

Architectural Layout and Beauty of Madurai Meenakshi Temple

Dr. D. Nagarathinam, M.E., Ph.D.
Rtn. Er. S. Ramanathan, F.I.E.

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Abstract

Madurai is a very old city of India, more than 2,500 years old. It was built by the Pandian king, Kulashekarar in the 6th century B.C. and also is believed to be the home for the classical language of Tamil. The best-looking buildings in the city are its most famous landmark, the **Meenakshi Sundareswarar Temple**. Introduction to Acoustics, rudiments of Wave theory and definition of elementary Acoustics terminology are explained in this paper. The Ponthamarai Kulam (Golden Lotus Pond) is located inside the temple. The pillars along the three corridors of the Ponthamarai Kulam do not have any big statues. The reason for this is also explained in this paper.

Key words: Madurai Meenakshi temple, *nada brahman*, Golden Lotus Pond, ancient traditions.

Introduction: Madurai Meenakshi Sundareswarar Temple

Temples, monuments and ancient cultural wonders abound in Madurai. The City is even called 'The Athens of the East'. Madurai city is also referred to by various names like "Madurai", "Koodal", "Malligai Maanagar", "Naanmadakoodal" and "Thirualavai". The word *Madurai* is derived from Madhura arising out of the divine nectar showered on the city by the Hindu god Shiva from his matted hair. Another theory is that *Madurai* is the derivative of the word *Marutham*, which refers to the type of landscape of the Sangam age, which surrounds the City of Madurai.

Madurai Meenakshi Temple Architecture

Meenakshi temple is situated in the heart of the city of Madurai. The Meenakshi temple is dedicated to goddess Meenakshi, the Consort of Lord Siva. It has long been the focus of both Indian and international tourist attraction as well as one of the most important places of Hindu pilgrimage. For the people of Madurai, the temple is the very center of their cultural and spiritual life. The sculpted pillars are adorned with the exquisite murals that celebrate the ethereal beauty of Princess Meenakshi and the scenes of her wedding with Lord Siva. At the Sundareswarar Temple across the courtyard, Lord Siva is represented as a *lingam*. The pillars depict scenes from the wedding of Meenakshi and Sundareswarar. Present are 985 richly carved pillars here, and every one surpasses the other in beauty. The cute looking temple was believed to have been sacked by the infamous Muslim invader Malik Kafur in the 1310 and all the ancient elements were destroyed completely and no sculptural elements of the ancient temple remain today.

The Pandyas started construction of Sri Meenakshi Temple in the early 13th century. The **East Tower** (*gopuram*) was built first (13th century) and then the **West Tower** (*gopuram*) in A.D. 1323 by the Pandyas. **South Tower** (*gopuram*) was built by one Sevvandi Chettiar in 1478 A.D. **North Tower** was built by Nayak rulers during A.D. 1564-72, but left unfinished, though the temple was commissioned with the east tower as the main entrance. One individual from Sivaganga completed North Tower in 1878. Thus it took about **650 years** to complete the present temple as we see today. East Tower height is 161'3"., South Tower height 170'6"., West Tower height 163'3". North Tower height 160'6"., all towers have 9 storeys each. You can find **MSL + 400 Ft stone** fixed atop **South Tower** by GTS of India.

From the very beginning the East Tower served as the main entrance to the Temple leading to the sanctum of Lord Siva, since Siva (Sundareswarar Swami) was the main deity of this temple. As per one version, a man dissatisfied with the irregularities of the Nayak regime, jumped down from the top of the East Tower and committed suicide. People refused to use the East Tower. People used other inlets including the present Amman Sannathi door way, which was so far the outlet but it became the inlet during Thirumalai Nayak (Ruled: 1623-

Engineering & Technology in India www.engineeringandtechnologyinindia.com

ISSN 2472-8640 1:5 December 2016

Dr. C. Swarnalatha, Ph.D. (Ed.) Entrepreneurship and Management:

Innovative Construction Techniques and Ecological Development. Vol. 2 Civil Engineering

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1659).Thirumalai Nayak built the vaulted Ashta Sakthi Mandapam with a small tower over it. Since then Sri Meenakshi, the goddess, gained importance.

