

The Art and Science of Chola Bronzes

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Ah, when will I get to gaze upon the unique
One to whom no other compares
Him who is fire, water, wind, earth and ether,
Him whom others cannot understand ...
(Manikkavachakar, in Yocum, verse 20.2)

So sang the 9th century mystic Manikkavachakar of Shiva as Nataraja, the Lord of Dance, presiding deity of the modest shrine, *cirrambalam* or 'little hall' at Tillai, later known as Chidambaram, in Tamil Nadu in southern India. Perhaps he had a prescient notion that, about a millennium later in an era of spectacular advances in cosmology and modern physics, this icon's realization in bronze would take on grander connotations as the 'Cosmic Dance of Shiva'! The astronomer Carl Sagan, in fact, saw the Nataraja as 'a premonition of modern astronomical ideas' (Sagan, p. 213).

The metal icons of the early mediaeval Chola Tamil kingdom (mid-9th-13th century) such as the Nataraja from The Cleveland Museum of Art in Figure 1, are highly coveted works of Indian sculpture. Pioneering historian of Indian art J.C. Harle was of the opinion that 'early Chola bronzes represent the finest representations of godhood, unsurpassed in any place or age' (Harle, p. 302). Examples of such masterpieces are on view in the exhibition, 'Chola: Sacred Bronzes of Southern India', at the Royal Academy of Arts in London from 11 November 2006 to 25 February 2007.

The Nataraja bronze, in all its complex imagery, has attracted interest from a galaxy of famous personalities, from scientists to art connoisseurs, philosophers and dancers. In 1921, the celebrated French sculptor Auguste Rodin (1840-1917) extolled an 11th century Chola Nataraja as '*une chose divinément réglée*', i.e. as something divinely ordered. In an essay entitled 'The Dance of Siva', geologist-turned art historian Ananda Coomaraswamy (1877-1947) saw in the icon elements of 'poetry, but nonetheless, science' (Coomaraswamy, 1924). Almost echoing the lover-beloved sentiment of the devotional *bhakti* hymns of Tamil saints, Rodin compared its grace to the Medici Venus and Coomaraswamy to the 'dancing Eros Protogonos of Lucian'.

The circumstances in which bronzes were cast during the Chola period, and the contexts within which they were and are sited, continue to have profound relevance for our present-day understanding of art, poetry, science, history and society. Remarkably, in an era preceding Leonardo da Vinci, the Nataraja bronze achieved a poetic synthesis of art and science, perhaps conceived as an iconometric star chart for Orion, as argued here from archaeometallurgical and astro-

archaeological evidence. It was not until the time of Tamil scientist-aesthete, Nobel Laureate Sir C.V. Raman (1888-1970), whose work on acoustics and light was spurred by inspirations as diverse as the music of the *veena*, solar coronae, the blue of the Mediterranean and pearls, would the region again throw up similar epoch-making ideas! As suggested here, even feminists have something to laud in the roles played by a widowed queen and her 'male muse' in the remarkable artistic and technological outpouring of Chola bronzes.

