

Pottery Decoration as a Medium to Examine Specialised Production in the Sixth to Fourth Millennia BC

Periodiation and Chronology

The time period which is generally called the Chalcolithic still lacks a precise definition in terms of time, space and characteristics. A similarly complex discussion is concerned with the exact division between the Neolithic and Chalcolithic periods. This problematic time span, which is sometimes called Late Neolithic and sometimes Early Chalcolithic is represented by Wadi Rabah and related cultures. The division of the remaining Chalcolithic phases is also not undisputed.

The chronology in this article is based on an early, middle and late Chalcolithic phase.¹ The early phase is represented by the Wadi Rabah and similar cultures, the middle phase can be found in ash-Shaykh 'Alī and in Tsaf. Some of the middle levels in Tall Abū Ḥāmid and Tulaylāt al-Ghassūl also belong to this phase, but need further clarification. The Late Chalcolithic period is the classic Ghassulien, which includes the upper levels of Tulaylāt al-Ghassūl, most Negevite sites and other sites such as Abū Snaysla, Neve Ur, etc.²

It is not of essential importance, how a particular phase is called or even into which larger period it is slotted, but I would suggest that it is important to use more tools for the definition of a certain time period or phase than C14 dates or material evidence, or even *one* category of material evidence (e.g. a particular handle-shape), as most periods are still defined. Another way to come to a more conclusive picture of time periods would be to compare whole assemblages with other assemblages instead of pieces. A third possibility to arrive at a more precise level of definition might be through detailed research into the other sub-systems of a society. While the sub-system

of material culture is generally well researched, the other sub-systems such as the political, social, religious or economic spheres remain largely undiscussed. Those possible comparisons are not meant to substitute the comparison of material evidence, but to complement it.

Specialisation

Definition of Specialisation

This approach to a definition of the Chalcolithic period deals with the economic sub-system, more precisely with the specialised production of craft goods and how this specialisation changed from the sixth to the fourth millennium BC. Several authors have claimed the existence of specialised production in the Late Chalcolithic for a number of different commodities like ivory-items,³ stone-tools, stone-bowls,⁴ metal-objects and not least pastoralism.⁵ But most of these arguments are of a descriptive nature and do not explain the characteristics of specialisation. A possible definition of specialised production as it has been worked out by numerous ethnological and ethnoarchaeological investigations could be as follows: specialisation is viewed as a *regularised*, permanent, and perhaps institutionalised production system in which producers *depend* on extra-household exchange relationships at least in part for their livelihood, and consumers *depend* on them for acquisition of goods they do not produce themselves.⁶

Specialisation is not characterised by the following: Personal abilities of a person are not a sufficient criterion to define a specialist, a gifted artisan might be a craft person but he or she is not a craft specialist.⁷ Specialised items are not necessarily characterised by intricate pat-

¹ A simple renaming of phases and particularly a different use of the term "late" does not seem to be a promising change of the periodisation.

² Late Neolithic: 6300-5500 BC, Early Chalcolithic: 5600/5500-5200/5100 BC, Middle Chalcolithic: 5100-4700/4600 BC, Late Chalcolithic: 4500-3700/3600 BC (Kerner 1998.: Chapter 2).

³ "...they fit easily into the growing evidence for a specialist craft of ivory working in the Chalcolithic settlements of the Beersheba region." (Moore 1988: 182).

⁴ "However the basalt industry ventured very soon upon its own independent line of development as demonstrated by the variations of the legged bowls, so we may also assume the existence of specialized workshops" (Amiran and Porat 1984: 13).

⁵ "...emergence of specialised pastoralism" (Levy 1983; 1995).

⁶ Arnold 1987; Costin 1991; Kerner 1998; Rice 1981.

⁷ Arnold 1987: 2. If somebody produces one ivory-figure in one year, he or she is not necessarily a specialist.

terns of decoration as can be found on several of the mac-
es found in Nahal Mishmar (Bar-Adon 1980), they are not
necessarily beautiful and rare objects such as the wall-
paintings at Tulaylāt al-Ghassūl (Koeppel *et al.* 1940;
Mallon *et al.* 1934) or conspicuous objects like for ex-
ample the basalt stands or pillars from the Golan (Epstein
1975; 1977), even very valuable material like the gold
from Nahal Qanah (Gopher 1997) is not necessarily an
item produced in specialised mode. It has been claimed
for all those objects that they have been produced by spe-
cialists, but it has not been proven and might not be true
for all of them.