The temple has **14 gopurams** including two magnificent Thanga (golden) Gopurams. The gopurams have exquisite sculptures with elaborate detailing. The tallest south temple tower is 51.9 metres (170 ft.) in height. **Fig.1. Shows the South Tower of Madurai Meenakshi Temple.**



Fig.1. South Tower of Madurai Meenakshi Temple

Laws of Acoustics

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ISSN 2472-8640 1:5 December 2016

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A few terms and Laws of Acoustics are explained below. Echoes and excessive Reverberation are bad boys of Acoustics. Flat surfaces create standing waves which produce flutter echoes. Concave surfaces produce focused echoes. Convex surfaces diffuse reflections, i.e., it breaks up and distributes sound. The concepts of white noise, pink noise, etc. and the space noise generated by the space bodies are also explained here. Space noise and all noise of nature are **White Noise** only, which masks other noises and has a soothing effect. All the stone pillars have sharp non-filleted edges, which are also good sound diffusers. All the statues have convex surfaces which diffuse sound. According to the Mass Law, “Transmission Loss (TL) or Noise Reduction (NR) of airborne sound across a solid wall is proportional to the Logarithm of the Mass”. Hence ideal acoustic environment with good aesthetic charm is established by the statues.

Porthamarai Kulam (Golden Lotus Pond)

It is the sacred pond inside the temple, a very holy site for devotees. The name means the Pond with **the Golden Lotus** and people have to go around the tank to enter the main shrine. According to legend, Lord Siva promised a stork that no fish or other marine life would grow here and thus, none are found here. The space around the **Pon Thamarai Kulam** even before and after Sri Meenakshi gained importance, is a crowded area. **Fig.2. Shows the Photo Graphical View of Porthamarai Kulam.**

If you walk along the corridors, the pitch of the noise made by people come running from the opposite direction will be amplified by Doppler Effect. The space noise (infra sound) from the **Pon Thamarai Kulam**, being an white noise will mask the background noise. You can talk to your friends or family with intelligibility. If there is rain, in the water in the tank the white noise effect is accentuated. All acoustic energy is degraded into some form of heat energy. By viscous attenuation of a plane wave the above heat energy can be absorbed. If statues are provided on the pillars of the corridors around **Pon Thamarai Kulam** air space will be reduced and the passages will be heated up by the acoustic energy. Hence big statues are avoided. Sharp edges of pillars serve as diffusers. If water is retained in **the Pon Thamarai Kulam** viscous

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ISSN 2472-8640 1:5 December 2016

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attenuation of acoustic heat energy is possible. That is why the **Pon Thamarai Kulam** is situated inside the temple to collect rain water from terrace and to get space noise to overcome the Doppler Shift and for viscous attenuation of acoustic heat energy. **Fig.3. Fibonacci Spiral profusely used.** All statues are designed and fixed not as an accident.

'Every statue is in its place, and a place for everything'. The placement of the statue is coherent, i.e., logically or aesthetically ordered or integrated. **Fig. 4. All statues with convex surfaces.**

Parallel walls or parallelism produces standing waves, which in turn creates echoes. Hence the statues on the pillars in any hall have random distribution to avoid symmetry and parallelism. All parts of the statues are proportioned to the **Golden Ratio 1.618** and the Fibonacci Spiral is profusely used in the statues. Fibonacci learnt number theory from India and also through the Arabs. **Fig.5. The axes of the north and south and the east and west gopurams intersect at the place where the shrine of the principal deity (Siva) is located.**



Fig.2. Porthamarai Kulam of Meenakshi Temple

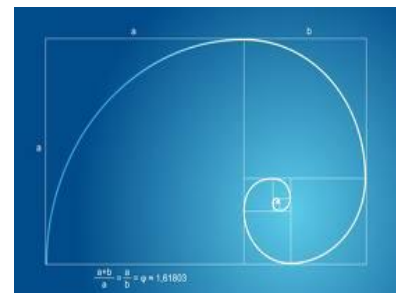


Fig.3. Fibonacci Spiral profusely used

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ISSN 2472-8640 1:5 December 2016