In some ways Chola bronzes in a broad sense have come to mean all bronzes of a distinctive south Indian style (even ones made in modern workshops). Technically, the mediaeval Chola period spans the mid-9th to the mid-13th century. However, when one talks of Chola bronzes in terms of a high tradition of art, it is with reference to the time of the imperial Cholas (c. 950-1070), when direct descendants of Vijayalaya Chola, the dynasty's founder, ruled mainly from Tanjavur in Tamil Nadu and when the classic bronzes were made. The phase after this is usually referred to as 'Late Chola', when a prince from the Andhra Eastern Chalukya lineage ascended the Chola throne, a line of succession which continued until 1279. The change seems to have introduced a more provincial style to the bronzes. For clarity, both in my PhD thesis (Srinivasan, 1996) and in this article, I have therefore classified Chola bronzes under the following categories: Vijayalaya Chola (c. 850-1070), Early Chalukya-Chola (c. 1070-1125) and Later Chalukya-Chola (c. 1125-1279). The Chola sculptural tradition itself evolved out of a mature phase of experimentation in stone and bronze under the Pallavas, who rose to power in the 6th century with their capital mainly at Kanchipuram, and were vanquished by Aditya Chola in 875. After the Cholas, the best-known Hindu dynasty is that of the Vijayanagara kings, who established their kingdom in 1336 in the region of Hampi, Karnataka and built a sprawling metropolis in the midst of intractable granite. The Vijayanagara were defeated in 1565 at the Battle of Talikota by the Muslim Deccani sultanates. While the interim period between the Chola and the Vijayanagara is more nebulous, and there was a period of instability with the advance of the Muslim sultanate from Delhi, the Later Pandyas were prominent between 1190-1310. For convenience in my thesis, I have classified the period from 1279 to 1336 as Later Pandyan, after the most prominent dynasty in this period and the stylistic groups other than Chola as Pre-Pallava (c. 200-600), Pallava (c. 600-875), Later Pandya (1279-1336), Vijayanagara and Early Nayaka (c.



(Fig. 1) Shiva as Nataraja (Lord of Dance)

Chola period, 11th century

Bronze

Height 111.5 cm

The Cleveland Museum of Art (1930.331)

Purchase from the J.H. Wade Fund

(Photograph © The Cleveland Museum of Art)

1336-1565), and Later Nayaka and Maratha (c. 1565-1800). It is interesting that the stylistic changes in bronzes attributed to these different groups, are comparable to stone sculpture at associated temples and also mirrored in changes of their metallurgical profile.

Temple worship under the Cholas largely followed Shaiva Siddhanta ritual. A dual form of worship was practised: intimate communion with the pillar-like stone *linga* representing Shiva in the sanctum, and public worship of metal deities (*utsava murtis*), such as the dynamic dancing Shiva, outside the sanctum during festival processions. Quite apart from notions of caste-based segregation in worship, such dualistic aspects can perhaps be linked to more ancient Tamil aesthetic sensibilities. For example, Tamil Sangam poetry (c. 1st century BCE-CE 3rd century) distinguished between the *akam* genre, concerned with the inner space of intimacy and love, and the elegiac and bardic *puram* genre, concerned with the outer space of valour, warfare and martyrdom.

Similarly, the mythology and poetry associated with Tamil Shaivite bronzes seem to play with opposites: the

human and the cosmic, the dreadful and the sublime, the 'supreme' with the individual consciousness, creation and dissolution, and macrocosm with microcosm. At the Nataraja temple in Chidambaram, dating back at least to the 12th century, another unique dual form of anthropomorphic-aniconic worship exists. In the sanctum, a Nataraja bronze has been placed adjacent to an empty curtain space said to represent Shiva as *akasha* (ether/space), one of the five elements. This is the Chidambaram Rahasya (Revelation of Chidambaram) housed in a golden-roofed inner sanctum known as the Chit Sabha or Hall of Consciousness.

The original Tamil term *cirrambalam* implying 'little hall', was Sanskritized to Chidambaram whose meaning is ascribed to the words *chit*, consciousness, and *ambaram*, cosmos (Younger, p. 112). However, as I have argued elsewhere and point out later in this article, the ideas linking Nataraja to the consciousness and the sky are already conveyed in the hymns of Tamil saints from the 7th to the 9th century using the terms *oru unarve*, one consciousness, and *nilavu*, sky. Here too, the interplay of interior mindscape with exterior landscape can be discerned, recalling Sangam ideas. Ramanujan's commentaries on early Sangam poetry elucidate the creative tension generated by the juxtaposition of *akam* with *puram*, of outer with inner space as in the verse below:

Bigger than earth, certainly,
higher than the sky,
more unfathomable than the waters
is this love for this man ...
(Ramanujan, pp. 108-09)

This opposing, yet complementary nature of Tamil Shaivite worship comes through when comparing two fine 10th century Chola bronzes from the British Museum which are



