

Janardhan Rao Havanje, Caroline D'Souza

Kaavi Kalé: The indigenous architectural ornamentation technique of the Konkan Coast, India

Kaavi Kalé: La técnica de ornamentación arquitectónica autóctona de la costa de Konkan, India

Kaavi Kalé: A técnica de ornamentação arquitectónica indígena da Costa do Concão, Índia

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Laterita, Esgrafiado, Almagre, Cal conchífera, Arte sacro

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Abstract | Resumen | Resumo

At the foothills of the formidable Western Ghats of India lies a coastal strip of land, the Konkan Coast, which forms part of the extended coastline along the west coast of the country. The unique culture found in the Konkan coastal landscape has produced a magnificent ornamental style named Kaavi Kalé. *Kaavi*, or *kavé*, means in this context “red oxide”, while *kalé* means “art form”. It is fundamentally an incised work performed on an architectural surface that has been previously finished with lime plaster and then a red oxide layer over it. This forms elaborate murals and motifs inspired by the unique folklore of Dravidian culture. Although predominantly found in Hindu temples, this secular art form can also be seen in churches, a mosque, Jain temples and folk deity temples, as well as in domestic architecture. This paper presents the history of the art form, its techniques, a brief iconographic study of its compositions and possible methods of conservation, through accounts of extensive primary surveys and on-site experiments and a study of secondary sources.

Al pie de las imponentes Ghats occidentales de la India se extiende una franja de tierra, la costa de Konkan, que forma parte del amplio litoral occidental del país. La singular cultura de la zona costera de Konkan ha producido un magnífico estilo ornamental denominado Kaavi Kalé. *Kaavi*, o *kavé*, significa en este contexto “almagre”, mientras que *kalé* significa “forma artística”. Se trata básicamente de un trabajo de esgrafiado, ejecutado sobre una superficie construida que ha sido previamente revocada con cal y luego cubierta con con almagre. Se crean así elaborados motivos y murales inspirados en el excepcional folklore de la cultura dravídica. Aunque esta manifestación artística secular se encuentra principalmente en templos hindúes, también puede verse en iglesias, en una mezquita, en templos jainistas y en templos de deidades populares, así como en la arquitectura doméstica. El objeto de este artículo es presentar la historia de esta manifestación artística, sus técnicas de ejecución, un breve estudio iconográfico de sus composiciones y unos posibles

métodos de conservación, a través de la explicación de las exhaustivas investigaciones preliminares y los experimentos in situ que se han realizado, así como del estudio de fuentes secundarias.

No sopé dos formidáveis Gates Ocidentais da Índia encontra-se uma faixa de terra costeira, a Costa do Concão, que faz parte da linha costeira alargada ao longo da costa ocidental do país. A cultura única encontrada na paisagem costeira do Concão deu origem a um magnífico estilo ornamental chamado Kaavi Kalé. *Kaavi*, ou *kavé*, significa neste contexto almagre (pigmento à base de argila vermelha), enquanto *kalé* significa “forma de arte”. É essencialmente um trabalho de estuque incisado que é executado sobre uma superfície arquitectónica que foi previamente finalizada com cal e depois com almagre. Isto dá origem a murais elaborados e motivos inspirados no folclore único da cultura Dravidiana. Embora predominantemente encontrada em templos hindus, esta forma de arte secular também pode ser vista em igrejas, numa mesquita, em templos Jainistas e templos de divindades populares, bem como na arquitectura doméstica. Este artigo visa apresentar a história desta forma de arte, as suas técnicas de execução, um breve estudo iconográfico das suas composições e possíveis métodos de conservação, através das descrições resultantes de extensas investigações preliminares, de experiências que foram realizadas no local, assim como de um estudo de fontes secundárias.

Introduction to the art form

The Kaavi Kalé art form is predominantly found along the coastal cultural landscape of the Konkan region, which comprises the coastlines of the Indian states of Maharashtra, Goa and Karnataka (Fig. 1). The Konkan Coast is a narrow strip of land between the formidable Western Ghats to the east and the Arabian Sea to the west. Hindu folklore attributes the formation of this coastal strip to Lord Parashurama (the 6th incarnation of Lord Vishnu), who provided land to his followers along the west coast by yielding his axe to the ground, which made the seas roll back and reveal land for them to live on. Historians and anthropologists have stated that the axe could refer to the man-made tools used during the Iron Age. These tools could have been used to clear the thick forests descending the Western Ghats to make land available for the settlement of agrarian communities.

The Konkan Coastal Landscape has a unique culture which is different from that of the elevated plateaus towards the east of the Western Ghats. It supports a large agrarian community whose fields are fed by rivers that originate in the Western Ghats and flow westwards towards the Arabian Sea. There is also a large community of fisher folk who have lived off the Arabian Sea for generations and have provided the primary food source for people in the region. Every cultural landscape is predisposed to evolve over time and tends to express certain manifestations of its culture through tangible art forms such as music, dance, art, folklore, cuisine, etc. One such cultural artistic manifestation is Kaavi Kalé which was used extensively in

the architecture of the area. *Kaavi/Kavé* here means “red oxide” and *Kalé* means “art form”. It is fundamentally an incised lime plaster work performed on an architectural surface that has been finished with red oxide, to form elaborate murals and motifs inspired by the unique folklore of the region.

