A Vessel for Building Another Vessel.
A Technical Template of the Late 4th Millennium BCE
in the Central-Eastern of the Iranian Plateau?

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Two vessels from different sites of the Iranian Plateau, dating to the late 4th or early 3rd millennium BCE are presented as palaeotechnological case studies. In the fractures of the vessels' walls, interfaces left by added clay parts (enhanced in the two illustrations) are quite recognizable. It is proposed that in both cases potters, in order to construct the bases, used to make bowls comparable with two types of finished containers common in their repertories (respectively, a moulded bevelled rim bowl and a coil-built truncated-cone shaped one with a distinctive pointed rim). As a working hypothesis it is suggested that making open vessels to build on the rest of the vase was a technical template, possibly shared in the late 4th millennium across different regions of the Iranian Plateau. Scholars are encouraged to record the sections of their vessels showing joins among coils and other interfaces, as this palaeotechnological evidence is potentially very useful in assessing the historical meaning of wide "interaction spheres" traditionally considered only in terms of traditional ceramic morphological comparisons.

Keywords: *Vessel; 4th Millennium BC; Iranian Plateau; Ceramic technology*

Introduction

During the last two years, while studying two ceramic industries of the late 4th millennium BCE (early Bronze age) of the Iranian plateau, the author came across two pottery vessels that, in two different contexts, may provide us not only with peculiar archaeological evidence, but also with useful methodological insight. One comes from the Mahtoutabad III occupation layers discovered in 2006-2009 in the site of the graveyard with the same name near Konar Sandal (Jiroft, Kerman). The other is a bichrome (black and red) painted jar of the oldest occupation levels of Shahr-i Sokhta (Sistan), very relevant for its chronological association with the only "Proto-Elamite" inscribed tablet so far found in the city and its unusual features, in terms both of form and decoration.

Case 1

The first case comes from the excavations of Mahtoutabad (a rescue intervention at one of the plundered graveyards of the Konar Sandal site complex, near Jiroft, Kerman, carried out from 2006 to 2009). The graveyard of the second half of the third millennium, unfortunately extensively plundered in 2001, revealed, about 4 m below the present surface, sequences of underlying occupation layers of the late 5th-early 4th millennia BCE (Mahtoutabad 1, 14C dated), followed by another settlement of the mid 4th millennium BCE (Mahtoutabad 2, comparable with Iblis IV in Caldwell 1967) (preliminary information in Madjidzadeh 2009 and Vidale & Desset nd).

Near the bank of the Halil Rud, in a single and isolated location, we found an alluvial deposit containing large amounts of ceramics (Mahtoutabad III) clearly related to the late Uruk horizons of Fars, Susiana and southern Iraq. The collection, in fact, includes hundreds of fragments of bevelled rim bowls and coarse oval trays, single-handled globular pots, a few carinated vessels with nose-like lugs, several specimens of tall conical "flowerpots", and other forms with meaningful similarities with the western ceramic assemblages (Desset & Vidale, ongoing research).

This paper will not consider the archaeological or macro-historical implications of this discovery (among others, Alden 1982; Algaze 1993, 2008; Pollock 2006: 78-116; Potts 1999: 52-71; for bevelled rim bowls Potts 2009 and Goulder 2010, all with extensive specific references) but rather

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focus on the interpretation of a technical detail of a single "flowerpot" (fig. 1). The location of the find is the Trench numbered at Mahtoutabad as V.

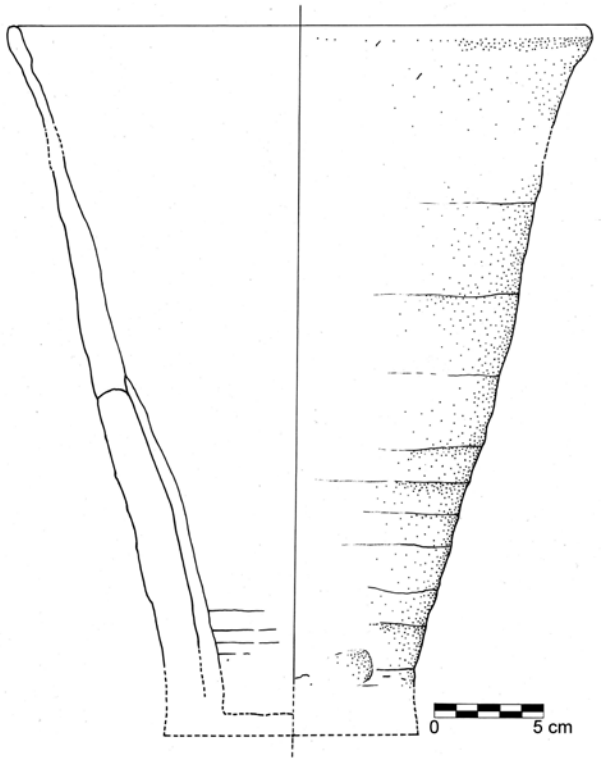

Fig.1: *A tall "flowerpot" from Trench V, Mahtoutabad, Mahtoutabad 3 occupation, showing the vase's building interfaces in section (Drawing: M. Vidale)*

