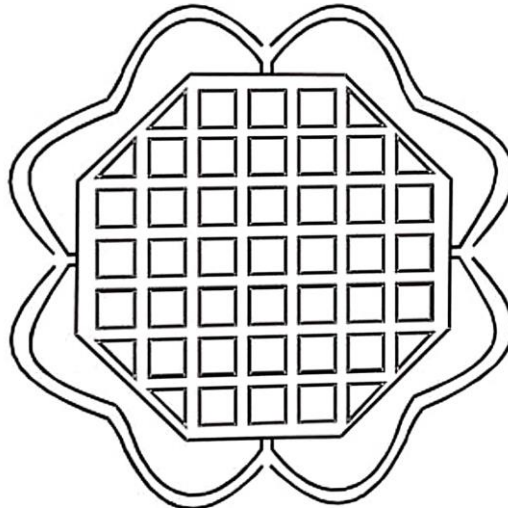

Figure 4 Padmaka

2.5 Swastika

Swastika type of plan contemplates some diagonal streets dividing the site into certain triangular plots. The site need not be marked out into a square or rectangle and it may be of any shape. A rampart wall surrounds the town, with a moat at its foot filled with water. Two main streets cross each other at the center, running south to north and west to east.
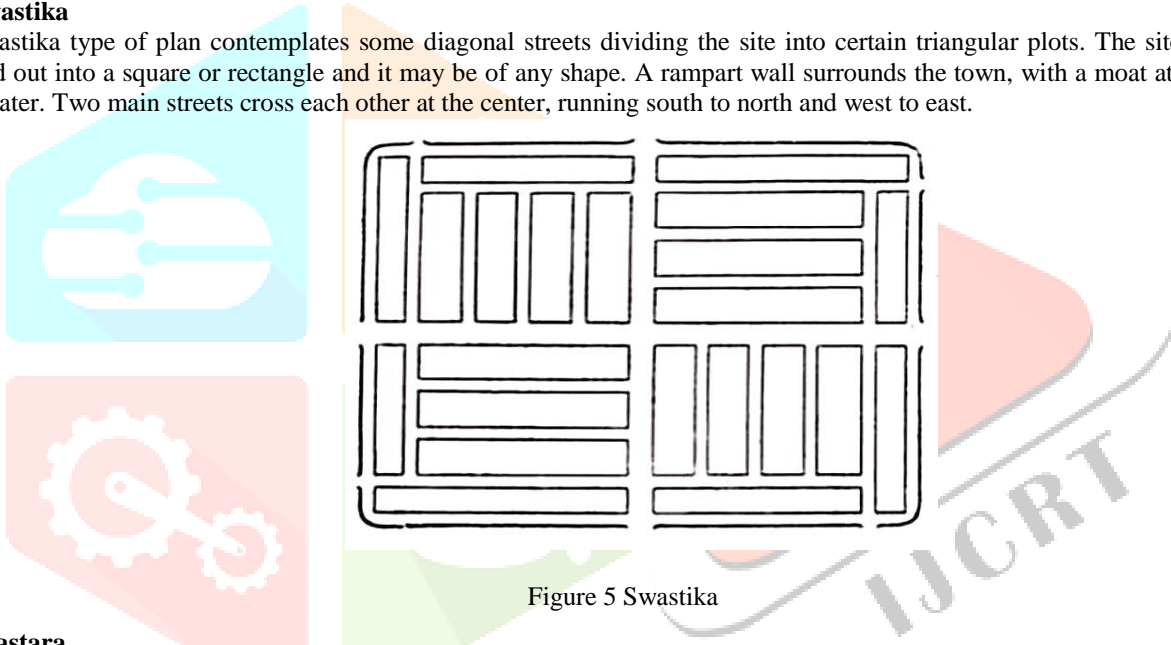

Figure 5 Swastika

2.6 Prastara

The characteristic feature of this plan is that the site may be either square or rectangular but not triangular or circular. The sites are set apart for the poor, the middle class, the rich and the very rich, the sizes of the sites increasing according to the capacity of each to purchase or build upon. The main roads are much wider compared to those of other patterns. The town may or may not be surrounded by a fort.
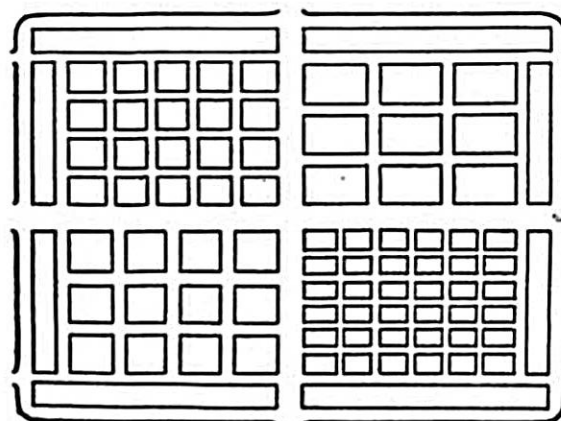