Geology of the area

The landscape itself played a role in the manifestation of this art form. The Konkan – Kanara lowlands, evolved geomorphologically during Cenozoic times and are bounded to the east by the immensely long (c. 1600 kilometres) Western Ghats escarpment. From Trivandrum to Mumbai (c. 8° - 19°N) the Ghats escarpment is preceded on its seaward side by a shallowly dipping, discontinuous ramp of dissected laterite-capped mesas, or “table lands” which slope gently from maximum altitudes of c. 150 – 200 metres in the east of the coastal plain, to less than 50 – 100 metres immediately adjacent to the coast (Widdowson 2009).

The extensive laterite rock cap cover formed over granite gneiss and basalt in the Konkan region has become one of the main building materials of the area. Laterite was first described by Francis Hamilton Buchanan who was stationed as a medical officer by the East India Company in the Malappuram District of Kerala (Buchanan 1807)¹.

The red and ochre colours of the laterite formations are attributed to the large quantities of iron oxides they

contain. This is what gives this region its distinct “red mud”, known as *Kaavi/Huramunji* in Kannada or *Thambdi Mathi* in Konkani. *Kaavi* has been the base material used for the Kaavi Kalé murals on architectural surfaces. Beautiful maroon mud is collected from Basavaraj Durga Dweepa, an island near Karwar. In the past this mud was collected and used for cloth dyeing too (Kamat 1993).

Seasonal variation of the local climate

The climate of the Konkan Coast is warm-humid or tropical monsoon. Its temperature varies from about 25°C in December to around 37°C in May. During the monsoon season humidity levels can reach as high as 97%.

The south-west monsoons last from the months of May to October. Monsoon winds initiated the first seafaring trade contacts, which explains why the west coast of India became the gateway for the western world into the Indian Peninsula for trade and commerce. The Great Indian Desert (Thar Desert) and adjoining areas of the northern and central Indian subcontinent heat up considerably during the summer months. This causes a low pressure zone over the area (Ramaswamy and Pareek 1978). In order to fill this void, moisture-laden winds from the Indian Ocean rush into the sub-continent. These winds, rich in moisture, rush towards the Himalayas, but the Himalayas form a huge wall which stops the winds from entering Central Asia. These winds rise and precipitate to form clouds and the cycle is completed with the downpour of monsoon rains (Fig. 2). The Arabian Sea branch of the south-west monsoon first hits the Western Ghats, which in turn ensures the Konkan and Malabar Coasts are the first to receive rain. The torrential downpour during the monsoons provides the region with a guaranteed annual rainfall of between 4,000-4,200 millimeters.

Multi-colored murals and paintings would not be able to withstand this level of heavy showers and humidity, as their surfaces would constantly peel off (Kamat 1993). However, centuries ago, the residents of this landscape adapted to the climate of the region and created highly resistant finishings on architectural surfaces using shell lime and *Kaavi* to create silhouettes in the form of murals. The seasonal variations ensure the curing and completion of the lime cycle every year to ensure the durability of Kaavi Kalé over the centuries.

Architectural manifestation

An abundance of laterite in the region led to its extensive usage in the built typologies. The soil was used to create compressed mud blocks and the stone was carved out to create the stone blocks used for walls, vaults, and paving. Lime, also called shell lime, was made from seashells. It was used as a finishing material on surfaces. *Huramunji* or *Thambdi Mathi*, which is rich in iron oxides collected from the laterite quarries, was used as the pigment for Kaavi Kalé.

The availability of clayey soil in the banks of the region's numerous rivers led to the establishment of tile factories that manufactured the famous Mangalore tiles. This changed the roofing techniques and skyline of the coast.

The warm-humid monsoon climate of the region required that air flow and ventilation be optimized in built spaces. This was achieved by creating small openings in the walls at regular intervals. The openings play an essential part in the composition of Kaavi Kalé on architectural surfaces.

Figure 1: Left: Topographic Map of the Indian Subcontinent indicating the states of Goa, Karnataka and Kerala, India (Map: <https://www.nationsonline.org/oneworld/map/India-Administrative-map.htm>, consulted on 13/05/2020) Right: Map showing Kaavi Kalé sites along the Konkan Coast

Figure 2: Map showing average monsoon arrival dates and prevalent wind directions during India's southwest summer monsoon (Burroughs 1999)