Flowerpots are tall, sturdy conical bowls, a distinctive ceramic type of the assemblages of Susa II, Acropole I, Level 17 (Lebrun 1978: Fig. 34). Our specimen was about 33 cm high, with a diameter at the mouth of 27 cm and a base of ca. 11 cm. The same type is also found in contemporary deposits in several sites of southern Iraq such as Abu Salabikh (Jones 1996) and Jemdet Nasr (Mackay 1931: Pl. LXVII). Moving towards the Iranian Plateau, these flowerpots are found at Tepe Farukhabad (Wright 1981: Fig. 45 e), and particularly at Tall-i Malyan (Sumner 2003: Fig. 22, Pl. XV a-c), but strangely enough are not recognizable in other important contemporary assemblages like those of Choga Mish (Delougaz & Kantor 1996: 39-91; only two vaguely similar vessels, respectively in Pl. 81, R and 83, EE), Tall-i Ghazir (Witcomb 1971), Godin Tepe (Badler 2007-2008), Arisman (Vatandoust et al. 2011: 196-253) or Tepe Yahya (Potts 2001: 1-54).

These vases are not always clearly distinguished, in the published reports, from other types, for example from coarser bevelled rim bowls of tall size (like in Gopnik & Rothman 2011) or from simple conical cups bearing extensive wheel marks on the walls and either string-cut, or concave bases. Traditionally, conical cups of this generic class have been interpreted as a second type of mass-produced container, competitive, from a functional viewpoint, with bevelled-rim bowls. For example, Nissen (1986: 124-125) mentioned "conical cups" of "Post-Late Uruk Date" (i.e. Jemdet Nasr) serially thrown off the hump as an innovation that deeply impacted the former ceramic technologies and triggered mass production.

As no carbon was found in the Mahtoutabad III assemblage, having been to a large extent washed off during its deposition on the banks of the Halil, its precise dating will be a matter of interpreting its ceramic associations, and will not be discussed in these pages.

The large and tall flowerpot of fig. 1 clearly shows the large rilling, spiral-like traces left by a slow wheel-throwing process, and it is entirely covered by regular, fine parallel throwing marks. At first, the gradual thinning of the walls from the thick bottom to the rim may be taken as positive evidence of wheel-throwing. But a more careful inspection of the base reveals, on the fractured surfaces, that the bottom of the vase was first shaped as a bevelled rim bowl. As I had only one flowerpot of such a big size, and excavation reports never detail the cross-section of ancient potsherds, it is at present hard to say if this case is a *unicum* or not, but readers are invited to check carefully their materials for similar (or contrasting) evidence.

According to my reconstruction, the potter first made a bevelled rim bowl with an unknown hand-forming technique (hand forming, moulding in earth or, as more recently suggested, within another larger vessel of the same type: see Goulder 2010). Then the potter placed the partially dried vessel on the potter's wheel and resumed the forming process by applying a series of coils or long slabs

and thinning/shaping them while the vessel rotated. The interior of the base, in this operation, was lined with a layer of plastic clay about 0.5 cm thick, and the outer surface of the bowl coated and smoothed with a thin layer of mud, on which appeared similar wheel-throwing marks. The edge, in the same section, looks rounded, as it would be if the potter had not shaped it in the normal bevelled fashion, or if the moulded base were still plastic and could be conveniently modelled in the round for the application of an upper coil after being placed on the potter's wheel.

The implications of this evidence are manifold.

First, as a first step of construction, the potter made what was normally a finished vessel – a bevelled rim bowl – as the base, of different vase.

Second, the making of bevelled rim bowls by moulding, at least in this case, was not an alternative choice, as assumed by H. Nissen and others, but rather a parallel technique that could be successfully embedded into the manufacturing sequence of a coiled- and a wheel-thrown vessel; like today, the potters of 5000 years ago combined in a creative way a variety of forming techniques in several types of hybrid sequences (Laneri 2011).

Third, at least in this lighting, the moulding of bevelled rim bowls does not look like an obtuse, mechanical process that could be left in the care of unskilled labourers, but rather as one of the techniques a potter had to master to compete in his/her socio-technical environment.

Case 2

All this came to mind of the author when he studied the second case discussed in this note, a roughly contemporary vessel from Shahr-i Sokhta, the ear-lugged Buff Ware jar found by M. Tosi in levels contemporary to those where the "Proto-Elamite" tablet of Period I, phase 10 (ca. 3200-3000 BCE, following Salvatori & Tosi 2005). The vessel (fig. 2) is painted black, the designs partially filled with a strong red colour: a technique apparently abandoned in the later Buff Ware vessels of Periods I and II.