Utilitarian and Prestige Items

All societies have a repertoire of utilitarian goods and
more prestigious goods, which need to be treated differ-
ently. Utilitarian goods are produced in large numbers and
are as much standardised and efficiently produced as pos-
sible, which is true for most utilitarian pottery. However,
prestigious items which carry social meaning of im-
portance for the society, are manufactured much more
elaborately and with more care and labour. Prestige items
are defined by their expensive material, by their elaborate,
time-consuming and sometimes secret manufacture and
by their elaborate decoration. Prestige items should also
have a very distinctive distribution pattern, otherwise they
would not be prestige-items, because a class of objects
which are owned by everybody in a society can hardly ex-
press prestige in that society. Prestige-items look special
because of the particular information-carrying capacity
they have in the society, not because they are made by
specialists. The complexity of the relationship between
prestige-items and certain specialists, who produce them
under the control of an elite cannot be discussed here.

The main aim of this article will be the analysis of util-
itarian objects. While prestige-items are characterised by
the effort invested in their production, utilitarian objects
manufactured in a specialised mode are characterised by
the efficiency and standardisation which are assigned to
an artefact. And by far the best example of this efficiency
and standardisation of the Chalcolithic period is pottery
and in particular the very inconspicuous and everyday-
item: the V-shaped bowl, which will be examined below.

Evidence for Specialisation

There are two possible sources of information about spe-
cialised production of pottery: direct evidence in the
shape of wasters, firing installations (pits, kilns), scrapers,
raw material (unworked clay, pigments) or stores with fin-
ished products. Nothing of that kind has been reported

from chalcolithic sites.

Indirect evidence on the other hand is plentiful: grow-
ing efficiency of production and standardisation of the
product. For pottery this is expressed in standardised
shapes, standardised surface treatment, standardised dec-
oration and better quality of ware and form. For a really
undeniable illustration of the change in all those
categories and the amount of work which was invested in
the production of a particular kind of fabric, it would be
necessary to count the relevant information from either
the entire pottery assemblage of a site or a statistically rel-
evant section. Unfortunately this is still not the case in
most projects and has certainly not been in the majority of
the earlier excavations. So we are only left with trends
and tendencies, which will be demonstrated in the fol-
lowing.

Early Pottery as a Case Study

There are three dimensions of pottery, which can be ex-
amined separately to describe and measure the different
amount of work which went into the production of the pot-
tery in question. The treatment of these different dimen-
sions, fabric, shape and decoration, can then be compared
during consecutive time-phases to reach a work-profile
through time. The analysis will deal with Late Neolithic,
Early Chalcolithic and Late Chalcolithic pottery of the
Southern Levant and concentrate here on decoration.

Fabric

The pottery of the Late Neolithic is all hand-made and the
crumbly quality of the fabric only supports simple shapes.
The wares are not clearly defined; the impression is rather
that these early potters experimented with clay, temper
and their relationship; that several production events oc-
cured and each time a different mixture was used. The
utilised materials are always local, while in the Early
Chalcolithic partly non-local material might have been
used. The Early Chalcolithic pottery shows also a slightly
narrower fabric-definition.

In the Late Chalcolithic fabric definition is clear and
unambiguous: nearly all sites have one or two major
wares, which exist in a fine and a coarse version. And the
correlation between certain fabrics and certain shapes is
very high.⁸ The shapes of V-shaped bowls in Pella and
Tulaylāt al-Ghassūl are nearly identical, but despite this
overall similarity chemical analysis has shown that mostly
local materials were used for the pottery production. The
important assumption is that pottery was produced on site
from locally available material but shaped and decorated
in an overall set of parameters. It is interesting to note that

⁸ For example in Abū Maṭar and Şafadi: Ware 2 is used mainly for
small vessels, ware 4 for even smaller and for some of the special
vessels like cornets and ware 3 for bigger vessels (large bowls and
jars). Looked at from the other direction, the relationship is even

clearer: all big vessels in Abū Maṭar and Şafadi are made from ware 3
(100% of the holemouth jars), while ware 5 is utilized for special ves-
sels: pots with nose-handles, big churns, small vases, cornets). Com-
menge-Pellerine 1987: fig. 11 and 1990: fig. 12.

several sites have imported and locally made pottery.

