



SNS COLLEGE OF ENGINEERING

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COURSE NAME : TAMILS & TECHNOLOGY

I YEAR/ I SEMESTER

UNIT –1 WEAVING AND CERAMIC TECHNOLOGY

Topic

**Weaving Industry during Sangam Age – Ceramic technology – Black & Red Ware
Potteries (BRW) – Graffiti on Potteries.**

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TOPIC 1: Weaving Industry during Sangam Age

Introduction-History of clothing:

Man used leaves and animal skins as clothes in ancient times.

Later began to use clothes by weaving.

Evidence of clothing in Sangam Period:

Narikuravas wore dresses woven from Maral-Type of cactus

Nilak Kodichiyar-dresses made from Asoka tree leaf.

Proof:

(i) Natrinai (64:4)

(ii) Kurunthogai (24:4-5)

Sculptural Evidence:

- Sculptural at Amaravathi & Jagkaiyapet had men with Turbans pleated garments till knee with flower designed girdles & Small pieces of hanging.
- Women wore sarees till knees & knots on head.

Sculptures (100 AD:400AD):

- Men wore dhoti,,top & turban.
- Women wore saree on waist & shawl on top with cloth on head as turban.

Names of Different types of clothing:

1. Leaf Dress:

- NariKurava women wore mango leaves proofed in Thirumurugu.
- Neithal women wore leafy dress with shoots, leaves & Flowers, proofed in pattinapalai.

2.Dhukil-Kalingam:

- King and Queen wore these clothes with flower design.



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- Women wore kalingam, when they are separated from Husband.

Proof:

Nedunelvadai

3.Katchai-Katchu:

- Chief son of kurunji land wore finely carved girdle.

Proof: Kurunji

- Archunan wore broad dress called kachai with floral designs.

Proof: Sirupaanatrupadai

- Veeman (a great warrior) wore dresses with flower designs. Queen had (Vambu) Kachu on their chest.

Proof: Nedunelvadai

4.Padam (Shirt):

Shirts worn by soldiers guarding thondai highways are called padam.

Proof:

1. Mullai pattu Thodar
2. Nachinarkiniar urai.

- Yuvanas traded in tamilnadu.
- They wore sarees dress on their waist & Meipai (Shirt) on top.

5. Sithar-Sitharvai:

- Dirty torn Rugs used.
- ***Proof:*** Perunaraatrupadai.

6. Kaazhagam:

- Priests wore these garments woven from town called kadaram.

7. Aruvai:

- High quality fine embroidery dresses worn by king and rich were called Aruvai.



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8.Kandam:

- Rough cloth to wrap around the tent (like wall) was called kandam.
- Proof: Natchinarkiniyar.

Raw material of textile Industry cotton

Cotton:

It was the raw material used for the textile industry production.

Proof: Purananooru.

- By this Proof, it was told that cotton was hugely cultivated at mullai regions.
- Grown cotton that were burst out and collected are packed in bundles to home.
- Chola king killivalavan fed & offered cotton packed in bundles as gift.
- It described the nuts remove cotton looks like white clouds.

Weaving women (or) Cotton women:

- Women especially women without partners did this weaving work at home as business.
- Bow is used to separate cotton from cocoon.
- Seed & dust were separated by bounding & cleaning. These are done by cotton women even at night with lanterns.
- Proof: Natrinai, Purananooru



Works of Cotton Women:

I. Weaving Thread:

Ginned & Spun in to cotton yarn.