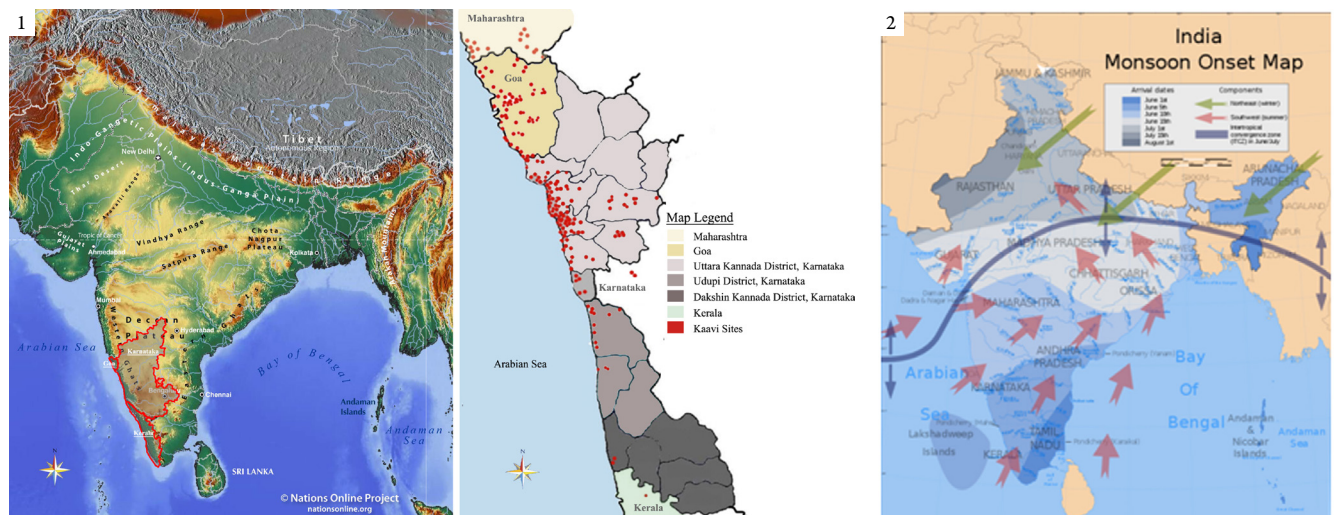




Figure 3: Maruti Temple, Advalpal, Goa

Origins of the art form

It has been difficult to ascertain where Kaavi Kalé originated. The Devanagiri, Kannada and Tigalari alphabets of the scripts found on some of the murals of the oldest temples in the region and the iconography which depicts Goan attire and ornaments have led researchers like Dr. Krishnanand Kamat to believe that it originated in the state of Goa (Kamath 1996). However, researchers like Gritili Mitterwallner state (Kerkar 2014):

The graffito technique seen in Goan Hindu temples may have been introduced originally by the Portuguese. It was popular in Italy. The graffito-decorated Hindu temples of Goa form a local idiom which has assimilated foreign elements transforming them harmoniously into a synthesis of unique character. They represent the most important contribution Goa has made to the regional arts of India. This decoration gained such popularity in the course of years that it spread north and south beyond the borders of Goa to wherever laterite stone was available for Hindu Temples.

Some historians believe Kaavi Kalé was performed in some of the earliest examples of Manueline architecture in Goa - a rich style of architectural ornamentation indigenous to Portugal in the 16th century - as can be seen in the chapel of the Lady of the Mount (commissioned in 1510 and completed in 1519) and the Saint Augustine tower (1602).

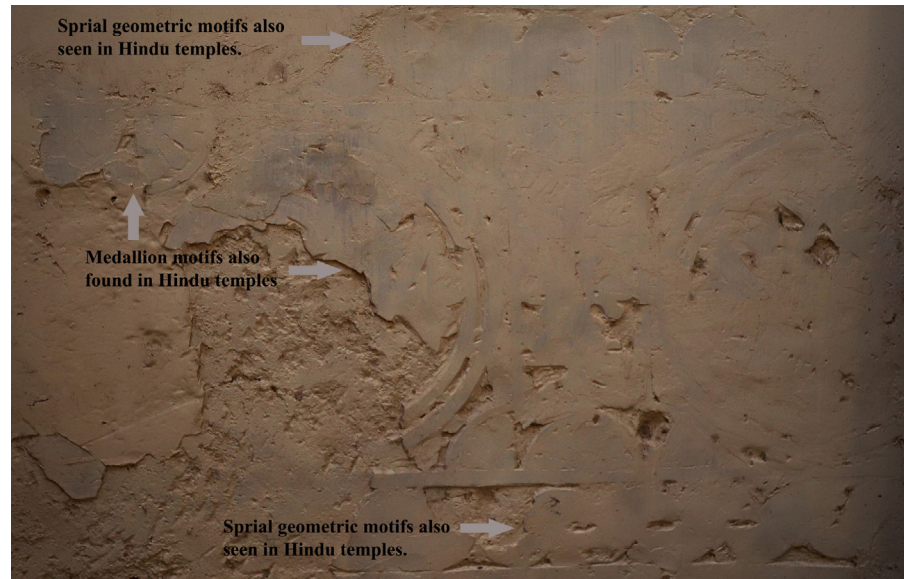
Nevertheless, primary visits to these sites with the help of the Archaeological Survey of India have revealed common Kaavi Kalé motifs also found in Hindu temples (Fig. 6). These motifs, symbolizing coastal flora and fauna, have been seen in 12th century CE palm leaf manuscripts found in Moodabidri, Karnataka and timber carvings in domestic and temple architecture. Another ancient motif used in the Archbishop's Palace (built in 1562 – 1619), near Se Cathedral, in Goa, is the *gandaberunda* – a two-headed bird considered to be an avatar of the Hindu god Vishnu (Fig. 4 and 5). This motif has been found in the seals used in the Kadamba dynasty (4th century CE), the Chalukyan dynasty (6th – 12th century CE) and the Hoysala dynasty (10th to 14th century CE). It has also been found on the coins used during the rule of the Vijayanagara Empire (15th century CE) and later during the Kingdom of Mysore,



Figure 4: *Gandaberunda* motif found on the wall surface of the Archbishop's Palace near Se Cathedral at Goa

Figure 5: Dwarapalaka Jaya doorway guardians and pillar designs at Shri Ardhaganapati temple, Banavasi, Karnataka, which is believed to be 600 years old

Figure 6: Kaavi Kale motifs found in the chapel of Our Lady of the Mount, Goa



which was initially part of the Vijayanagara Empire. If an art form with such dexterity had to be created for a new style of architecture that was commissioned by foreigners in the region, the presence of local skilled craftsmen would have been absolutely essential.