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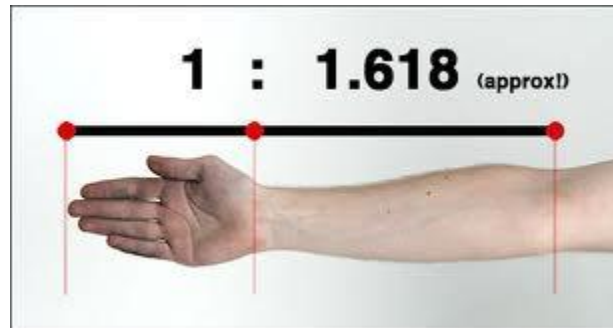
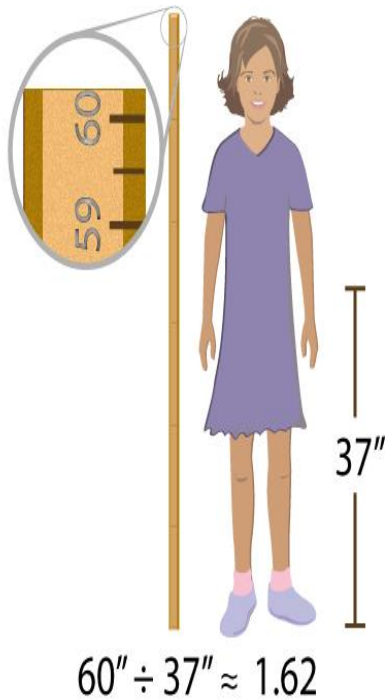
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Golden Ratio $\phi = 1.618$

$$\phi + 1 = \phi^2$$

$$\phi - 1 = 1/\phi$$



All Statues are proportioned to satisfy the Golden Ratio

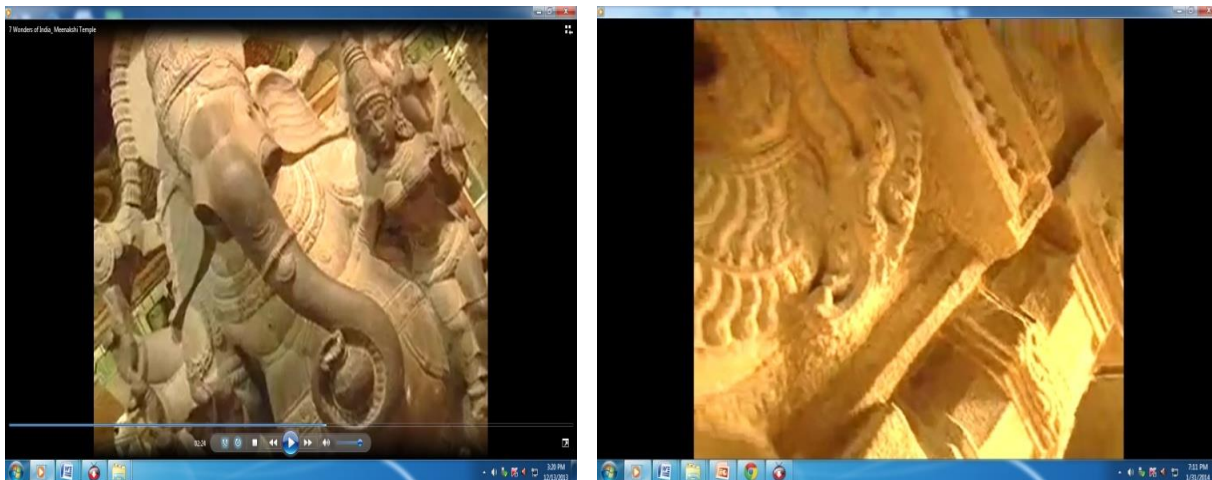


Fig.4. All statues with convex surfaces

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ISSN 2472-8640 1:5 December 2016