(Fig. 2a) The back of the image in Figure 2

(Fig. 2) Shiva as Chandrashekhara (Lord of the Moon)
Chola period, c. 990-1000
Bronze
Height 51 cm
British Museum (Asia 1958.7.15.1)
(Photograph © the Trustees of the British Museum)

in the Royal Academy exhibition (Figs 2 and 3). Whereas the Vedic god Rudra who is linked to Shiva is primarily destructive, Chola and south Indian iconography emphasizes Shiva's benign aspects (Rathnasabapathy, p. 46). The image in Figure 2, Chandrashekhara, the Lord Crowned with the Moon, one of the god's most gentle manifestations, captures the sensuous-sacred dimension seen in the best Chola bronzes. The crescent in Shiva's coiffeur conveys the cool and calm of the moon, while moonbeams are perhaps delectably suggested by the three locks protruding along parabolic trajectories on either side. A corresponding depiction is provided by the image of Shiva as Shrikantha, Lord of the Auspicious Neck, who redeemed the world by retaining in his throat the poison that ironically emerged from the churning of the ocean by avaricious gods in search of nectar (Fig. 3). From these two images, it can be seen that the mere change of an attribute and a subtle shift of expression, transformed a serene Chandrashekhara into a Shrikantha full of foreboding gravitas. Shrikantha holds a serpent rather than the remnants of a flower stalk, and flared nostrils and pursed lips have replaced the quiet smile. T. Richard Blurton describes this as a 'magisterial' image depicting Shiva as both an all-powerful deity and as a protector of his devotees (Blurton, frontispiece).

The impulse to reconcile dualities is best articulated in the famed mid-11th century Chola Ardhanarishwara image in Government Museum, Chennai, depicting godhood as a composite of male and female halves (see Thomas, p. 41). However, in the Chandrashekhara image, the male-female duality is symbolized by the unadorned, extended right ear-lobe and the roundel-shaped left ear-ring (see Fig. 2). It is almost as if modern ideas, such as those conveyed by the scientific complementarity principle of wave-particle duality, had been aesthetically internalized whereby contradictions are resolved as two sides of the same coin. At a creative level it anticipates Jungian ideas that 'the confrontation between two positions generates a tension charged with energy' (Campbell, p. 298).

The Nataraja bronze is a unique Tamil formulation with the right leg of Shiva extended in *bhujangatrasita karana*, literally 'serpent fright dance movement', the kind of action that one would probably make to escape a serpent. Based on 13th century Tamil Shaiva Siddhantic texts, Ananda Coomaraswamy famously interpreted the icon as Shiva's *anandatandava* (*ananda*, bliss; *tandava*, Shiva's awesome dance), which is also the dance of bliss within the consciousness (Coomaraswamy, p. 27). The image, with the ring of fire representing cosmic cycles of creation and destruc-

tion, is said to depict Shiva's five acts or *panchakritya*: creation symbolized by the drum, destruction by the fire, protection by the front right arm, solace by the crossed left arm, and dispelling of ignorance by trampling the demon.

To understand the ramifications that the scientific study of Chola bronzes might have for the history of art and metallurgy, I undertook compositional and trace element analysis on 130 representative South Indian bronze icons and lead isotope analysis on sixty of these (Srinivasan, 1996). Samples were primarily taken from the Government Museum, Chennai, Victoria and Albert Museum, London and British Museum, London. Lead isotope ratio analysis enables the grouping of artefacts on the bases of shared ore sources or casting from the same batch of metal with lead from mixed sources. When these results are read together with the trace element composition (especially from Ni, Co, As, Bi, Sb values and Fe/S ratios), characteristic profiles could be empirically identified. Thus, images of uncertain attributions



(Fig. 3) Shiva as Shrikantha (Lord of the Auspicious Neck)
Chola period, c. 970
Bronze
Height 59 cm
British Museum (Asia 1970.9.21.1)
(Photograph © the Trustees of the British Museum)

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(Fig. 3) Shiva as Shrikantha (Lord of the Auspicious Neck)
Chola period, c. 970
Bronze
Height 59 cm
British Museum (Asia 1970.9.21.1)
(Photograph © the Trustees of the British Museum)

were stylistically re-assessed as Pre-Pallava [8], Pallava [17], Vijayalaya Chola [31], Early Chalukya-Chola [12], Later Chalukya-Chola [17], Later Pandya [15], Vijayanagara and Early Nayaka [20] and Later Nayaka and Maratha [12] (with the number of images studied in each group indicated in the square brackets).

