

RADIOCARBON CHRONOLOGY OF LATER STONE AGE POTTERY DECORATIONS IN THE UPPER SEACOW VALLEY*

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ABSTRACT

Fibre temper is a prominent trait of ceramics traditionally ascribed to the Bushmen of central South Africa. Fibres from thirty decorated vessels found on surface sites in the upper Seacow River valley (Richmond and Middelburg districts) were extracted and radiocarbon dated. Rocker stamp designs, although present here by ~950 BP, were more frequently used between ~600-400 BP. Thereafter, other stamp-impressed motifs were preferred. One of these appears to be restricted to a very brief period (~300-200 BP) just before the European arrival, after which rocker stamping reappeared and became the only motif used in the historical period. Calibration of these dates reveal ambiguous gaps in the record. The previously proposed four phase sequence of decorations, based on stratified sherds from shallow rock shelter fills, is extensively revised and reduced to three phases.

INTRODUCTION

Several rock shelters used frequently by Bushman hunter-gatherers, and possibly by intrusive Khoi herders, are under investigation in the upper Seacow River valley, Richmond and Middelburg districts, Northern and Eastern Cape (Figs 1 & 3). One goal of these excavations was to establish a stratified sequence of ceramic decorations. This was to be used as a basis for seriating several hundred sherd samples collected from surface sites in the same area (Sampson 1988; Hart 1989). However, each shelter yielded very few diagnostic sherds and some sequences appeared to be locally churned. Analysis designed to isolate the supposed disturbed areas further reduced the numbers of stratified sherds. Only six radiocarbon dates from associated charcoal were used to propose a ceramic sequence for the upper valley, based on this limited sherd sample (Sampson *et al.* 1989).

The stratified evidence suggested that Khoi vessels and undecorated fibre tempered ware appeared together at ~1100 BP. Khoi ware was less common, increased in

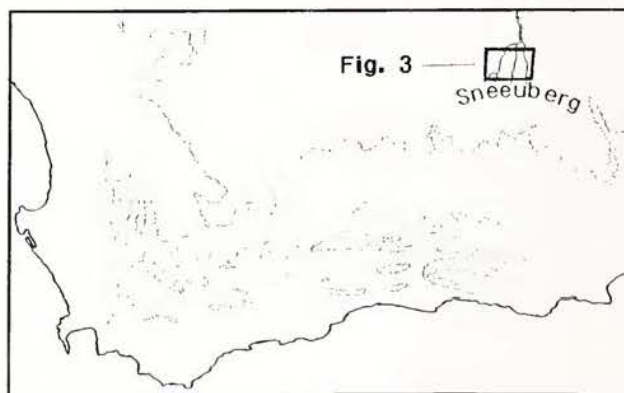


Fig. 1. The Seacow River drains the north slope of the Sneeu Berg Mountains, a major range of the Great Escarpment.

frequency, then disappeared at ~500-400 BP. Fibre tempered wares continued, now bearing stamp impressed decorations on the outer surface. Four phases of