Another aspect is the actual process by which this art form was executed. Sgraffito commonly involves the use of stone lime instead of shell lime. The application process also differs. In the sgraffito technique the white lime plaster is applied over the colored plaster and it is the etching process that reveals the coloured plaster below. Kaavi Kalé does this in reverse: white lime plaster is applied first and then the *kaavi* layer.

Some historians of local art and architecture further support argument by quoting Tome Pires, a Portuguese apothecary

who travelled to the region in the early 16th century. He stated that “they have beautiful temples of their own in this region” (Pires and Rodrigues 1944: 59).

Having presented all the above arguments, it is unfortunate that one cannot identify the exact year in which the Hindu temples were established, as no written records were kept. Moreover, the concept of *jeernonoddhaara*, which involves a major renovation every 144 years and minor renovations every 12 years, ensured only the latest dates were recorded. Perhaps scientific dating techniques could help to establish some key dates.

The authors would like to acknowledge that adequate research has not been done in this area and that further studies need to be carried out.

Figure 7: Mural depicting Karna and Arjuna fight at Mahalasa Narayani Temple, Kumta



Figure 8: Exterior of the Lakshmi Narayan Mahamaya Temple, Ankola, Karnataka



Socio-political events that led to the proliferation of the Kaavi Kalé

The Portuguese-led Goan inquisition in the early 16th century CE led to the migration of a large number of Gowd Saraswath Brahmins (a Hindu community) and Christian converts who were forbidden to follow the cultural practices of the region. This mass exodus led these communities to settle along the coast to the south of Goa, on the Konkan belt stretching from Karwar to Mangaluru, in Karnataka, and the northern parts of Kerala (Kamath 1996). These migrations led to the uprooting of the *kuldevtas*, or family deities, from family temples that were destroyed during the inquisition. These *kuldevtas* had to be installed for worship after the migration. Hence, a multitude of temples were constructed along the Karwar - Mangaluru coastal area. The inquisition was abolished in the year 1812, which saw some of the families migrating back to Goa.

This reverse migration brought back to Goa Kaavi Kalé murals inspired by Dravidian culture, like the Yakshagana dance forms, which is an ancient practice of the Tulunadu culture. Some of the initial temples built outside of Goa after the migrations are Sri Mahalasa Narayani Temple (1565), at Kumta, Sri Ramamandir (mid 16th century CE), at Honnavar, and Sri Lakshmi Narayan Mahamaya Temple (1560), at Ankola (Fig. 8).

Execution of Kaavi Kalé

The execution of this art form involves preparing the material, applying the material, and finally finishing it. Each of these steps are explained in detail in the following sections.

Materials used

Primary Materials:

- Sea shells.
- Water.
- Clean river sand.
- Red laterite mud (*Kaavi/Huramunji* in Kannada and *Tambdi Mathi* in Konkani).

Organic Compounds:

- Jaggery.
- *Ancistrocladus heyneanus*: Sap of liana creeper, called *Nerolé* in Kannada
- *Aegle marmelos* – Juice from the wood-apple fruit, called *Bheladahannu* or *Bilvapatre* in Kannada.
- *Senegalia senegal* - Gum arabic, extracted from the bark of the tree, called *Maravajra* in Kannada.
- *Tamarindus indica* - Powdered seeds of the tamarind tree, called *Hunasebeeja* in Kannada.
- *Aloe Vera mucosa*, called *Lolesara* in Kannada.

Preparing the material

Lime preparation:

Sea shells are collected and thoroughly cleaned². A 2:1 ratio of sea shells and charcoal is mixed in a handmade furnace