Shape

Late Neolithic pottery has few form-types with large individual variations in each type. This changes continuously through time and the Late Chalcolithic pottery has many different forms with little in-type variation. The form typology begins also with a high degree of diversity and ends with a high level of homogeneity in each type. The development in the forms of jars can be taken as a brief example: in the Late Neolithic one has jars with wide necks, in the Early Chalcolithic jars have everted necks, bow-rim and short cylindrical necks and in the Late Chalcolithic there are jars with three different neck types, jars with spouts, and bottles (as a special kind of jars).

In the Late Chalcolithic some of the shapes are highly specialised like cornets, fenestrated bowls, chalices and churns.⁹ But together with these highly specialised items existed a wide range of less dramatic but nevertheless specifically made shapes. The "real" holemouth jars, hole-mouth-jars with large flaring rims, jars with necks and out-flaring rims, large storage jars, small cups, small V-shaped bowls, and large V-shaped bowls. The whole functional range is represented: individual, storage, and drinking vessels, cooking vessels, production and transportation vessels. The standardisation of vessel shapes also shows itself very strikingly in the beginning of the standardised size of vessels. The best example for this development is the V-shaped bowl: one group has between 8 and 15 cm diameter (with a heavy concentration between 10 and 13 cm) and is up to 9 cm high. A second group is between 16 and 24 cm diameter and 13 cm high and the largest group is over 30 cm diameter and around 15 cm high. The important point here is the fact that this is true both for bowls made on the turntable or wheel like in Tall Abū Ḥāmid and for hand-made bowls like in Abū Snaysla. One has to conclude that an overall idea of the "typical" shape and size of, certainly a small, V-shaped bowl existed. Holemouth jars and cornets also show a tendency towards a limited range of measurements.

The V-shaped bowls in particular seem to show an interesting trading pattern as well (Roux and Courty 1998). A certain amount of the small V-shaped bowls were most probably traded from the Negev to other places like Abū Ḥāmid. They were also exchanged in the Negev itself, mainly to Gilat, but also to other places (Alon and Levy 1989).

Decoration

One result of the research into specialised production was,

that—concerning specialisation—decoration is the most telling of all the pottery properties. Decoration can be analysed in three ways: 1) the amount of decorated to undecorated pottery in different assemblages (from different time periods) can be compared; 2) the amount of necessary work for different kinds of decoration can be measured (an intricate incised pattern obviously needs much more labour than a simple painted band on the rim); and 3) the labour in one particular decoration technique can be measured in the amount of single, individual gestures, which are necessary to produce that decoration.

At Munḥaṭa, 13% of the *entire* Late Neolithic pottery is decorated (Garfinkel 1992), at Jericho ca. 10%, and at Abū Thawwāb ca. 20% (Kerner 1998: 234ff.). The Yarmukian pottery is often painted *and* incised or slipped *and* incised, therefore shows a considerable amount of labour per vessel. The decoration at Munḥaṭa consists nearly half of incised designs (herringbone and others), 20% is painted, and less than 40% is simply slipped. In the Early Chalcolithic period the percentage of decorated pottery at Munḥaṭa 2a is halved to 6%, and while most of the decoration consists of slips (over 80%), only 3% are incised and less than 1% painted. The amount of decoration at Jericho increased to over 20%, but the majority of decoration changed—like at Munḥaṭa—to simple slips (Kerner 1998: 236).¹⁰

Very little can be said about the Middle Chalcolithic pottery. The small amount of published material from Tall Tsaf or Katārat as-Samrā' consists nearly entirely of elaborately painted sherds and no information about percentages of decorated to undecorated material is given.

The available information about the percentage of decorated material in the different assemblages from the Late Chalcolithic is also scanty and gives a very multifaceted picture: Abū Maṭar, Ṣafadī and Abū Ḥāmid have between 16 and 18% decorated pottery (Commenge-Pellerin 1987: 47; 1990: 32), Tulaylāt al-Ghassūl and Abū Snaysla most probably under 10%, at Pella the results vary between the different areas, but are around 25% and in ash-Shūna North 33% of the pottery is decorated (Kerner 1998: 248ff.). The amount of decorated pottery has not decreased compared with the earlier periods.

It is not only the amount of decoration which is important for the interpretation, but also the kind of decoration. It is a process of standardisation and growing efficiency; in connection with pottery decoration, standardisation can be measured by the variability of decoration and the efficiency of the labour input necessary for the decoration. There is a strong tendency towards

⁹ Although some of these forms started already in the Early Chalcolithic period.