Figure 6 Prastara

2.7 Karmuka

This plan is suitable for the place where the site of the town is in the form of a bow or semi-circular or parabolic and mostly applied for towns located on the seashore or riverbanks. The main streets of the town run from north to south or east to west and the cross streets run at right-angles to them, dividing the whole area into blocks. The presiding deity, commonly a female deity, is installed in the temple build in any convenient place.
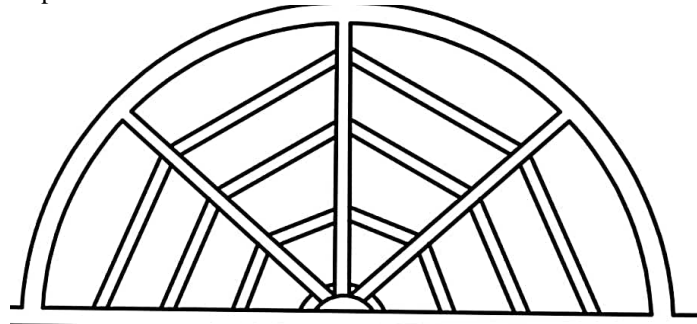

Figure 7 Karmuka

2.8 Chaturmukha

Chaturmukha type of plan is applicable to all towns starting from the largest town to the smallest village. The site may be either square or rectangular having four faces. The town is laid out east to west lengthwise, with four main streets. The temple of the presiding deity will be always at the center.
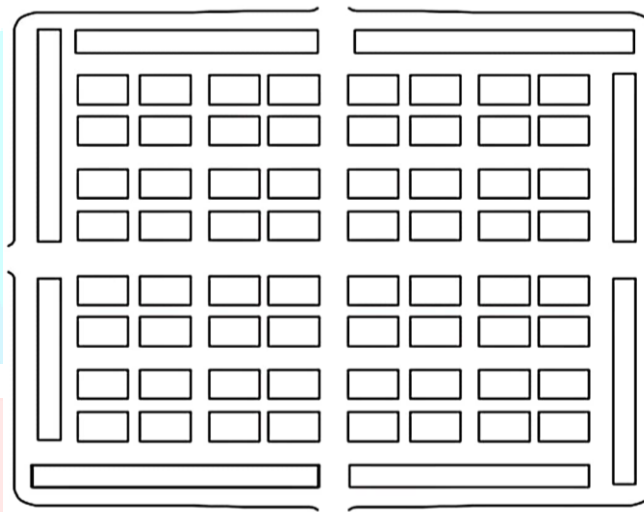

Figure 8 Chaturmukha

III. ORIGIN

The natural determinant for the origin of population and the settlement pattern of the city is totally based on River Vaigai and the only water supply which is one of the 17 river basins of Tamil Nadu state. This oldest heritage city is a planned settlement based on ancient town planning principles of Indian Shilpasatra, forming four concentric squares with the Meenakshi Amman temple the glory at the centre. The entire of Madurai is based on occupational hierarchy and caste system of the locals over there. Madurai is popularly known as The Athens of East and is the famous Temple Town, City of four Junctions, City of Jasmine, and The City that Never Sleeps.

The city is closely associated with the Tamil Literature and culture and can find its influence in the distinct forms of architecture of each period. Influence of Dravidian architecture, Islamic architecture, Tirumalai Nayak palace – which is a combination of both Dravidian and Islamic style, along with Victorian era architecture.

Meenakshi Amman temple
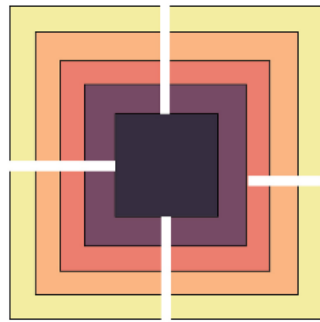**Dravidian Architecture**