Figure 9: Layers of application of lime plaster and Kaavi on a wall surface



Figure 10: Stages of execution of a Kaavi medallion



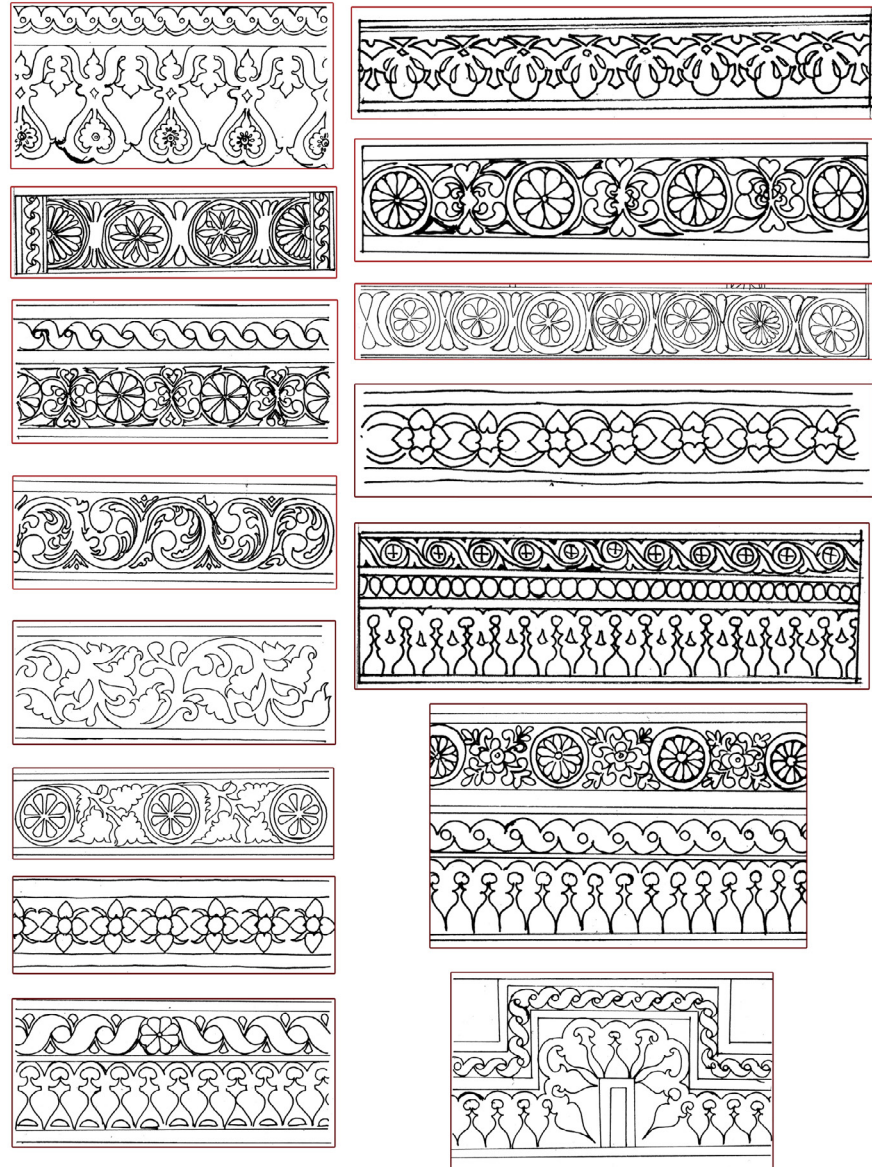


Figure 11: Various patterns found in different temples

and baked overnight³. Shell lime is also pure lime with less than 10% impurity. Upon baking, it undergoes a calcination process at a temperature of about 800o C - 1000o C, which involves the release of CO₂ (Carbon Dioxide) to produce CaO (Calcium Oxide). The calcination process reduces the volume of Cao to half that of the initial shell volume. This CaO, which is also called fat lime or lump lime, is highly unstable and continues to absorb CO₂ from the atmosphere if not taken care of and appropriately and stored in an airtight container. Not all of the volume of baked lime from the furnace is used for making the plaster. The bottom layer, closest to the heat, is used for agricultural purposes. The middle layer is the most appropriate for used in plaster. The upper layer, which has received the least amount of heat, is reused in the next batch for making shell lime.

Slaking:

The shell lime, also called *simpisunna* in Kannada, is then mixed with water. This produces an exothermic reaction.

Additional water is added to ensure the entire volume is thoroughly mixed. Traditionally large clay pots were used for the process. The slaked lime is left under water in the same pot for at least two weeks with stirring carried out at regular intervals. This forms homogeneous, thixotropic and smooth lime putty.

Preparation of plaster:

The slaked shell lime is first sieved using a cotton handloom cloth to ensure there are no impurities present in the plaster. This process sieves out larger unslaked particles which could hamper the plastering process. In the past jute cloth was also used for the process. However, the use of cotton cloth ensures a fine sieving.

Rough plaster:

A 1:1.5 ratio of slaked lime putty to clean river sand is mixed and allowed to ferment for a period of ten days. At regular



Figure 12: Morjai Temple, Goa, showing Kaavi Kalé on its cornices, pilasters, openings and plinth

intervals, additional water is added to the mix, stirred and beaten using a timber pestle. The aforementioned organic compounds, like fermented jaggery, liana creeper decoction, aloe vera juice, sausage tree fruit liquid (*anekaayi rasa*), wood-apple fruit liquid, gum arabic, and powdered tamarind seed, are added. In some parts of the coastal belt a small amount of fermented honey and brick powder are also used.

Smooth plaster:

A 2:1 ratio of smooth lime putty to clean river sand is mixed and allowed to ferment for a period of ten days. Regular mixing and beating is carried out with a timber pestle. The organic compounds listed above are also added to the mix. Primary site surveys revealed that there was no fixed recipe when it came to the addition of organic compounds. Each artisan had their own recipe, which was handed down to them verbally by their forefathers, who were greatly influenced by the natural resources available in their surroundings.