¹⁰ It should be mentioned that certain very time-consuming modes of decoration developed in the Early Chalcolithic period. Vessels

with large and elaborate applications have been found in sites like 'Ayn Jarba or Abū Ḥāmid. These vessels are considered as carrying special meaning, which excludes them from the normal utilitarian repertoire.

less complicated designs in the chalcolithic material compared with neolithic material. So even if a growing percentage of vessels would be painted with a simple band along the rim, the pottery is much more standardised and can be more efficiently produced than vessels which are first painted, then incised in different designs and then polished. As a good example, the Yarmukian incision design can be taken.

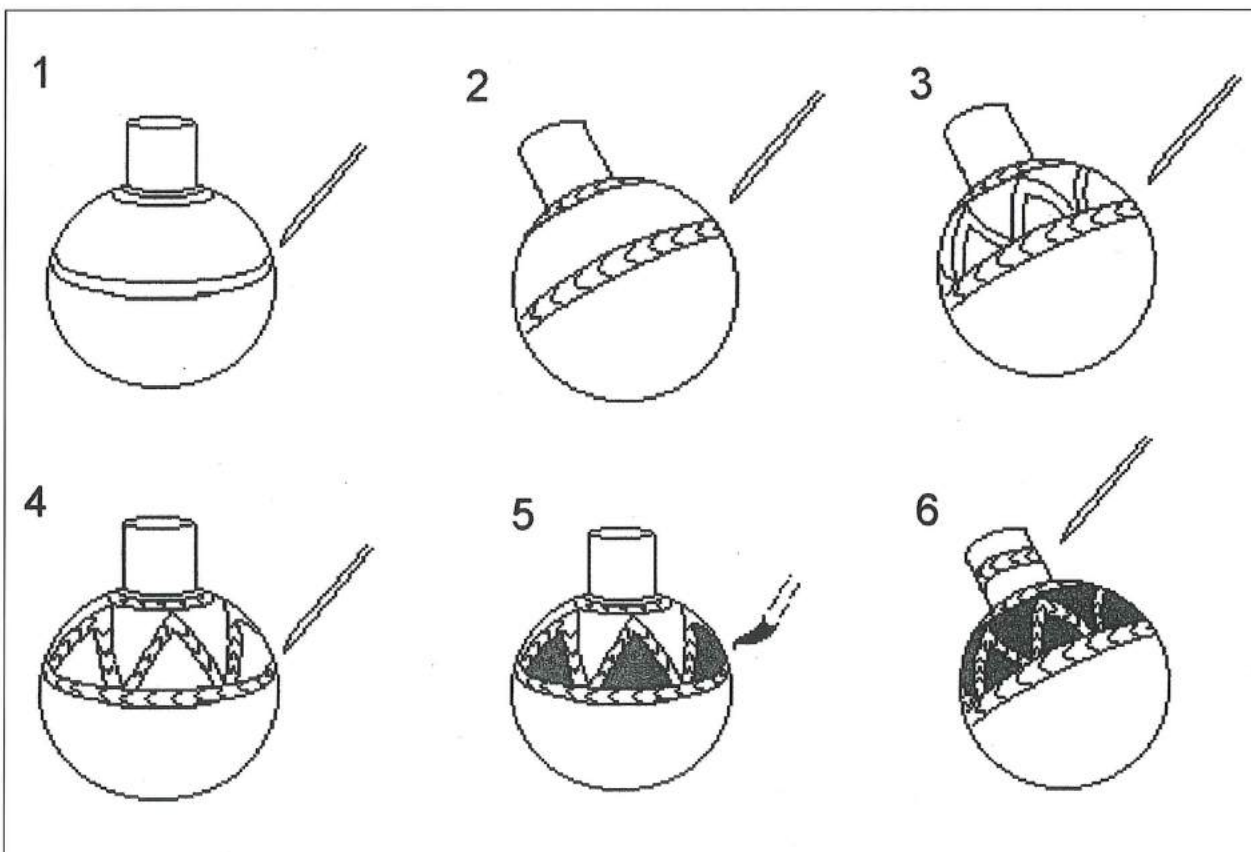
FIG. 1 shows the different movements and steps which are necessary to produce a "typical" Yarmukian pot: the pots first needs to be turned clockwise or anti-clockwise on the same level with one hand, while the other hand incises the horizontal lines on the rim or neck. In the second step: the pot has to be turned twice in both diagonal directions to fill the incised band with short incised strokes. In the third step: the pot has to be laid nearly on its side and then turned up and down to incise the diagonal lines on the body. The fourth step involves the filling of those lines with short strokes. In the fifth step: the tool has to be changed and the space between the incisions painted. Bowls are then finished, Jars need to get a different design of incision on the neck. So five different steps of work are a minimum for the Yarmukian jar, but the larger ones can require up to nine steps of work.

