9. Morphological Study

A typological study of pottery helps in appreciation of function, aesthetics and taxonomy. All pottery has some function or utility and it is the nature of these functions that is the basis of morphological classification of pottery. The utilitarian nature of pottery distinguishes it from non-utilitarian, ritual, ceremonial, elite or special purpose pottery. Ceramics in their role as containers or vessels are in fact tools; tools that facilitate storage, transportation and processing food. These are the three main functions of pottery. Each use requires the vessel to be suitably designed to perform a particular function. These can be further divided to different kinds of storage, transportation and food processing artefacts. Many factors combine to decide the morphology of the vessel. They are as follows.

1. state of matter of the contents, whether they are solids or liquids
2. nature of these contents, whether they are hot or cold or whether heat is applied to contents
3. frequency of use in drawing or placing of contents and the convenience with which it can be done
4. duration of use in storage and processing
5. distances involved in case of transportation

These factors individually and collectively influence the morpho-technology of the vessels. Despite the fact that pots are fragile, they are suited to fulfill many functions. They can be conveniently shaped to suit any need, can hold liquids and solids both hot and cold, can be heated repeatedly, can be effectively used in short and long distance transportation of liquids. Although each category of vessel is formed to suit a particular function, it is not uncommon for a vessel to be used for different uses. For instance, the same pot can be used to transport and storage of water, provided the
distance from the water source is not far and repeated trips can be made to collect water. So also the same pots can be used for cooking, serving and also for consuming food. Hence, pots are normally made to have attributes which can enable it to serve more than one function.

9.1 Classification on the Basis of Morphology

The morphological classification of pottery can either be based on the utility or the shape. Utilitarian value of the pottery is so high that the use of terms to describe the vessel forms are invariably words that suggest the function that it is made for. For instance, vessel forms are generally described as storage pots, cooking pots and so on.

Pottery has been classified on the basis of shape. Terms like bowl, jar and dish have been used but no clear distinctions have been drawn between them. Therefore, classifications sometimes overlap and sometimes are contradictory. The subjectivity involved in classifying pottery into different morphological groups is problematic. A pot may be described by some as a bowl, by others as a basin, while others might simply call it a dish.

9.2 Anatomy of Pottery

A vessel has three essential components: orifice, body and base. The relative proportion of these components defines the morphological classification of pottery. These are also significant in function, construction and decoration of the pottery.

The body of the vessel can be described as the part of the vessel between the orifice and the base. The body of the vessel includes the maximum diameter and is also the region with the greatest enclosed volume.
The orifice is the opening or the mouth of the vessel. The morphological classification largely depends on the proportion of the orifice to the maximum diameter. If the diameter of the orifice is equal to or greater than the maximum diameter, the pot can be classified under the unrestricted vessel form. If the diameter of the orifice is less than the maximum diameter, it is classified as restricted vessel form. The orifice is subject to a great deal of elaboration. The orifice is further comprised of the lip, rim and neck. The terms lip and rim are normally used interchangeably. In fact, lip is the tip of the rim. It is therefore a part of the rim. But the transition from lip to rim is very difficult to distinguish if the rim is not set at an angle or curve from the neck or body. If the diameter of the orifice is less than the maximum diameter, the region between the orifice and the body is called neck. The shape and forming of the lip is dependent on the function. Certain functions like pouring require the lip to be pinched or to be extended to form an open spout.

The base of the vessel is the part which is in contact with a hard surface consistently. While flat bases are not difficult to identify, it is sometimes difficult to distinguish round bases from the sides of the body.

### 9.3 Function, Technology and Morphology

The relation between vessel use, morphology and technology has been investigated and described by many comparisons of ethnographic, archaeological and technological data. Many ethnographic studies of ceramics from Southwest America and West Africa have suggested that cooking pots have larger orifices than storage pots, but the duration of storage does not have an effect on the diameter of the orifice (Rice, 1987). The duration of storage and distance of transportation determine the volume of the pots. Pots used for storage over longer durations are greater in volume.
and pots used for transportation over short distances are considerably of greater volume than pots that are carried for longer distance. Cooking pots are of greater volume than serving or eating. Pots vary depending on whether they are intended for long or short term storage, how frequently the contents are used and the nature of contents. Ethnographic data suggest that pots that store are relatively taller to facilitate pouring, while storage pots for dry contents are shorter and squat.