Goripalayam Dargah
Islamic Architecture

Tirumalai Nayak Palace
Dravidian + Islamic style

St. Mary's cathedral
Victorian Architecture

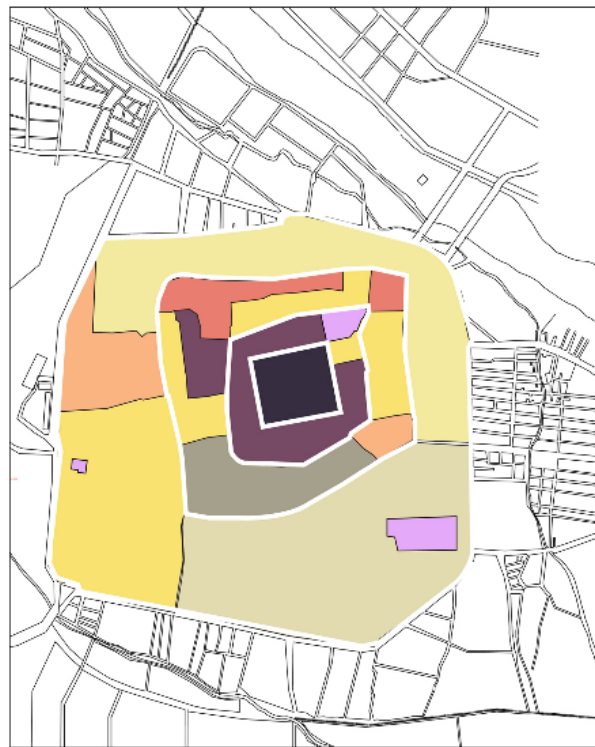Figure 9 Different Architectural styles followed in Madurai, Source: (Cityfiedgeek, 2019)

Figure 10 Zoning of Madurai City based on Caste hierarchy and comparison of ancient planning and Madhurai city plan, Source: (Cityfiedgeek, 2019)

IV. URBAN GROWTH AND EVOLUTION

Older core city of Madurai was a fortified settlement on the southern banks of Vaigai River, also there were few scattered buildings and agricultural farm lands outside the fort area. After the 1900s, with the advent of the railway's facilities and other public services the city's growth gradually started towards Northern part the administration center of the city also shifted to the Northern part as a decongestion measure for the city management. The Northern part of the city provides administrative and civic services and industries, while the South city provides all the commercial and socio-cultural economic activities because of the tourist movement.
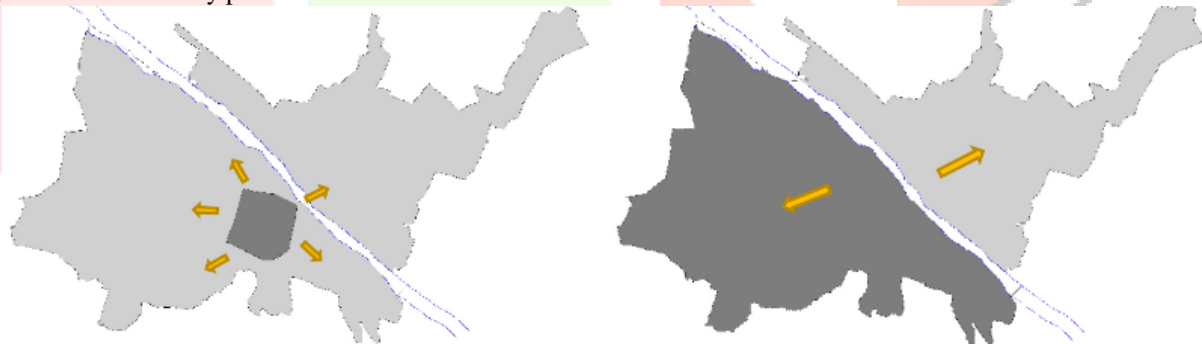

Figure 11 Map representing the evolution in urban growth along the temple and river, Source: (Cityfiedgeek, 2019)
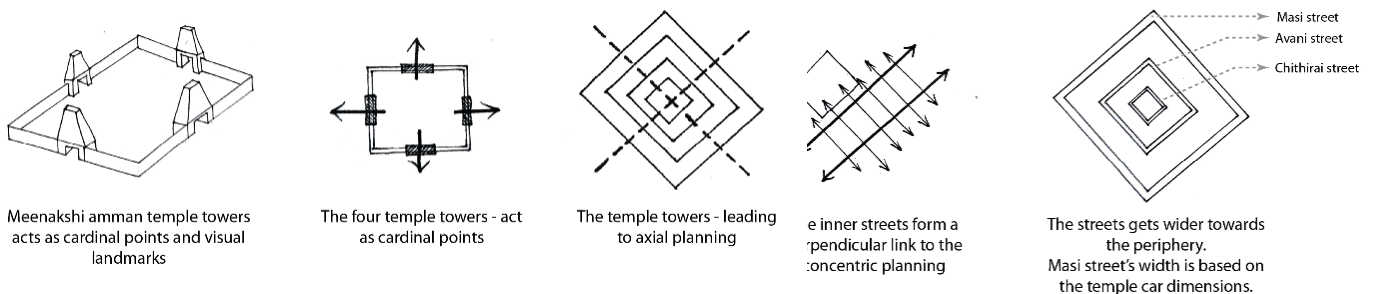