An image of Lord Vishnu as Varaha, his man-boar incarnation, with consort Bhudevi, the earth goddess, seated on his lap from the Victoria and Albert Museum, which features in the Royal Academy exhibition, was among the bronzes I tested (Fig. 4). While some art historians date this stylistically to the 13th century, the technical fingerprinting suggests a date of the 14th century (*ibid.*, p. 272). The date is, in my opinion, consistent with its style, which is comparable to stone sculptures of the Vijayanagara, a Vaishnavite dynasty, dedicated to Vishnu at Hampi, such as the now-damaged colossal Narasimha which once had a seated Lakshmi (Longhurst, p. 95). The technical study also indicated a marked increase in the number of bronzes of Vaishnava affiliation that were attributed to the Vijayanagara group over the other periods.



(Fig. 4) Bhu-Varaha, Vishnu's avatar as a gigantic boar embracing the earth goddess
Vijayanagara period, 13th century
Bronze
Height 45.5 cm
Victoria and Albert Museum (IM-6-1924)
(Photograph © V&A Images)

Although the Nataraja icon is generally regarded as a 10th century Chola innovation, archaeometallurgical testing suggests that the form was already in existence during the Pallava dynasty (6th-mid-9th century), which was best known for the graceful stone sculpture at Mahabalipuram (Fig. 5; Srinivasan, 2001 and 2004). Whereas some readings point to the icon's political or martial symbolism especially under the Cholas (Kaimal, 1999), my scientific studies, corroborated by some 6th-9th century Tamil hymns, suggest that some cosmic perceptions did precede a later Sanskritized 12th/13th century phase of worship at Chidambaram (Srinivasan, 2004). For instance, a verse by Manikkavachakar goes: 'He who creates, protects, and destroys the verdant world. The primeval One ...' (Mowry, p. 53).

As symbolized by the rear hands of the Nataraja bronze holding in opposition the drum of creation and fire of destruction (see Fig. 6), the worship of it seems to grapple with the life-death duality. Thus, at times Manikkavachakar's gripping verses rail at Nataraja, calling him a madman who oversees death and destruction at cremation grounds, and at other times, hail him as the dancer (*kuttan*) who sports playfully with cosmic creation and destruction.

In contrast to the modern visual apprehension of Chola statuary, godhood in the past was largely perceived as something 'beyond vision' as in Manikkavachakar's plea for a gaze of Shiva in the opening verse of this essay. The *bhakti* hymns of the Tamil Shaivite saints convey a yearning for Shiva as the unattainable. Manikkavachakar also described Shiva as the One Transcendental Consciousness (Oru Unarve) (Yocum, verses 22.3, 24). Many of the 6th-9th century Tamil saints and Shaiva Siddhanta worshippers were not from higher castes. To them, Shiva the dishevelled deity as social outcaste was more accessible. By the later mediaeval period, with the Brahmanical caste system tightening its grip on society, the lower castes were excluded from the inner sanctum. In a touching episode, the low-caste saint Nandanar is said to have pleaded for Shiva's vehicle, the bull Nandi, to move aside so that he could glimpse the Nataraja at Chidambaram, and was granted union with Shiva in the sanctum. The metal processional images are in any case so heavily adorned that the face can be barely discerned by the worshippers.