The thickness of the pot is also determined by the use to which the pot is put to and also the morphology of the pot. The walls of a large storage have to be thick. If the pot is large, the walls are thicker in order to provide greater strength. But if the storage pots are to be moved or lifted more frequently, thicker walls will just make the pot heavier and thus inconvenient. The walls of the pot used for cooking do not require being thick, in fact thin walls of the pot are better conductors of heat than thick walls. Thinner walls are more resistant to thermal stress. These considerations influence the techniques of manufacture. The use of paddle and anvil or burnishing makes the walls thin and consolidate the walls.

Cooking pots are intended to make the efficient use of the heat and the morphology of the cooking pots is suited for this purpose. Cooking pots are likely to be rounded than of angular contours to resist thermal shock. The globular shape of the vessel exposes much of the base, walls and the contents of the vessel to heat. Cooking pots are more likely to have thin walls and a porous, coarse textured fabric.

The archaeobotanical studies have suggested a Neolithic crop package that mainly consists of cereals and millets. The most common process of cooking in the Neolithic period was boiling. So, the morphology of cooking pots exhibit many characteristics that exhibit features which facilitate this type of cooking. The pots used for cooking have a relatively larger orifice diameter for easy adding and
removing of contents. It is also to be noted that a slight constriction at the orifice or a low neck is present in the cooking pots to help prevent boiling over and reduce evaporation. The size of vessels meant for serving and eating depends on the number of people partaking food.

The characteristic of vessel form most specifically modified or adapted to distinct use is the orifice. Of special interest is whether the orifice is restricted or unrestricted and whether or not it has a neck.

An unrestricted orifice allows easy access to the contents. So, it is well suited for cooking pots, when the contents have to be attended frequently and also storage jars the contents of which are frequently added or removed and also serving dish.

A restricted orifice is principally useful in storing liquids and it prevents spills. It reduces evaporation in cooking pots. A neck is an adaptation of the restricted orifice to restrict spill during transportation and reducing evaporation while storing and cooking. A final modification of the orifice with functional significance is the rim or lip form. The modification of the lip is not only decorative but also functional. The lip is normally thickened to form one of the many shapes. The simplest of the rim forms is the rounded rim and the internally rounded, the most commonly found rim forms in the Southern Neolithic. The mouth or the rim is subject to much movement and is likely to be broken by an accidental blow. In order to prevent such a break, the lip is thickened and given different shapes. The external rounded rim and the beaked rims provide a better support to a lid which can be used to cover. The beaked rim or the external rounded rim is more commonly seen in restricted pots.

The form of the base of the vessel is very important for the stability of the vessel. Although flat bases are the most stable ones, they are not suitable for cooking,
especially boiling purposes. There are instances of pots with conical or pointed bases.

Such pots most definitely need support for stability. This stability can either be in the
form of stands or such pots can be supported by stones or even cradled in soft earth or
sand bed. The table gives a summary of function, shape and technology (Rice, 1987).

<table>
<thead>
<tr>
<th>Functional Category</th>
<th>Shape</th>
<th>Material</th>
<th>Surface Treatment and Decoration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage pots</td>
<td>Restricted forms, orifice modified for pouring or closure</td>
<td>Variable (possibly of low porosity)</td>
<td>Variable; attempts to reduce permeability</td>
</tr>
<tr>
<td>Cooking pots</td>
<td>Rounded, globular, unrestricted, generally lacking angles, rarely conical</td>
<td>Coarse and porous, thin walls, thermal shock resistant</td>
<td>Few or none, surface roughening</td>
</tr>
<tr>
<td>Food preparation(without heat)</td>
<td>Unrestricted shapes, simple forms</td>
<td>Emphasis on strength; relatively coarse, dense</td>
<td>Variable, generally low</td>
</tr>
<tr>
<td>Serving</td>
<td>Unrestricted for easy access, with handles, flat bases for stability</td>
<td>May be fine</td>
<td>Present for symbolic roles</td>
</tr>
<tr>
<td>Transport</td>
<td>Restricted orifice, light weight</td>
<td>Emphasis on strength, dense, hard</td>
<td>Variable, generally low, towards reducing permeability</td>
</tr>
</tbody>
</table>

Table 9.1: Function, Shape and Technology of pottery (after Rice, 1987)
9.4 Rims from Sanganakallu-Kupgal Site Complex

9.4.1 Initial Ashmound Phase

The Figures Nos. 9.1 and 9.2 of the rim types of the contexts from the Initial Ashmound phase show that they are simple rim types like rounded rims and slender
rounded rims. Slender rounded rims are variants of the rounded type but much thinner in thickness. The restricted forms with a short neck are dominant.