Figure 12 The basics of town planning, Source: (Cityfiedgeek, 2019)

V. TRADITIONAL PLANNING STRATEGIES

The old city town of Madurai is believed to be designed according to Rajdhani plan, described in the Mansara, one of the Shilpasastra, and has the fivefold concentric rectangular formation with Meenakshi- Sundareswaram Temple at a very center point of the town. The city was a well-planned one with bazaars and many broad streets with high and luxurious mansions on both sides. The city was built around the temple complex as the focal point with a combination of a concentric street pattern.

VI. URBAN PATTERN OF THE CITY

City's fabric is defined by its distinct urban patterns. Coarser patterns can be seen in areas where there are high economic and socio-cultural opportunities while some of the coarser pattern areas are also prevalent in core city and Sellur area. These areas are highly of mixed-use creating many opportunities and choice for people to work. The fine patterns of the city are seen in TVS colony, KK Nagar, Villapuram colony and Agrini township. In Madurai, Meenakshi Amman Temple is at the central core. Royal Palaces, Brahmins and Priests at the first concentric rectangle. Traders, Kishatriyas and Vaishnavaites were given the second rectangle. The lower caste Sudras and immigrants Zoroastrians were placed in the third rectangle. Map showing Settlement Pattern of Madurai city with ancient town planning system is shown in Figure 13.
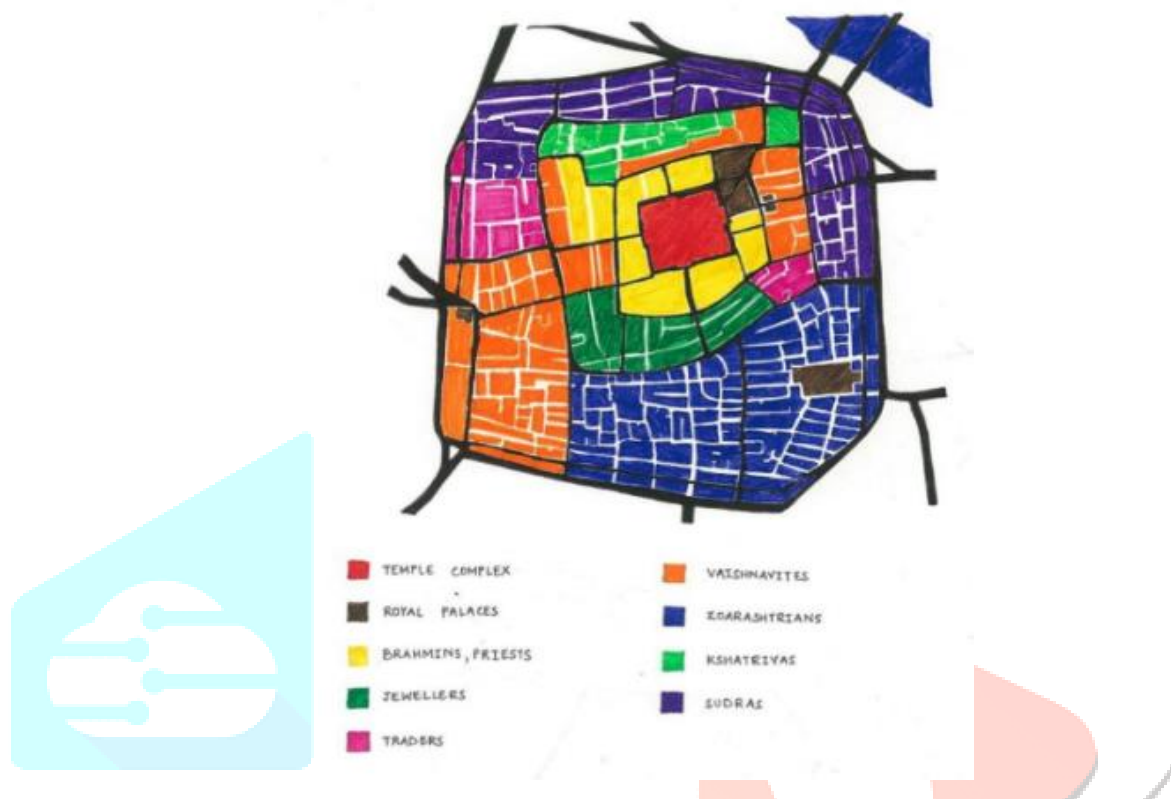

Figure 13 Map showing Settlement Pattern of Madurai city with ancient town planning (credits: Shravani Gurav)

VII. VITALITY

Madurai with its different zones i.e., Historical core zone which satisfies the socio-cultural needs of the people, and yet is the complete contrast of the Northern city maintains the equilibrium on both sides from the effects of urbanization, and thus supports the vital functions of the city.