Fig. 2: *Graphic reconstruction of the bichrome jar found in the Eastern Residential Area, Period I, phase 10, room XX, cuts 23-24, showing the coils joins (Drawing: M. Vidale).*

This peculiar bichrome jar, found in not less than 50 small fragments and presently stored at the National Museum of Oriental Art, Rome, was recently chosen as a training artefact for the students-conservators of the last course of archaeological restoration at the ISCR, Rome (Istituto Superiore per la Conservazione e il Restauro of Rome). The jar was restored 40 years ago with materials which underwent a noticeable decay and methods that today are not accepted. Part of the fragments were detached, cleaned and re-glued with better adhesives. In this occasion, the vessel was systematically re-studied, analyzing it by the means of advanced X-ray radiography for a better assessment of its forming process, and taking minimal samples for defining the techniques of bichrome painting through SEM and thin section analysis.

The vessel, preserved for about 25% of its body, has no preserved base. It cannot be phisically re-assembled, because the joins are too worn and limited to support the weight of the reconstructed jar. However, the graphic reconstruction of fig. 2 gives an idea of its form and painted decoration. It

is an ovoid jar, with the lip painted black and the residues of a red band on the shoulder. The upper part shows two superimposed friezes. The upper one has a series of opposed hatched triangles, where the buff-coloured background contrasts with red-filled squares, forming checkboard patterns. The opposed triangles form lozenges filled by hatched crosses, filled red in alternating rectangles. The lower frieze is made of metopes containing lozenges, in turn filled by unpainted crosses, bounded by red triangles.

Together with other finds, the vessel was published in Tosi 1969, Figs.34-38; Lamberg – Karlowsky and Tosi, 1973, 34-36, Figs. 139-140 and Biscione 1974, Fig. 7 (see also for the general context Amiet & Tosi 1978) as reflecting a complex sphere of cultural interaction among distant areas (southern Iraq, Susiana, the shores of the Persian Gulf, Sistan, northern Baluchistan and the Kopet Dagh piedmont: see also Biscione 1973, 1974, 1984).

In fact, considering its form and decoration, the vessel may be linked to the west for its unusual bichromy, its ear-like black-painted lugs on a red band, the general restricted form, and limited aspects of the painted patterns (the double hatched triangles and their checkboard pattern). On the other hand, in the ceramic complexes of the so-called Proto-Elamite period, for example at Godin Tepe and Seh Gabi (Young 1969, Young & Levine 1974, Weiss & Young 1975), as well as at Tepe Yahya (Potts 2001: 1-54) the vessels are more restricted, biconical or carinated with a short cylindrical neck rather than globular or ovoid, lugs are nose-like, and the designs are more often incised than painted and generally quite different (see also Delougaz & Kantor1996: 112-123; Wright 1981: 91-135 and others). In particular, the black-and-red alternating patterns in the hourglass and cross designs of the upper frieze have no known *comparanda*.

Thin section analysis shows that the clay matrix was intentionally tempered with a sand-like material including rounded grains of basalt and dolerite, fully compatible, at first sight, with the clay beds near Shahr-i Sokhta. That similar jars are a local creation affected by a prestigious "international" model is also suggested by the evidence of similar vessels in other areas of the settlement (Salvatori & Vidale 1997: Fig. 88, 1-4) and in some graves of Period I (Piperno & Salvatori 2007: grave 406, p. 214, Fig. 475, 6678; grave 413, p. 221, Fig. 493, 7037, this latter very similar for the ear-lugs on the shoulder, the red pigment and the almost identical size. Other jars of the same general type may be seen in the graves of Period I published in Sajjadi 2007, but the ear-lugs are not recognizable).

The technical examination of the fragmentary vessel at the ISCR archaeometric facilities provides new and potentially relevant information. Both the X-ray images (fig.3) and the observation in detail of the fracture surfaces show that the vessel was probably built with nine or ten superimposed coils (wide on average 3.5 cm) plus a couple of tiny coils for shaping the everted rim.