Consequently, the myths associated with the 63 Shaivite *nayanmar* saints may reflect attempts to negotiate and subvert the layered hierarchies of class and caste. In some, the devotee identifies closely with Shiva as outcaste or beggar, as in the case of the 6th century woman saint Karaikal Amaiyyar, one of the most interesting subjects depicted in Chola bronzes, who prayed to become a ghoulish hag so that she could wander the cremation grounds with Shiva. Shiva also elevates the devotee to a status beside him as in the case of the saint Chandesha who was but a lowly cowherd (Fig. 5). In the story of Chandesha, a young man Vicarasarman,

motivated by the mistreatment of a cow, decided to tend the cows of his village. Moved by his actions, his herd yielded an abundance of milk. Being an ardent devotee of Shiva, Vicarasarman poured the excess milk on a *linga* made of sand. However this enraged the villagers and his father who kicked down the sand mound. The affront to Shiva disturbed the meditating Vicarasarman so much that he cut off his father's leg with an axe. Shiva rewarded his devotion by making him Chandesha, the steward of his household (Depommier, pp. 9-10). A fine sculpture from the mid-11th century Gangaikondacholapuram temple, attributed to Rajendra Chola, shows Shiva seated next to Parvati with his left hand on Chandesha's head and his right in a pose of tying a flower garland around the saint's head (see *ibid.*, p. 9). In its adulent pose with folded palms and adoring smile, this scaled-down standing Chandesha is somewhat similar to the image from the British Museum in Figure 5. In an image inset within a trident from the British Museum, also on view at the Royal Academy, Shiva is portrayed as Vrishabhavana Deva, a bucolic cowherd with the bull (see fig. 10 in the article by John Guy in this issue).

There are interesting astrological and astronomical connotations for Nataraja as suggested by mythology. Astrophysicist Nirupama Raghavan is of the view that the supernova explosion in the region of the Orion constellation in 1054 may have impacted the religious poetry, rituals and depictions related to Nataraja's cosmic dance (Raghavan, personal communication). At the Nataraja temple in Chidambaram, the chariot processional festival of Margayi Tiruvadirai which takes place in December is related to the fact that the moon is full in the star Betelgeuse or Alpha Orionis, or *nakshatra* Tiruvadirai. This reddish supergiant in the constellation Orion, is one of the brightest and largest (Darius, p. 156). Raghavan has also made some intriguing astronomical calculations which suggest that another important annual chariot processional festival, the *brahmotsava* of Ani Thirumanjanam is in fact related to the 1054 supernova explosion, reported by Chinese astronomers to have taken place on 4 July. According to inscription, Ani Thirumanjanam has been celebrated continuously since the mid-11th century Chola period (Natarajan, p. 356; *Epigraphica Indica*, vol. 4, A.R. 118 of 1888). Ani Thirumanjanam is known to be celebrated in *nakshatra* Uttara; essentially a *nakshatra* denotes the spatial position of the moon at a particular time. Raghavan then used software which helped her to find out which day in 1054 the moon would occupy the longitudinal position associated with the *nakshatra* Uttara. She discovered that it fell on 11 July, very close to the Chinese date of the supernova explosion! Betelgeuse is also linked to Rudra, the wrathful Vedic god and hunter, the equivalent of Orion in Greek mythology.

A collaborative study between myself and Nirupama Raghavan points to an exciting iconometric link between

(Fig. 5) Saint Chandesha
Chola period, c. 970
Bronze
Height 48 cm
British Museum
(Asia 1988.4.25.1)
(Photograph © the
Trustees of the
British Museum)



Nataraja and the constellation, Orion. A star chart for Orion dated 800 (Fig. 6a) was mapped on to the Nataraja image in Figure 6, which I identified from archaeometallurgical and lead isotope study as being of Pallava vintage. A 'stellar' inspiration for the Nataraja icon, at least at its inception, may be inferred from the astonishingly good fit given by this superposition. Apart from implying high astronomical competence, it also seems to ratify the Pallava dating, possibly making this the earliest known Nataraja bronze. It brings to mind a remark in Arthur C. Clarke's 2001: *A Space Odyssey*: 'My God, it's full of stars ...'.