9.4.2 Main Ashmound Phase

During the Main Ashmound Phase, as is clear from the Figures 9.3 and 9.4, restricted forms with rounded rims are far greater in number. While the context 1197 has rounded, slender rounded and pointed rims, the context 1168 which probably covers a longer time period and is also a later in time has a wider variety of rims. Bevelled rims, both exterior and interior can be noticed in this context. It can also be noticed that in this Phase, restricted forms with shorter necks are conspicuously more in number.

Fig. 9.3: Rim Types of context 1197, Main Ashmound Phase
Fig. 9.4: Rim Types of context 1168, Main Ashmound Phase
In the Late Ashmound Phase, there is a gradual rise in the number of unrestricted forms, although the restricted forms are more in number. Simple rim forms continue in this Phase with a predominance of rounded types.
9.4.4 Post Ashmound Village Phase

This Phase is represented by the contexts from the site of Hiregudda. The degree of taphonomy is very high in the potsherds from this site and the surface features and also the rim types are difficult to identify. The Figures 9.8 to 9.14 are representative of the rim types from this site and also the Post Ashmound Phase. The unrestricted forms increase in number and pots with rims that are squared and
bevelled are more frequent in occurrence in this Phase. The channel spout appears in this phase and there is one example of a pinched lip in an unrestricted form.

**Rim Types - 3132**

![Chart](chart1.png)

Fig. 9.8: Rim Types of context 3132, Post Ashmound Village Phase

**Rim Types - 3049**

![Chart](chart2.png)

Fig. 9.9: Rim Types of context 3049, Post Ashmound Village Phase
Fig. 9.10: Rim Types of context 3061, Post Ashmound Village Phase

Fig. 9.11: Rim Types of context 3027, Post Ashmound Village Phase
Fig. 9.12: Rim Types of context 3059, Post Ashmound Village Phase

Fig. 9.13: Rim Types of context 3130, Post-Ashmound Village Phase
9.4.5 Post Ashmound Pitting Phase

Fig. 9.14: Rim Types of context 3068, Post-Ashmound Village Phase

Fig. 9.15: Rim Types of context 1147, Post Ashmound Pitting Phase
In the Post Ashmound Pitting Phase, although there is still a greater presence of rounded rim types, other types like the double beaded, bevelled, squared and hammer head can be noticed. With the exception of context 1131, in all other contexts of this Phase restricted forms continue to be more numerous than the unrestricted forms.
Fig. 9.18: Rim Types of context 1131, Post Ashmound Pitting Phase
In the Late Occupation Phase at Sannarachamma, the unrestricted forms constitute a greater percentage among the rims. Forms like the rounded pinched lip in unrestricted forms and spouts among the restricted forms start to appear. The number of squared rims increases in this Phase.
Fig. 9.20: Rim Types of context 1119, Late Occupation Phase

Fig. 9.21: Rim Types of context 1144, Late Occupation Phase
9.4.7 Terminal Occupation Phase

In the Terminal Occupation Phase at Sannarachamma, as is evident from the Figures below, there is a greater variety of rim types, mostly among the restricted forms. Rim types like squared, beaded and bevelled which suggests the use of lids are more frequent in occurrence. There is an evident increase in the number of unrestricted forms in this Phase.

![Rim Types-1052](image)

**Fig. 9.22: Rim Types of context 1052, Terminal Occupation Phase**
Fig. 9.23: Rim Types of context 1156, Terminal Occupation Phase
Fig. 9.24: Rim Types of context 1146, Terminal Occupation Phase
9.5 Change of Ceramic Forms and Culinary Change in the Southern Neolithic

The change in ceramic forms observed in the Southern Neolithic suggests the adoption of new varieties of foods, their preparation and social practices of consumption. Allchin (1960) has provided an exhaustive list of forms of pottery during the Neolithic and later phases. Based on the same and also the other excavation reports of Southern Neolithic sites, and also from the present study, it is suggested that flared bowls and everted rims jars were the most common of all the ceramic forms. In the later phases, two new forms make their appearance, one being the perforated strainer and the spouted jars and a channel-spouted form. Type 24 of Piklihal typology (Nagaraja Rao, 1971; Subbarao, 1948; Wheeler, 1948). The
spouted jars and the channel spouted forms enter the repertoire in the second (2000-1800 B.C.) or third (1800-1200 B.C.) phase. Similar forms are found from the Malwa phase of Western Maharashtra, from c. 1700 BC at Inamgaon (Dhavalikar and Ansari 1988), and further north from the later Jorwe Phase (c. 1500 BC) e.g. at Navdatoli (Sankalia et al. 1971). They are also found in the Patapadu Ware of the Kunderu valley, which is considered to be equivalent to the Malwa/Jorwe horizon (Fuller, 2005).