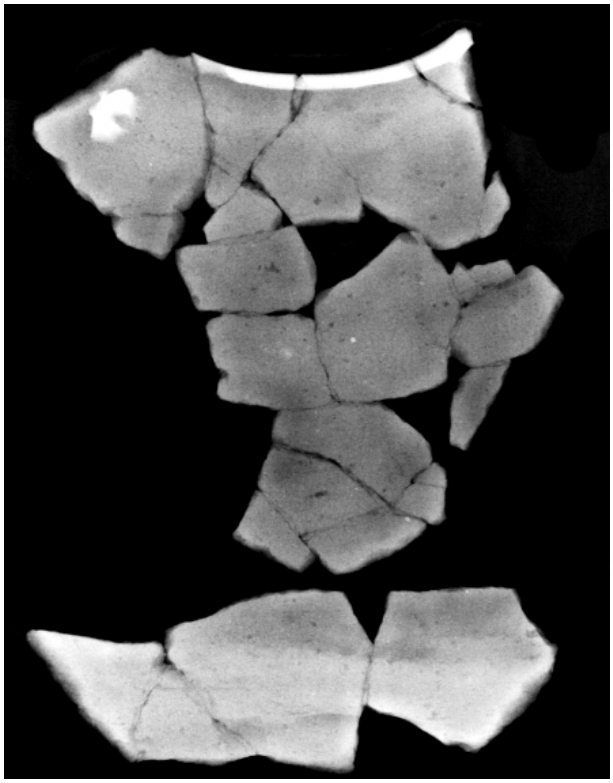

Fig. 3: *X-ray image of the bichrome jar from Shahr-i Sokhta discussed in the text, showing, in form of bands of alternating transparency and aligned horizontal pores, the evidence of coil-building.*

Preliminary results of thin section studies show that the bichrome decoration was obtained with the same clay-based pigment, but applied before

firing in different degrees of dilution and variably affected by a double-cycle firing in which a reducing atmosphere was followed by an oxidizing cooling (ISCR, ongoing research; G. Sidoti, personal communication). How far this ingenious technique was also shared with the west, or with the contemporary sites of the central-eastern Iranian Plateau, is a matter for further studies.

While checking the fracture surfaces, the author noticed that in the lower body, but above the missing base, the wall substantially thickened without an apparent reason. By observing the cross-section of the potsherds under an oblique light, it was observed that the coil, in this thickened part of the base, has a slightly pointed asymmetrical end, embedded in the upper coil. In other words, the base of the bichrome jar is a truncated-cone shaped bowl with a slightly pointed or S-shaped rim, looking exactly like a common type of Period I (Salvatori & Vidale 1997: various specimens in Figs. 82-84; see also the bowl 7043 in grave 413, containing, as stated above, jar 7037, almost identical to our vessel: Piperno & Salvatori 2007: 221).

While building large restricted vessels with coils, potters had to stop after forming the base, that had to begin drying and become harder in order to support the growing weight of the following superimposed parts. For this reason, the end of the last coil of the base, in fracture, often emerges revealing its original shape, and sometimes it is wrongly identified as a rim.

There is little doubt that the pointed end of the lower coil granted a better join, but it is also clear that in this case, too, the potter made the base of a jar by reproducing in detail a standardized bowl-like form he knew very well: "a vessel for building another vessel", to repeat the expression of the title.

In both cases we might be dealing with the same cognitive approach to the forming of a medium-sized containers, in a period in which the evidence of intensive long-distance communication across the Iranian Plateau, whatever the historical meaning of the interaction, is impossible to ignore.

Conclusions

We frequently discuss interaction spheres and other archaeological models of cultural exchange in terms of similarities between artefacts, but as the formal similarities are always ambiguous, they should be counter-checked in terms of their formation processes, i.e. of ancient technology. However, the required evidence to do such is not always revealed in detail in the excavation reports. Ceramic painting technologies, particularly when bichrome or polychrome designs are on record, followed different regional craft traditions, and the author suggests that, when studied in detail, will reveal not only important techniques and cognitive models, but also the direction of technical communication flows or, in contrast ancient frontiers. Some of these techniques may turn out practical adaptations dictated by base materials and general know-how, but other will depend on precise cognitive models; these latter might be more specific than doubtful formal comparisons - a perfect testing bench for more general hypotheses on cultural transmission. For example, E. Mackay (1931), discussing the ceramics of his dig at Jemdet Nasr in southern Iraq, discussed polychromy mainly in terms of brightly coloured slips; and Moorey (1999: 155) mentions regarding the red paint in western contexts of the Jemdet Nasr period, the use of hematite pigments mixed with manganese ochre or with calcite and in rare cases of mercury sulphide or cinnabar (applied after firing), which was a quite different approach from the ingenious solution preliminary identified in the Shahr-i Sokhta vessel.

The author also suggests that the same may be true for the details of ceramic forming processes. Like polichrome painting, these latter are often more complicated and variable than commonly supposed, firstly because the joining of superimposed coils and the assembling of the different sections of medium-large sized vessels has a style of its own. Providing (whenever possible) archaeological drawings of ancient vessels which include the details of interfaces and discontinuities among the assembled parts, will be equally crucial for the archaeological interpretation of ancient cultural interaction spheres. This analytical practice was introduced many years ago in the archaeology of prehistoric South Asia

by the foundational work of P. Vandiver (1987, 1988, 1995; see also Dipilato & Laneri 1998 and Fazeli Nashali et al. 2010) but so far it has not been exploited in its full scientific potential. However, all the information is potentially there.

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