The Kaavi (maroon) plaster:

The final *kaavi* layer of plaster is made in a 4:0.5 ratio of sieved red laterite soil to lime putty which is thoroughly ground and mixed. This paste has a butter-like consistency and is allowed to ferment for a period of two days with thorough mixing at regular intervals. On the day of application, the organic aforementioned compounds are further mixed with the *kaavi* plaster and made ready for use.

Application process

The traditional walls in the region are built using either compressed laterite mud blocks or laterite stone. A layer of rough plaster 20 to 40-millimetres thick is then applied onto the wall surface and flattened using various masonry tools (Fig. 9).



Figure 13: Kinnaras (equivalent to Cupid in Hindu mythology) at Ram Mandir, Honavar, Karnataka

Another layer of plaster, i.e. the smooth plaster, is applied atop the rough plastered surface. This can be done on a wet surface, like the *buon fresco* process, or on a dry surface, like the *a secco* process (Fig. 9).

In the *buon fresco* process, the *kaavi* plaster is applied over the smooth plaster in a layer with the thickness of an eggshell (Fig. 9).

The etching of the wall mural begins immediately following the application of the *kaavi* plaster. This is done to allow for any changes to be made in the mural design process before the layer dries out. Tools used for this process are mainly a timber compass, stencils and various other pointed, handmade tools, named *kanta* (steel bodkins), to aid in the etching process. These tools enable the artisan to etch on the wet *kaavi* surface, thereby revealing the white smooth plaster surface below. This brings out the art work in the positive while the white background remains in the negative (Fig. 10).

Repetitive geometric designs are made using a stencil made of timber. Larger and more complex murals are initially drawn on paper. The lines are perforated with pins and a tracing of this mural is transferred via the perforated holes with dry lime applied onto the work surface (Srikrishna 2015). These murals are usually drawn freehand, without the aid of any drafting tools.

Care is taken to ensure that the *kaavi* plaster is applied only to those surface areas that can be worked on immediately. The artisan cannot apply the *kaavi* layer in advance to work on it later.

The curing of the completed wall surface begins about twelve hours after the etching process has been completed. This continues for a period of four days at intervals of six hours.

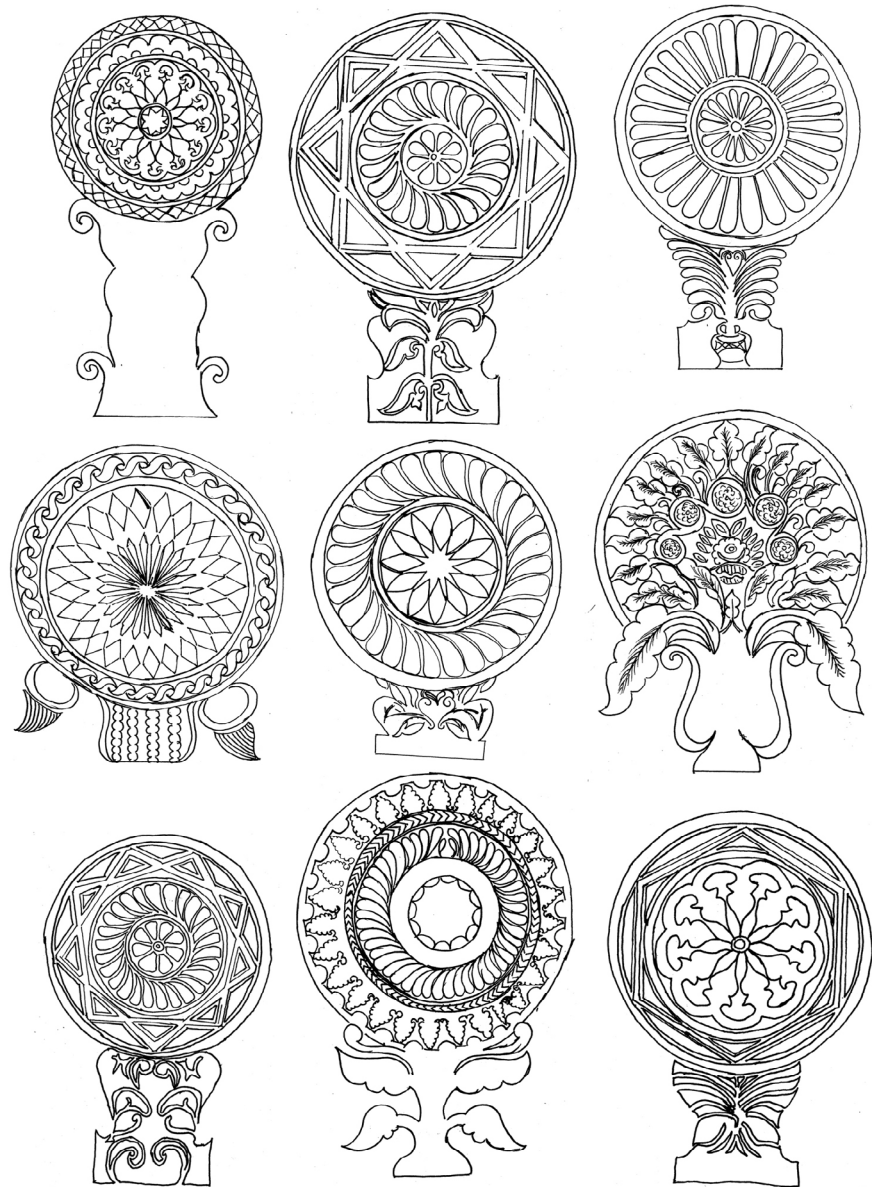


Figure 14: Various kinds of circular flower motifs converted into trees by the addition of a trunk

During the primary surveys conducted on-site, an additional step was discovered on the wall surfaces in Goa. After the etching has been carried out on the *kaavi* layer, there is an additional process that involves refilling the etched foreground with smooth lime plaster, thereby ensuring the creation of a *kaavi* mural which is flush with the outer plane. Some examples of this finish are seen in the Our Lady of the Mount, the Se Cathedral and in the remains of the Saint Augustine Tower in Goa.