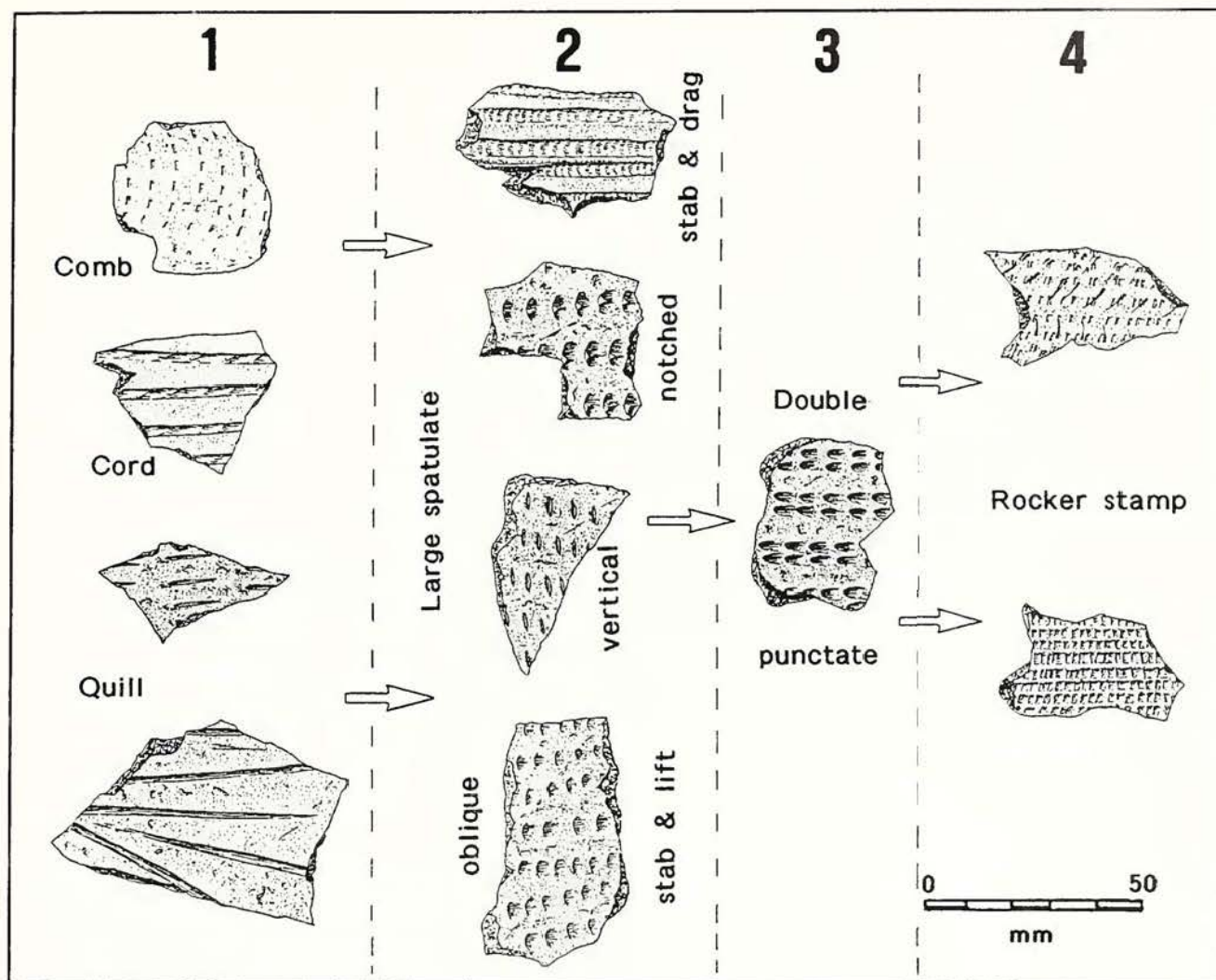


Fig. 2. Provisional four-phase sequence of stamp-impressed motifs on fibre tempered pottery, based on excavated sequences (Sampson *et al.* 1989).

decoration were proposed (Fig. 2). Non-rocker motifs appeared first, the earliest being comb stamp, cord impressed and quill (Sampson 1988). In the next phase, variants of large spatulate (oblique, vertical, and notched stab & lift; also stab & drag) replaced all preceding motifs except quill. In the third phase, double punctate motifs took over. Finally, highly variable rocker-stamped motifs replaced the rest.

The associated charcoal dates indicated that the four phases of decoration fell between ~ 500 BP and ~ 150 BP. The three non-rocker phases fell between ~ 500 BP and ~ 300 BP and two other non-rocker motifs (ovoid stab & small spatulate stab & drag) fitted somewhere within this range. Charcoal samples from near rocker stamp sherds suggested that the last phase fell between ~ 300 BP and at least ~ 170 BP. Repeated co-occurrence of rocker stamp sherds with European artifacts suggested a later (~ 100 BP) termination for the last phase (Sampson *et al.* 1989).