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Weaving Cloth:

- These women are called 'Cotton Women'. Spinning of Yarn by the cotton women are called panuval.
- Proof: Purananooru

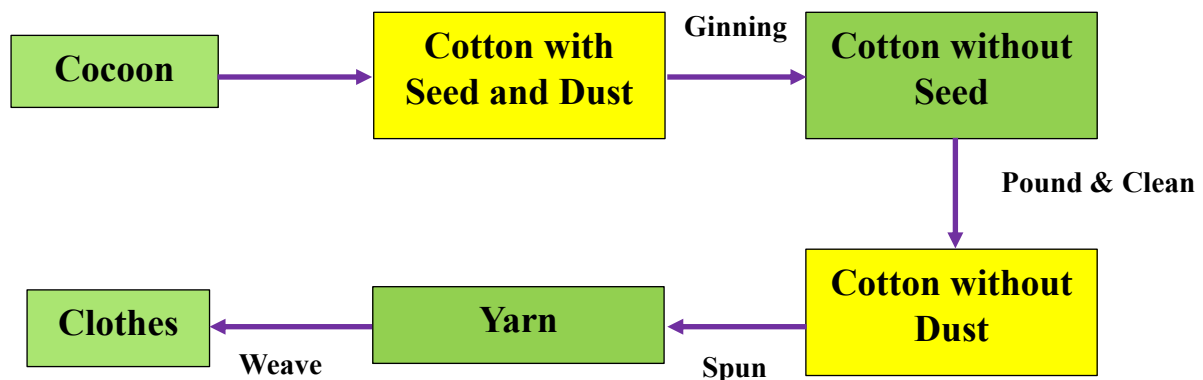


Fig. 1.1 Spinning of Yarn by Cotton Women

Types of Fabrics:

Thin fabrics:

- Thin fabrics like Milk spirit & Paper woven with fine thread were worn.
- Proof: Malaipadukadaam.



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High Quality Fabric like Snake Skin:

- They produced high quality beautiful clothes with floral design like snake skin.
- Proof: Purananooru.

Rough Cloth:

- Pure Coarse cloth made with bamboo were used.
- Proof: Sirupaanaatrupadai.

Silk Cloth:

- Person known as Nunvinaikarugan weave with silk thread & Rat hairs.
- Proof: Silapadhikaram.

Other types of clothing:

- Thirumurugaatrupadai speaks Lord murugan as Red Robbed person.
- Women wore red coloured dress during puberty.
- Women wore silk dresses at morning & Cotton at night.
- Proof: Manimegalai, Seethalai Saathanar,

Dye Industry

1. Avuri Plant Dye:

- Avuri flowers were plucked & soaked overnight in big tank & yellow dyes were prepared, after filtration.

Yellow Dye Water + Oxygen → Blue Colour

- This Blue Colour dye is called Indigo & were exported.

2. Konrai Tree Sap:

- By this, different colors were prepared.

3. KaasuKatti & Dye Root:

- Red dye was prepared by mixing these roots.



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4. Avuri, Saffron, Turmeric, Mustard, Lacquer:

- All the above are mixed to get various colors.
- Used in Kanchi, Madurai & Mayuran.
- Proof: Porunar Aatrupadai.

Payment of Taxes to Weaving Industry:

Professional Tax:

- Weaving looms are taxed.
- Non-Weaving looms are called Madiloom.
- Adai looms-Half duty is imposed.
- Village tax was paid by weavers.
- Road Tax were imposed told by poet Rasu.

Sales Tax:

Woven Clothes were sold on streets and Tax paid for that was called 'Kulavari' or 'Family Tax'.

Export:

- Exported to Foreign Countries.
- Inter State Sales were done mainly to Gangetic regions(Paatalipuram and Kaasi).
- Artha Sastra of Gautilya in 3rd century referred cloth from Madurai as Mathuram.

TOPIC 2: Pottery-Ceramic Technology

- Material used by people made with clay types are called Pottery.
- Profession is named as Kuyathozhil and potters are called Kuyavars.
- The existence is known through artifacts of archeological excavation.

Stages of Pottery Industry:

Clay:

- Chosen suitable clay



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- Archeological sites were found with readily available sources suitable for heating.

Proper Temperature:

- Create temperature suitable for heating by clay →Klin.

Time:

- Enough time was needed to prepare, shape and Water clay heating.