VIII. SENSE

Sense is depicted in the city's concentric planning with the temple towers providing cardinal direction on 4 sides, streets in the name of Tamil months, Meenakshi Amman temple, tirumalai nayak palace and other historical monuments, which gives a sense of place and legibility. The core city provides natural surveillance with its design elements in human scale and the traditional planning of homes with thinnai.

IX. FIT

The fit of Madurai city is good enough with its spatial and temporal pattern matching the different behaviors of people.

X. ACCESS

The city's planning strategy and the well-connected network of transportation and communication allows access and exchange with ease and minimum time and efforts.

XI. EFFICIENCY & JUSTICE

The Northern city maintains the equilibrium from the effects of urbanization since the core city has development regulations and rules for building structures inside the town.

XII. CONCLUSION

The ancient scripture Manasara Vastushastra serves as an invaluable guide to the principles of Indian architecture and town planning. Attributed to the sage Manasara, the text provides detailed guidelines for constructing various structures, reflecting a profound connection between cosmological theories and urban planning. This research paper focuses on the application of Manasara principles in Madurai, a city with a rich heritage influenced by diverse architectural styles. The study explores different town plans catering to specific geographical conditions, emphasizing the city's growth and evolution, zoning based on caste hierarchy, and the seamless integration of ancient town planning principles. Madurai's vitality, equilibrium between historical and modern elements, and adherence to traditional concepts are highlighted, showcasing the city's cultural richness.

On the other hand, Madurai, unlike many historic towns, faces challenges in the present urban context. Despite enduring cultural, social, and economic changes along with urbanization, the city's planning systems have demonstrated resilience. The study reveals that the organization of land use, caste, and professions along streets played a crucial role in creating a sense of community and identity. While acknowledging the importance of ancient knowledge, the paper does not blindly advocate for the application of Shilpashashtra principles but rather encourages thoughtful consideration of these age-old systems enriched by trial and error. Madurai stands as a notable second-tier Indian city, serving as a commercial center for southern Tamil Nadu. The city's growth, initially along the south, shifted towards the north after the 1900s, leading to a division of functions between the two regions. The present scenario sees the South offering commercial and socio-cultural dimensions, while the North provides administrative and civic services with an industrial presence. This dynamic creates two distinct relationships within the city – one between Old and New and the other between South and North.

REFERENCES

[1] Ananth, S. (1998). Vastu: the classical Indian science of Architecture and Design. New Delhi: Penguin Books.

[2] BALASUBRAMANIAN, P. (2017, March 10). Urban Connect At Madurai. Retrieved from Hashtag Urbanism: https://hashtagurbanismblog.wordpress.com/2017/03/10/7-steps-for-urban-connect-at-madurai/

[3] Cityfiedgeek. (2019, June 4). Urban Form Of Madurai. Retrieved from Urban Journal: https://cityfiedgeek.wordpress.com/2019/06/04/urban-form-of-madurai/#:~:text=The%20natural%20determinant%20for%20the,Amman%20temple%20in%20the%20center.

[4] egyankosh. (2017). Unit-26 Urban Planning. Retrieved from egyankosh: https://www.egyankosh.ac.in/simple-search?query=Urban+Planning

[5] emilsisla. (2020, April). Town planning concepts in Manasara Vastu Sastra. Retrieved December 2021, from https://sociogatherers.wordpress.com/: https://sociogatherers.wordpress.com/2020/04/30/town-planning-concepts-in-manasara-vastu-sastra/

[6] Prakashdagade777. (2021, 3 1). Sangam Age. Retrieved from https://upsc-syllabus.com/sangam-age/

[7] Seth, R. (2021, March). Manasara – An Ancient Text on Architecture. Retrieved January 2023, from https://www.samacharjustclick.com/: https://www.samacharjustclick.com/featured/manasara-an-ancient-text-on-architecture/

[8] https://ignca.gov.in/Asi_data/22950.pdf

[9] Manasara. (2023, December 15). In Wikipedia. https://en.wikipedia.org/wiki/Manasara

[10] Category: History Of Architecture: Manasara Silpa Sastram (accessed, 2024, January) pdfcoffee, https://pdfcoffee.com/category-history-of-architecture-manasara-silpa-sastram-pdf-free.html