9.5.1 Perforated Pottery

The other important addition to the southern Neolithic ceramic repertoire is the perforated pottery which came to be present in the later phases of the Neolithic occupation at Sanganakallu and other sites. This perforated pottery has been considered to have served various purposes like as incense braziers, strainers, steam cooking, covers for boiling milk etc., by many scholars. According to Allchin (1960), there are three possible uses of these perforated pottery - (a) braziers for incense burning; (b) lid for milk boiling; and (c) steam cooking of cereal products. The use of perforated pottery as colanders has been suggested by Sankalia (1963). Paddayya (1969) on the basis of ethnographic studies in Guntur, Andhra Pradesh, has suggested that the perforated pottery could have been possibly used in the preparation of cereal and milk delicacies. Recently, a more complete specimen recovered from Watgal indicates that some of these perforated bowls had spouted lips for pouring, in addition to straining functions (Devaraj et al. 1995). Another complete specimen from Balijapalle (Cuddapah District) has a lipless rim (Venkatasubbaiah 1992). The specimen from Watgal indicates its probable use as a curd strainer (Fuller, 2005). This form occurs in the Late Jorwe period c.1200 B.C. the source and direction of these
forms were considered to have been from northern Deccan to the Southern Neolithic region. But the occurrence of these forms in the Southern Neolithic at earlier phases than the Late Jorwe phase suggests that the spouted jar and the perforated pottery could have evolved in the southern Neolithic and dispersed northwards (Fuller, 2005).

The perforated sherds begin to appear in the Late Ashmound Phase and continue till the Terminal Occupation Phase in Sanganakallu-Kupgal complex. Allchin (1960) and Wheeler (1948) are also of the opinion that the perforated pottery types although indicative of a Neolithic date, persist into the Iron Age. All the perforated sherds found are body sherds and belong mostly to the technological Groups D and E. One example of a perforated bowl with pinched lip was noticed at Sannarachamma similar to the spouted lip perforated bowl from Watgal (Devaraj et al., 1995). This is an unusual feature for a vessel which would not have been able to hold liquid.
Fig. 9.26: Perforated Pottery Occurrence in Sanganakallu-Kupgal Site Complex
Fig. 9.27: Perforated Potsherd (External Surface) from Post Ashmound Pitting Phase.

Fig. 9.28: Perforated Potsherd (Internal Surface) from Post Ashmound Pitting Phase.
9.5.2 **Spouts**

Spouts occur in Sanganakallu-Kupgal complex in the Main Ashmound Phase onwards. The number of spouts increases considerably in the post Neolithic levels such as the Post Ashmound Village and also in the Terminal Occupation levels.

![Spouts Diagram](image)

**Fig. 9.29**: Occurrence of Spouts in Sanganakallu-Kupgal Site Complex

9.5.3 **Base**

Of the 28 sherds that were identified as base, only two were round; one each of the Main and Late Ashmound Phase. The rest all are flat base sherds. As already pointed out, flat bases are easily recognizable and this might be the cause for the large number of such base sherds. It is also evident from the Figure that the base sherds are considerably greater in number in the later phases. It is also interesting to note that 11 of the 28 base sherds belong to the technological Group B. The unrestricted forms are
greater in this technological group. This suggests the occurrence of unrestricted forms with flat bases.

![Base Sherds](image)

**Fig. 9.30:** Occurrence of Base Sherds in Sanganakallu-Kupgal Site Complex

Another form which made its appearance in the later Neolithic phase but has earlier precursors in the Chalcolithic of Northern Deccan and Central India is the restricted necked jar. Tall restricted necked jar occurs in the Kayatha Ware.

As has been pointed by Fuller (2005) it is interesting to note that most of the forms in the Southern Neolithic ceramic repertoire are forms which are related to liquid contents. There is a conspicuous absence of forms related to processing of wheat, sorghum and rice. The flat plates like forms appear only much later in the late Iron Age c. 500 B.C. when these food grains are well adopted in the culinary practices (Fuller, 2005).
Fig. 9.31: Pottery Shapes from Sannarachamamma.
Fig. 9.32: Pottery Shapes from Sannarachamma.
Fig. 9.33: Pottery Shapes from Sannarachamma.
Fig. 9.34: Pottery Shapes from Sannarachamma.
Fig. 9.35: Pottery Shapes from Sannarachamma.
Fig. 9.36: Pottery Shapes from Sannarachamma.