Pottery making process



Potter's Wheel: (Kuyavanaar Thiruvai)

- The Clay is placed into the middle of the Spinning Wheel (Chakrthalai).
- The Speed of the rotating wheel is adjusted by the potter with a stick.
- The Solid sphere of clay is pressed, squeezed and gently pulled upward to form a vacuum pot.
- The vacuum with hole is dried slightly & enlarged with plank, stone & closed the hole.

Kind of Rotators:

1. Ballpoint Rotators.
2. Cone Slot Rotators.

Ball point Rotators:

- Ball at wheel bottom.
- Plinth is there to fix this ball.
- If the wheel rotates Straight, then it indicates moving of the wheel.
- If the wheel rotates tilt, then it indicates stopping of the wheel.

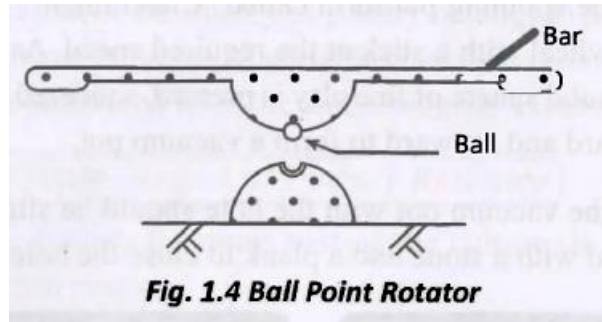


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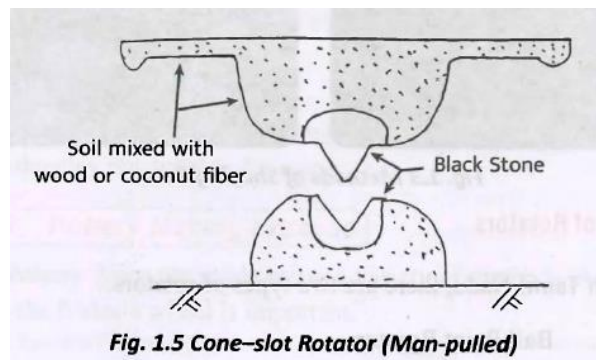
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- Proof: Edges Thurstan in his Only Small amount



Cone Slot Rotator:

- Black Stone with flat ring around is fixed under the wheel.
- It can be placed on a plinth for placing the wheel.
- Now it can be rotated.
- Men sit in front of rotator shape the soil. Mean time, His wife will spin the rotator.
- Large amount of soil can be placed.



Evidence:

1. Tiruchengode Hill → Both rotators shown
2. Kovoorkizhar → Cone Slot, rotator.
3. Nilathambriran temple (Tiruchengode)
4. Iyur mudavanar

Clay minerals:

Primary mineral is White clay/Kaolinite



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40% Aluminium oxide

46% Silicon Oxide

14% Water

Types of clay:

First layer clay:

- Found in rock
- No Sediments
- Heavy, Dense & pure.

Second layer clay:

- Forms with light sedimentary mixture.
- Fine & Lighter.
- Stored & Submerged in Water.

Excavation Evidence:

- Pottery sheds in excavations were analyzed by Geoscience of University of Pisa in Italy.
- Pots found at Kizhadi resembled local soil sample & some other parts of TN(Used for Cooking).
- Nature of Soil remains same form 6th century to 2nd century.

TOPIC 3: Black Red Vessels

- BRW Culture→Emerged in North & Central India and used in Western Gangetic Regions.
- Eastern Uttar Pradesh→ Used Grey Coloured painted pottery.
- North India→Used Black Gazed Pottery.
- Indus Valley Civilization of Punjab & Gujarat→Used Black Pottery.





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Raw Materials:

- Red Colour is given by Hamatite(Iron Mineral).
- Black Colour is given by Charcoal(Organic Matter).