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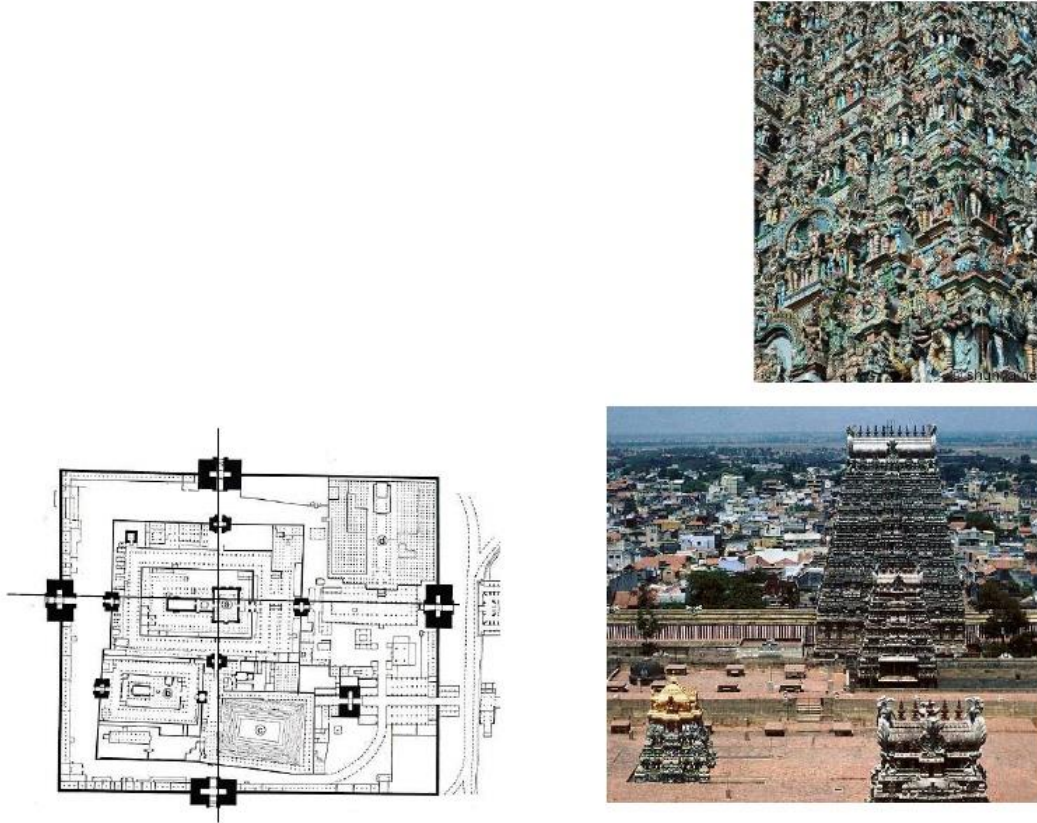


Fig.5. The axes of the north and south and the east and west gopuras intersect at the place where the shrine of the principal deity(Siva) is located

Mukkuruni Pillaiyar

The Mukkuruni Pillaiyar is placed on the cross road because of the convex nature of Pillaiyar's belly which will diffuse noise and prevent formation of echoes. The decorative works around the statue should be removed for good results. The temple bell produces white noise and has a soothing effect on those who meditate inside the temple. The bell must be rung with a delay time. Siva's cosmic dance represents the origin of the cosmos and augments the big bang theory. The drum on his upper right hand represents the origin of the cosmos with a big bang and the trident on his left hand marks the destruction of the cosmos. His dance represents the cyclic happening of this creation and destruction. The **Navagrahas** are called cosmic influencers,

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because they are essential for our existence. There are only four kinds of musical instruments: String instrument, Percussion instrument, Wind Instrument and Brass instrument, each having many varieties. All these instruments with or without combinations can be played anywhere in the temple with balanced acoustics. The musical pillars are not hollow and are quite solid. Top and bottom have fixed ends. When struck, noise is produced by the pillars by Flexural Mode of vibration. The temple is built to a master Vedic Architect's blue print. The large space, the temple bell and the statues are ornaments to the temple and are curative pills to your wavering mind.

During the 7th and the 8th centuries, the *mandapams* have flat roofs usually covered with massive stone Slabs, while in the South India the *mandapams* are provided with flatter pyramidal covering with waterproofing and surrounded by a parapet. The Madapam in the South Indian temples are often large in size. (Hundred-pillar mandapam, thousand-pillar mandapam, etc.). Pillars are most times well ornamented and display carvings of gods and goddesses, various characters and mythical animals.