Indeed, a 'cosmic' sense permeates a Tamil verse to Nataraja by the saint Appar, referring to sky as the Tamil *nilavu*. The use of the Tamil term *nilavu* during this 7th century period is significant because it suggests that the 12th century Sanskritic influences need not be invoked to explain the linkage of the Nataraja with *akasha*, space, at Chidambaram, but may rather echo the sensitivity to nature in Tamil Sangam poetry:

The Lord of the Little Chamber,
filled with honey,
will fill me with sky (*nilavu*)
and make me be
(Handelman and Shulman, p. 48)

Chola statuary was made by lost wax casting or *madhuchhishthavidhana*, described in the *Manasollasa*, a 12th century encyclopaedic text ascribed to the Western Chalukyan king Someshvara of Kalyana (Reeves, pp. 32-33). At Swamimalai, near Tanjavur, the Chola capital, hereditary *sthapatis* or icon makers still cast bronzes in the traditional manner. Unaided by a physical model, a solid wax image is made using *tala*, iconometric measurements marked out on a coconut frond. The wax image is invested with clay to form the mould which was then heated to expel liquefied wax before molten metal is poured into the resultant hollow to give a unique metal image.

As revealed by the rear of the Chandrashekhara image, the casting technique was one where the mould was placed at a horizontal incline; and the main sprue at the base of the spine was then cut off, leaving behind a protrusion (see Fig. 2a). The back of the arms bears traces of runners which were once attached to the main image to aid the flow of molten metal and then sawn off.

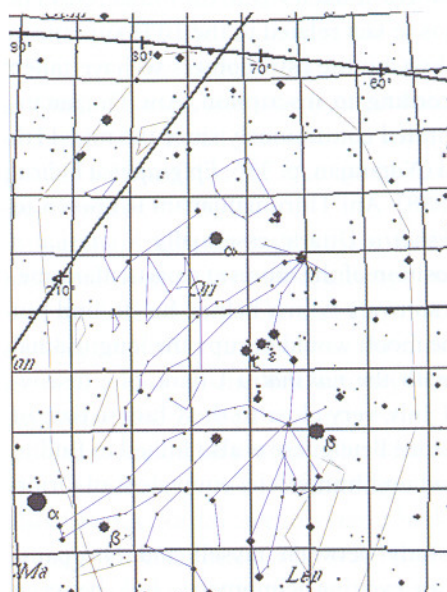
Although south Indian metal icons are often called *pancha-loha* or five-metalled icons, the author's analyses of about 130 Chola and other south Indian images showed that 80 per cent were of bronze (copper and tin) and the rest brass (copper and zinc), and nearly all were alloyed with lead to facilitate casting (Srinivasan, 1996). However, traces of randomly added gold and silver could be also detected which together with lead, tin/zinc and copper would make up five metals (Srinivasan, 1999). This fitted the explanation of Devasenasthapati in Swamimalai, an icon maker I interviewed in 1991, that the *pancha-loha* prescription referred to the addition, at the request of a client, of very minor pinches of gold and silver, more for the sake of ritual auspicion or *shastra*. To finally invest the metal icon with divinity, temple priests performed ceremonies of the 'opening of eyes' known as *kannatharakaradu* in Tamil or the 'awakening of the five senses', *elundarasalai* (Raja Deekshitar, personal communi-

cation). In fact, Shaiva Siddhantic concepts of Shiva emerging from the formless one to the manifest five-fold or Sadashiva may underlie the symbolic devolution of the inner, aniconic *linga* into the outer world of anthropomorphic processional *pancha-loha*.