Nanotechnology in Black red pottery:

- Kizhadi excavation reveal that, Nano Technology was used in heating process of pot.
- Famous journal “Nature Scientific” published this article.

Carbon Nanotubes:

- Chemical analysis revealed the presence of carbon nano tubes in the Black paint.
- This allows the pot not to decay or lose its luster ever after 2000 years.
- Tensile strength is 100 times better than steel strength.

Mediterranean region excavation:

1. Single walled Nanotubes.
2. Multiwalled Nanotubes.

Formation:

- Carbon Nanotubes were formed by heating Carbon based compounds to 1200⁰C high temperature.

Colouring:

- Dyes were prepared from Plants, Tree, Vines & Plant Products. Heating painted pots forms Carbon Nanotubes.





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TOPIC 4: SCRATCH CODES ON VESSELS/GRAFFTI MARKS

Potter's Seal:

Wooden mallet is used for the decorative work on pottery. It has a flower or an image carved on both ends.

If the vessels are properly dry and are tapped in a row with a wooden hammer, the flower on the tip of the hammer will form a row.



Fig. 1.9 Potter's Seal

Scratching on Pot

Scratched letters/ Tamil Scripts on the pots [Black Red Pottery] were found during the Sangam period.

Before Introduction of letters encrusted on materials, Scratch Paintings called Graffiti marks were encrusted.

The description of the Indus alphabet (4500 years script) written from the right to the left was found on the pots.

Scratches and symbols emerges between Indus Script and Tamil-Brahmi script during Copper Age and Paleolithic Cultures.



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Excavations:

1. Excavations carried out at Adichanallur, Korkai and Mangulam in Tamil Nadu have given pot shells with symbols.
2. They were also found in places like Kantharodai, Manthai, Rithiyagama in Srilanka.
3. A Metal stamp was found at Vattukkottai in Jaffna, Sri Lanka. Pattern includes Tamil & Indus Script.

- ❖ Tamil section is marked as Goventh.
- ❖ Indus script is marked as Cocon.(Co means Royal Potter)

4. Pot Shells were also found at Vettukaddu and Paramankirai.

Potters were called as 'Vellalar' or 'Velan' in Tamilnadu and Srilanka and were also encrusted on Pot Shells. 75% of symbols are discovered from South India.

Tamil Brahmi Scripts:

Pre-Tamil Brahmi Scripts reflected Paleolithic and Iron Age people. 1001 Pot shells at Kizhadi indicate sangam people knew basic writing to express their thoughts.

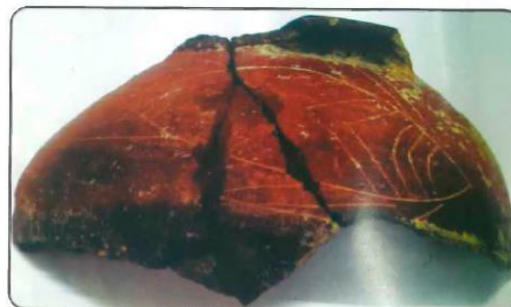


Fig. 1.10 Scribbles of Tamil-Brahmi Script

Solar Appearance by Radiation Incision Lines:

A pot unearthed in the excavation has six radiating lines inscribed with 14 small connecting lines. Radiation lines were coloured.

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On the appearance of Sun, the letters are glittered with clear impression.



Fig. 1.11 Incised Pottery found at Kizhadi

Evidences:

- ❖ In a book published by Padmasree Airavatham Mahadevan, evidence of Tamil Brahmi Script on 110 cave inscriptions at 32 towns in Tamil Nadu were mentioned.
- ❖ 56 pot shells inscribed with Tamil Script at Kizhadi excavations were reported by the Department of Archaeology, Tamil Nadu.
- ❖ Broken pot shells have some incomplete inscriptions like Kuviran Adha(n) or Aadhan (May be a name of man).
- ❖ K. Rajan has clarified in his book 'Early Historic Writing System'