The Thousand Pillar hall of Madurai Meenakshi Amman Temple (Fig.6.) was built using the older *Nellaiappar Temple*, Tirunelveli as a model. The *Aayiram Kaal Mandapam* or Thousand Pillar Hall contains 985 (instead of 1000) carved pillars. It is considered culturally important and is maintained by the Archaeological Survey of India. At the entrance of the Mandapam, there is an idol of a man majestically seated on a beautiful horse. Legend has it that this is an idol of *Ariyanatha Mudaliyar* who built the mandapam.



Fig.6. Thousand Hall Pillars at Madurai Meenakshi Temple

Madurai Meenakshi Architectures were destroyed in 1310 A.D.

The original temple was built by Kulasekara Pandian in 6th century. At first it was a temple of art and architectural elements. Lord Siva was worshiped there. At Madurai Lord Siva performed one of the **seven dances of Sandhya Tandava** by lifting left foot for the balance of creation whereas Lord Siva performed his dance of **Ananda Tandava** by lifting right leg at **Chidambaram**. The temple was believed to have been sacked by the infamous Muslim invader Malik Kafur in AD 1310 and all the ancient elements were destroyed.

Restoration of Meenakshi Temple by King Thirumalai Nayakkar

The temple in its present form was constructed in the 1600s. The initiative to rebuild the structure was taken by first Nayak King of Madurai, Viswanatha Nayak (1559-1600 A.D.). The restoration was carried out under the supervision of Ariyanatha Mudaliar, the Prime Minister of the Nayak Dynasty and the founder of the Poligar System. King Thirumalai Nayakkar (circa 1623-1659) played an important role in the temple's construction. He built various complexes

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ISSN 2472-8640 1:5 December 2016

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inside and outside the temple and he built Vasantha Mandapa to celebrate Vasanthotsavam. Kilikoottu Mandapam and the corridors of Teppakulam were built by Rani Mangammal. Meenakshi Nayakar Mandapam was built by Rani Meenakshi.

Ashta Sakthi Mandapam

The visitors who enter the temple through eastern gateway, first enter through the Ashta Sakthi Mandapam.(Fig.10). Visitors are not entering through eastern gopuram. During the construction of eastern gopuram, the gopuram had collapsed and a few workers died. So the visitors started avoiding entering through this gopuram and they started entering through Ashta Sakthi Mandapam. This Ashta Sakthi Mandapam was built by Thirumalai Nayakkar wives Rudrapathi Ammal and Tholimamai. Ashta Sakthi Mandapam is an impressive structure with a hemispherical ceiling. It is 14m long and 5.5m wide. There are bas-reliefs all over the place.

One School of Thought

It was built with the help of Roman (Italian) Architect. But the citation was not there in history. But we have to believe that only Greek and Romans were good in this architecture. (Refer above architectural view).

Another School of Thought

Thirumalai Nayakkar Mahal was built with the help of Roman Architects. By seeing the Arches, Rudrapadi Ammal wanted to construct a hemispherical structure. Therefore this Ashta Sakthi Mandapam was built by our architect in order to prove that we can also construct an arch type of Mandapam. That is why this was constructed by our Indian architects.



Fig.7. Ashta Sakthi Mandapam for Eastern Entrance

Madurai Meenakshi Temple Tower Height is the Vasthu for House Construction

There are 14 gopurams (Towers) in the Meenakshi Temple. The outer 4 Towers are the landmarks of Madurai. The height of 4 Towers are given below:

South Tower Height: 170'6"

West Tower Height: 163'3"

East Tower Height: 161'3"

North Tower Height: 160'6"

These towers; height are the basic source for the Vasthu Construction of our house. When we construct our south wall, it should be always higher than the other walls.

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ISSN 2472-8640 1:5 December 2016

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Conclusion

Madurai Meenakshi Sundareswarar Temple is a symbol for the beauty of art and architecture. The symbol stands for the immortal world of art and architectural.

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Dr. D. Nagarathinam, M.E., Ph.D.
Principal
Theni Kammavar Sangam College of Technology
Theni – 625 534
Tamilnadu
India
dnagarathinam1960@gmail.com

Rtn. Er. S. Ramanathan, F.I.E.
Civil Structural Consultant
Chennai
Tamilnadu
India
tvmsrnathan@gmail.com

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