Yarmukian vessels with slightly less complicated decorations need three to four steps (TABLE 1), the same is

necessary for Early Chalcolithic vessels, when they are incised or have applications. The Early Chalcolithic incised designs are far less regular than the Late Neolithic designs. Most incised vessels of the Wadi Rabah period need only to be turned in one or two directions for the entire incision and then another time for the painting. But by far most of Early Chalcolithic pottery is only slipped or slipped and burnished and therefore needs only two steps of work (TABLE 1). The application of slip is normally achieved by dipping the entire vessel into the liquid clay-solution of the slip and therefore can be done quickly. Burnishing requires far more time, but has also more ad-

TABLE 1. Schematic representation of the different amount of labour for decoration techniques. Italics show the most frequent kind of decoration for each time period.

Phase	more than 6 steps	5-6 steps	3-4 steps	2 steps	1 step
Late Neolithic	<i>incised Jars</i>	<i>incised bowls</i>	painted vessels		
Early Chalcolithic			incised vessels and applications	<i>slipped and burnished vessels</i>	
Middle Chalcolithic			painted vessels		<i>slipped vessels</i>
Late Chalcolithic			applications, complex painted designs	painted or incised also slipped	<i>painted or incised or impressed vessels</i>



1. Phases of the decoration of an incised Yarmukian vessel.

vantages for the practical qualities of a vessel than purely aesthetic results.¹¹

The Late Chalcolithic pottery consists of a small amount of complexly decorated pottery, which requires three steps of work, but the overwhelming amount needs only one step (TABLE 1). The first group includes the pottery which is painted in complicated chequered or wavy designs. The second group comprises of the vessels with one band of paint along the rim, which can be done very quickly by simply holding the brush to the rim, while the vessel is turned on some kind of turntable. It is also important to notice that the painted decoration becomes more sloppy and negligently done over time.

The third method to measure differences in labour-input is to compare the same kind of decoration. A motif of any kind needs to be translated into gestures (Hagstrum 1985): every short stroke in the filling of the herringbone incisions is one gesture, but one continuous line of incision is also one gesture. One painted stroke along the rim might be up to three gestures, it depends how often the brush would need to be dipped into new paint. If different vessels are compared, the results are as follows: a large incised and painted Yarmukian Jar (which carries two complete sets of the motif) needs 517 gestures, a bowl needs 340 gestures, a small jar 165. Two Early Chalcolithic vessels, which are incised and painted need 63 and 51 gestures, compared on the same grounds (Kerner 1998: 255). The few incised vessels from the Late Chalcolithic period require also only a small number of gestures due to their irregular and small pattern.

It is very interesting to notice, but outside the scope of this article to interpret in detail, that decoration itself and also the kind of decoration and the shape of a vessel are related in some sites: only one third of small open vessels (bowls) are painted, while 50% to 75% of small closed vessels (jars with lug-handles etc.) are painted. Large vessels are more often painted and in particular the large bowls can show a wider variety of decorations. Cooking pots and jars with spouts are very seldom decorated at all and pithoi often have applications or incisions (Kerner 1998: 242, 244-5).

Summary

The information derived from all three different ways to analyse decoration shows that pottery was produced in a continuously more effective, standardized and less time-consuming way. So on the grounds of smaller amounts of evidence in ware and type standardisation and much more so on standardisation in decoration, we can state that pottery becomes produced more and more under specialised conditions. Although hardly any information at all is available

about direct evidence for specialisation in pottery production, indirect evidence of more standardisation and efficiency in the production process points towards specialised production. The large amount of common pottery would certainly be produced by independent specialists.

A similar analysis could certainly be carried out for the metal-products from the Late Chalcolithic period. The analysis of the economic sub-system helps therefore to define the different Chalcolithic phases more precisely. A similar study of other sub-systems might help further in defining a set of characteristics for time-periods.

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¹¹ It should be noted here, that against normal expectations, the amount of burnishing is higher in the Late Neolithic than in the

Early Chalcolithic period (Kerner 1998: Tab.7.9).

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