Of the 28 Chola images analysed by the author, most were leaded bronzes with an average of 7 per cent tin and 7 per cent lead and only two had up to 2 per cent zinc (Srinivasan, 1996, p. 449). In later periods, the tin content falls as in the Vijayanagara-style Varaha image in Figure 4 with 3 per cent lead and 2.5 per cent tin. The Later Pandyan group (mid-13th-mid-14th century) had the highest average zinc content at 3.5 per cent. The selected use of brass for artefacts other than images is suggested by examples such as an early historic Deccan votive bowl-cum-lamp from the Victoria and Albert Museum (IM-9-1924) with 14 per cent zinc. Although the ore sources of most analysed images were unidentified due to the lack of lead isotope data, the lead in a Later Pandyan brass Buddha from Kanchipuram (Victoria and Albert Museum, IM-44-1966) with 24 per cent zinc was traced to the Ambaji mines in Gujarat.

The best Chola bronzes did not need much finishing as suggested by the details that stand proud of the surface, such as the folds of the *lungi* or skirt at the thigh of the Shrikantha image and the mobile fingers holding the snake (Fig. 3). These features suggest a superior mould-making technique, especially in the preparation and application of the innermost fine coat of clay, that would enable details in wax to be picked up well and for the mould to withstand the great weight of metal used in solid casting. By comparison, the great tradition of early European statuary was hollow cast, often with pieces riveted on as repairs. When the Shrikantha is placed next to the Vijayanagara era Varaha image in Figure 4, it can be seen that the latter was more heavily cold worked as seen in the hatched designs.

(Fig. 6) Nataraja, with star chart of Orion plotted. Attributed from archaeometallurgical study to the Pallava period (c. 800-50) Bronze Height 28 cm British Museum (Asia 1969.12.16.1) (Courtesy of the Trustees of the British Museum)



(Fig. 6a) Map of star positions in the Orion region, c. 800, matched to the Nataraja in Figure 6

Sensibly, the maximum tin content in the analysed Chola bronzes was found to be within 15 per cent, beyond which as-cast bronze becomes brittle. That this was an informed choice is indicated by the deliberate use of wrought and quenched beta (23 per cent tin) bronze alloy in a plate from the Chola period from the Government Museum in Chennai (Srinivasan, 1994). This high-tin bronze tradition was found from my studies to have longstanding, continuous and local roots traceable to the south Indian Megalithic period, indicating that the Chola bronzes emerged from a pre-existing pool of skilled bronze metalworkers (*ibid.*).

A singular accomplishment of Chola bronzes as religious expression is the way they connected the arts of poetry and dance with the science of bronze casting. They emerged out of the passionate poetic and liturgical ferment of 6th-12th century Tamil Nadu, which lay the foundations for the *bhakti* movement of salvation through intense devotion to a personal god. A Tamil inscription even mentions a royal *prasasti* or paen for a mediaeval Pandyan ruler composed by an artisan (Nagaswamy, p. 29). The creative synergy between bronze craftsmanship and poetry is finely captured in a love poem by the woman saint Andal (c. 800) to Lord Vishnu, evocatively comparing pregnant rain clouds to the clay mould holding liquid wax (Dehejia, p. 13).

Even the details realized in bronze seem to provide codes to Shaiva Siddhanta philosophy. A verse by the saint Sundaramurthi Nayanmar goes: 'Pray thou to the Lord with twisted hair locks for liberation from all acts of omissions and commissions (Rathnasabapathy, p. 37)!' Such snaking locks are seen in the rear of the Chandrashekhara image (see Fig. 2a). Handelman and Shulman reveal that the philosophical universe of the Shaiva Siddhanta canon has 'a twisted or braided quality, which never unfolds or develops in straight lines' (Handelman and Shulman, p. 35). Correspondingly, the dance movement of the Nataraja icon, with right leg and front left arm slanted in parallel, appears to spiral around a vertical axis like the double helix of a DNA molecule.