Given the small sample size and the doubts surrounding the stratigraphic integrity of the shelter fills, a fully independent test of the sequence was sought. The

best available option was direct dating of large decorated sherds from surface sites (Beaumont & Vogel 1984; Bollong *et al.* 1993). Here, we test the later (decorated) part of the ceramic sequence by direct dating of fibre temper in selected sherds.

SAMPLING AND METHODS

The collection of decorated fibre-tempered sherds from several hundred upper valley sites (Sampson 1988) was searched for sets of large or matching sherds decorated with the various marker motifs shown in Figure 2. The goal was to acquire five vessels of each motif type for dating. As fibre makes up only 0.5-2.0% of the sherd by weight, whole sherds weighing > 200 g were sought first. If too little fibre was obtained from a single sherd, then sets of sherds from the same vessel (with matching decorations) were selected. The fibre is thought to be mainly carbonized grass which has absorbed variable amounts of fat and blood (Bollong *et al.* 1993).

Five or more dated vessels were obtained for only three of the main motifs: rocker stamp, double punctate,

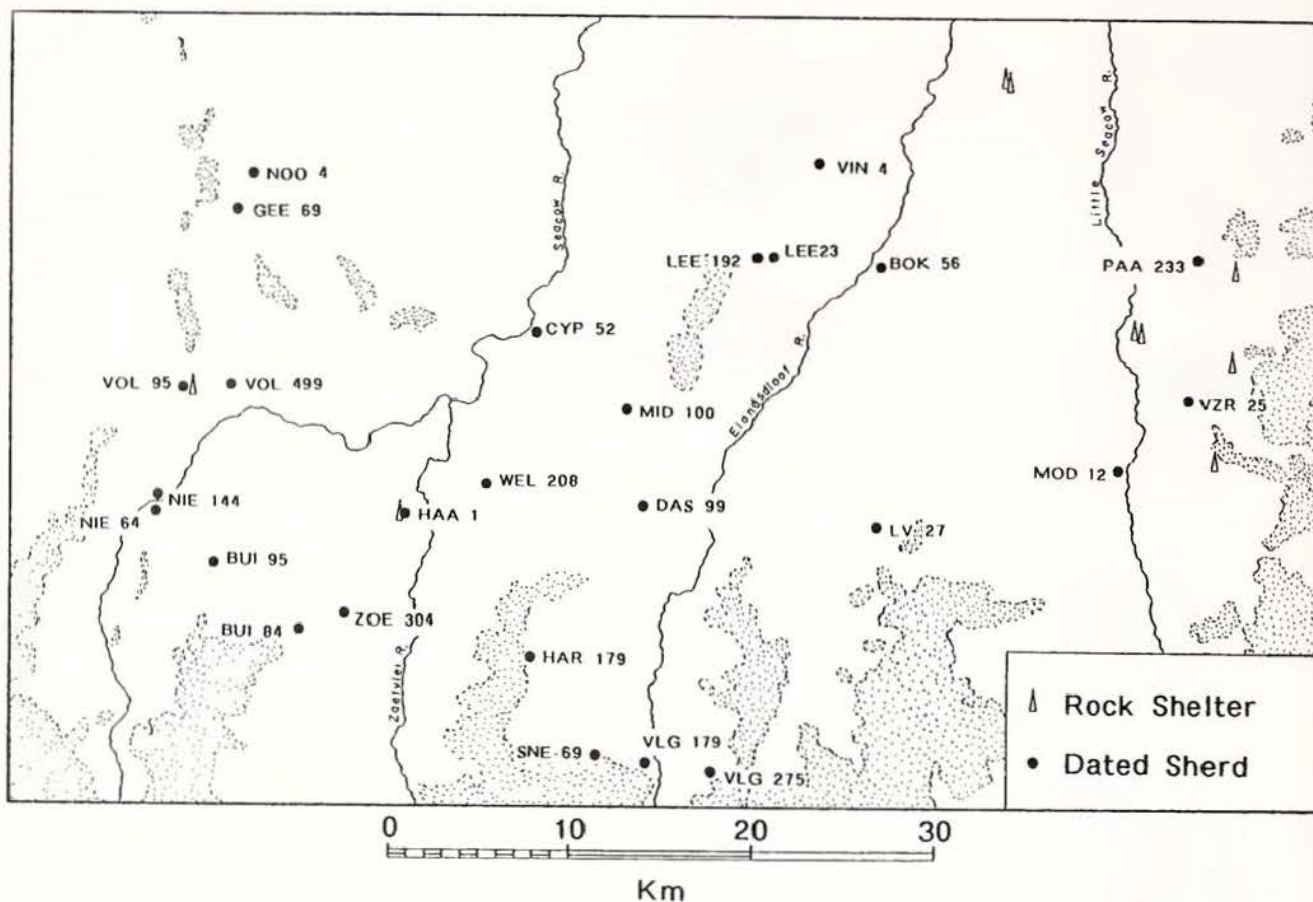


Fig. 3. Locations of nine excavated rock shelters and of the dated sherds from surface sites (Table 1) in the upper Seacow valley.

and large spatulate oblique stab & lift. None of the latter's other variants (vertical, notched, stab & drag) were dated. Of the three readily available motifs, vessels from widely separated surface sites in the upper valley were chosen, and vessels from contiguous sites were avoided wherever possible. Except for the southeast headwaters valley of the Little Seacow tributary, which yielded very few ceramics of any kind, the dated sample was evenly distributed across the whole study area (Fig. 3).