Finishing

The finishing is performed in two stages.

Flattening and polishing before etching: after the application of the final *kaavi* plaster layer, the surface is polished using rounded flat stones found on the river bed.

Polishing after etching: polishing takes place a day after etching and one round of curing. Coconut husk with coconut oil or rounded flat river stones are used to polish and rub the surface meticulously.

Iconography

Kaavi Kalé is a secular art form that has been produced in both sacred and domestic spaces. It is found on various surfaces, in both the interiors and the exteriors of buildings. In temples it can be seen on the walls and ceiling of the *mukhamantapa*, a kind of porche located in front of the main doorway; the *sukasana*, semi-open verandahs used for seating; the *mahadvara*, the main entrance doorways, the *navranga*, the assembly hall in front of the sanctum sanctorum; and *garba griha*, the sanctum sanctorum.



Figure 15: Marikamba Temple, Sirsi, Karnataka

As mentioned earlier, the warm-humid climate required multiple smaller openings through the façade. The openings were enhanced by providing a *kaavi* detail at the borders. Cornices and plinths were decorated with rows of inverted leaf and spiral patterns (Fig. 11).

Pilasters abutting the walls would be decorated with V-shaped or inverse-V-shaped bands (Fig. 12). Geometric shapes like triangles, squares, hexagons and octagons are used to create mosaics across surfaces (Kamath 1996).

Murals stand apart from other motifs because they are usually found in either niches or platforms. They cover a range of surface areas from about 6 square feet to 36 square feet. Every mural is enclosed within an arch-shaped *prabhaavali*, an ornamental circular or oval ring. They are performed freehand, with a number of *jvālās* (fire flame-like shape). Sometimes there is also a *keertimukham* (face of glory). Above the *keertimukham* there is a lotus bud or lotus flower in full bloom (Fig. 13). The top of the mural

may also sometimes include a *mukuta* (crown or headgear of deities), a *kalasa* (pitcher pot, a shape also used as spires atop domes or entrance gateways of temples) or a *gopuram* (monumental entrance tower atop the entrance gateway). Care is taken to cover at least two thirds of the designated surface.

The regional flora and fauna are an integral part of the murals as well. A group of oval petals is drawn to represent a flower. If a trunk is added to the motif, it symbolizes a tree or a flowering plant (Fig. 14).

The murals of Shaivite (a form of Hinduism where Shiva is considered to be the main deity) and of Vaishnavite (a form of Hinduism where Vishnu is considered to be the principal deity) temples had themes that resonated with their belief systems. The murals vary from place to place and cover the entire gamut of mythological, historical and contemporary themes. In order to create these compositions, the artisans had to know not only the Ramayana and Mahabharata (the two ancient Indian Sanskrit epics), but also the Puranas (Hindu mythology and traditional folklore) and the Sthala Puranas (local Hindu mythology and local traditional folklore) (Srikrishna 2015).

The murals also depict socio-cultural aspects of the time, showing contemporary attire and weaponry. Historical themes like Vyasa Muni (a sage considered to be the author of the Mahabharata) and Madhvacharya (a Hindu philosopher of the 13th century CE) are depicted in Venkataramana Temple, Siddhaapur, Karnataka; in Bedkani Seetaramachandra Temple, Bilgi, Karnataka; and in Pete Venkataramana Temple in Kundapur, Karnataka. Also found in Marikamaba Temple, Sirsi, Karnataka, are murals with socio-political themes like a Hoysala king fighting a lion or a Vijayanagar king welcoming western travellers to his *darbar*.

Urban areas like Honnavar, Kumta and Sirsi (Fig. 15) produced the most quintessential examples of the art form and it has managed to survive the test of time thanks to the efforts from art historian Dr. Krishnanand Kamat. The artists were always given a rough guideline as to what a

Figure 16: Kaavi medallions on the soffit of Maruti Temple, Pernem, Goa



mural was to contain, but the ultimate artistic manifestation was always left to the artisans themselves.

Kaavi Kalé in domestic architecture is most commonly found in “business houses” or “guest houses”, which were specifically set apart from the main houses. These “guest houses” were used as trading houses just during the day. To impress buyers, these “houses” were set apart from the main house and were richly and artistically embellished (Pandit 2017).

Decline of the art form

Over time, new technology and modern ways of building did not leave room for Kaavi Kalé. Patronage of the art form declined and the expertise of master artisans was not put to use, which then led them to take up other means of livelihood. *Kaavi* murals in domestic architecture were the first to be torn down to make way for new homes with “modern” materials (Kamath 1996). Many temples with beautiful Kaavi Kalé were lost to the concept of *jeernoddhaara* or renovation in the name of God. Of the temples where it still exists, inadequate upkeep (Fig.