Nataraja, described as a master of the arts by Sadasiva Settar, is both dancer and musician, keeping time with the drum (Settar, 1996). Shiva is also depicted in Chola bronzes holding the stringed *veena* as Veenadhara Dakshinamurti. Physicist-turned-cult writer Fritjof Capra imaginatively saw in Shiva's dance an analogy for the modern physicist's 'dance of subatomic particles' (Capra, 1975). Something of this subliminal importance of dance and again, the link to Tamil Sangam poetic sensibility comes through in another verse by Manikkavachakar:

He ... revealed his foot which is like a tender flower,
caused me to dance
entered my innermost part (*akam*)
became my Lord.
(Yocum, verse 63)

If the 17th century marble marvel of the Taj Mahal, dedicated by Mughal emperor Shah Jahan (r. 1628-56) to his late wife, is the world's ultimate monument to the 'female muse', then its male equivalent may lie in the phenomenal accomplishments of the 10th century Chola queen Sembiyan Mahadevi, whom Harle rated as an 'all-time great patron' (Harle, p. 301). Gandaraditya, Sembiyan's husband, who ruled from 949 to 957, was an ardent devotee of Shiva who authored the fifth of nine Shaiva hymns known as *Tiruvisaippa* before fasting to death (Venkataraman, pp. 14-15; *Epigraphica Indica*, vol. 3, p. 280). The gilding of the Chidambaram temple is also referred to in a hymn by Gandaraditya as indicated in an inscription, no. 75, on a pillar at Uyyakondan-Tirumalai (E. Hultzsch and V. Venkayya, eds, *South Indian Inscriptions*, vol. 2, at http://www.whatisindia.com/inscriptions/south_indian_inscriptions/volume_2/no_75_76_pillar_at_uyyakkondan.html). In the aftermath of her all too early widowhood, Sembiyan Mahadevi flung herself into a flurry of activity, commissioning temples and bronzes until 1000 and even founded a town named after her. Remarkably, Sembiyan Mahadevi's story defies the 'sati stereotype' of mediaeval Hindu womanhood. Inscriptions do suggest that in early mediaeval southern India and generally in Tamil Nadu, *sati* was probably relatively rare, especially among Pallava and Chola noblewomen who were prominent in patronage and public life. That it was a voluntary option is nevertheless suggested by the example of the widow of Parantaka Chola II, who immolated herself on his pyre after he died in battle in 955 (Aravamuthan, p. 34). Sembiyan, it



(Fig. 7) Stone sculpture of Nataraja at the temple built by queen Sembiyan Mahadevi at Konerirajapuram (Photograph courtesy of Benoy Behl and Latika Gupta)

seems, chose to divert her grief by channelling her energy into creative endeavours.

The finest example of Sembiyan's devotion to her late husband is the commemorative Umamaheshvara temple at Konerirajapuram erected in 972 with a panel showing Gandaraditya in an attitude of worship (Venkataraman, pp. 14-15). This temple has one of the most distinctive early stone Natarajas (Fig. 7). To me, his regal, yet boyish demeanour shares something with the extraordinarily pensive, yet youthful bronze of Shiva as Shrikantha in Figure 3, which has been attributed by Vidya Dehejia to Sembiyan's atelier (Dehejia, p. 117). It is almost as if the widowed queen had willed her craftsmen to capture the conundrums and contradictions of her late husband's personality as a renunciate to the throne and an ascetic who chose voluntary termination in his prime.

Perhaps then, in a Jungian sense, the Nataraja represents an archetype from which one may derive meaning and creative inspiration. According to Handelman and Shulman, 'the apparent paradox at the core of much classical Shaiva myth is that a violent negation effectively nourishes and affirms' (Handelman and Shulman, p. 35). A related Jungian idea is articulated by Eshwar Sundareshan in his essay on the work of sculptor Caroline Mackenzie with traditional Tamil masons, whereby 'the creative process ... consists of the unconscious activation of an archetypal image ... which makes it possible to find one's way back to the deepest springs of life' (Sundareshan, p. 95). A contemporary life-size three-figure bronze sculpture by Shakti Maira entitled *Dancing Siva*, one with a boyish smiling face of *ananda* or rapture which was made by the artist as a response to his son's illness and death movingly captures this timeless idea (Maira, back cover). Sembiyan's story thus epitomizes the notion of 'creation arising, phoenix-like, from the ashes of destruction' as the underlying philosophy and psychology behind the Nataraja bronze.

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