17) and incongruent repair techniques (Fig. 18) have led to further loss of the valuable art form. Incongruent renovations have led to the use of enamel paints over Kaavi Kalé to “brighten” the murals (Fig. 19). Some renovations resulted in a layer of plaster being added onto the mural surface and a new mural redrawn by unskilled labourers (Fig. 20). The insensitive interventions mentioned above, the need for new structures and a general lack of awareness ultimately led to the decline of the art form.

Conclusion: Probable Conservation Techniques and Awareness

It is unfortunate that this indigenous art form of the Konkan Coast is today on the verge of extinction. However, it is not totally lost. Upkeep, maintenance, the right conservation strategies, awareness and skill generation can still ensure the survival of this art form for the future generations.

Most renovations that have taken place are reversible and hence the etched *Kaavi* surfaces can be brought back if the surfaces are appropriately and carefully cleaned. Some conservationists suggest the application of an acrylic

Figure 17: Inadequate upkeep at Mahadev Temple Ashwath Katte: masonry built on a square, rectangular or circular shape at the base of a Peepal tree, Amdalli, Karnataka

Figure 18: Incongruent cement renovations made on a temple wall surface, leading to deterioration of the art form at Gorkarn Mutt, Gokarna, Karnataka

Figure 19: Enamel paint being used over Kaavi Kalé at Marikamba Temple, Sirsi, Karnataka

Figure 20: Covering of a Kaavi Kalé with enamel paint and a line drawing being made in its place, Ganpati Mahamayi Bhagvathvada, Asnoti, Karnataka



sheet over the mural surface, so as to preserve it from further damage, but this strategy does not hold good in a warm-humid climate. The humidity trapped between the acrylic sheet and the lime surface breeds algal growth and prevents the constant lime cycle process from taking place. Currently certain strategies are also being discussed on how a mural can be saved when an old structure has to be taken down. Strategies are being drawn up for part-by-part removal of a masonry wall to keep the *Kaavi* finishes intact. These discussions are still in their infancy and would need the expertise of a number of people across disciplines in addition to monetary resources. Dr Krishnanand Kamat also suggested the digitization of murals in the form of line drawings and photographs, which would also form a database of murals (Kamath 1996).

Another strategy to ensure the future propagation of this art form is raising awareness. To this end, the authors themselves have participated multiple workshops in primary schools, architecture and interior design colleges, as well as with the general public which have been very well received. The resource materials used here are 1 foot x 1 foot plaster of Paris tiles covered with a *kaavi* layer. These squares are cast in advance and handed out to workshop participants who, after a brief introduction, go through an etching exercise to create their own personal murals. Sometimes pre-designed stencils are created to produce historic motifs.

With all the aspects discussed above, we are aware that not everything survives forever; nevertheless, if future generations are made aware of the richness of our traditions and culture, it may perhaps lead towards a more sustainable future.

¹ He writes that he discovered a type of weathered material which was clay, full of cavities and pores, containing large quantities of iron in the form of red and yellow ochre. It was soft when fresh and could be cut easily and when exposed, it became hard and resisted air and water much better than bricks. He used the term *laterite* to designate this material (*laterite* in Latin means "brick stone"). He defined it as "a residual product of weathering, rich in secondary oxides of iron and aluminium or both-nearly devoid of bases and primary silicates and commonly found with quartz and kaolin and developed in tropical or warm temperate climatic regions".

² Sea food (clams and oysters) forms the native primary food source for people who reside along the coast line. After usage the shells that are leftover are usually dumped by the roots of coconut trees. These shells that accumulate to form large quantities over a period of time are then collected and cleaned thoroughly for lime preparation.

³ The process is usually conducted at night because of the CO₂ emissions that take place in addition to the emission of a foul smell which may be harmful and unpleasant for the residents around.

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Janardhan Rao Havanje

He is an independent artist and is currently pursuing his PhD on Kaavi Mural Art at Manipal University, Udupi, Karnataka. His decade long research has led him to visit over 6,000 temples along the West Coast of India in pursuit of finding remains of Kaavi Art. He has been invited as an artist and a reference person on the subject for over a hundred workshops. He has worked on the renovation of multiple mud sculptures in historic temples across Dakshina Kannada and the Udupi District. Janardhan's Fish Sculpture on the sands of Malpe Beach, in the Udupi District, on World Environment Day 2018 won him numerous accolades worldwide.

Caroline D'Souza

She is a Conservation Architect, graduated from the School of Planning and Architecture (SPA) of New Delhi, and an Assistant Professor at the Department of Architecture at Srinivas Institute of Technology, in Mangaluru. Her research interests lie in the trading networks and cross cultural influences along the West Coast of India, the Cultural Landscape of Tulu Nadu, and the evolution patterns of heterogeneous port towns of the Indian Subcontinent. Her mentorship has won her department multiple heritage documentation awards. Caroline also volunteers with the Indian National Trust for Art and Cultural Heritage (INTACH), Mangaluru Chapter and has curated exhibitions and workshops to bring about awareness of the heritage in her city.