Comb stamp sherds contained so little fibre that none qualified, but some have been thermoluminescence (T/L) dated (Sampson *et al.* in prep.). None of the rare, small cord impressed sherds could be dated. Of the rare quill and ovoid stab & lift motifs, only one set of sherds each could be found with sufficient material for dating. Three vessels with pointed spatulate motifs were also selected because of their occurrence on rare lugged vessels, a feature more commonly associated with Khoi vessels (Hart 1989).

Except for three pilot vessels processed in the early 1980s, plasticene imprints of the impressions were made from each specimen before it was broken up. Imprints were mounted on card with epoxy, labelled and photographed.

Fibres were extracted by hand after crushing the

sherd, and the powdered residue was separated by flotation and filtering. Combustion and measurements were made using conventional gas-counting methods. None of the difficulties experienced elsewhere with dates from organics in sherds (De Atley 1980) were encountered in this programme (Bollong *et al.* 1993).

RESULTS

The uncalibrated dates are listed in chronological sequence in the last column of Table 1, and the mean values are plotted with one-sigma error bars in Figure 4. Besides a solitary outlier at 940 ± 100 BP, the dates range between 600 BP and 140 BP. Sigmas range between 100 and 30 years, with the larger values where carbon yield was particularly poor. The lugged sherd, being exceptionally voluminous, yielded more carbon and consequently has a narrower error bar.

The only prominent gap between the ends of one-sigma error bars in Figure 4 occurs between the earliest two dates. Between 600-140 BP there is no comparable hiatus.

Dates were converted using the calibration programme Radioc. 35, p.37 which gives the calendar date(s) at which the mean radiocarbon value intercepts the calibration curve. Also given is the one-sigma range

Table 1. Radiocarbon dates from fibre temper in stamp vessels.

Decoration Motif	Surface Site	Field Label	Lab. No.	Uncalibrated Date (yrs. BP)
Rocker Stamp	Van Zyls Rus 25	VZR 25	Pta-5944	140 ± 40
Rocker Stamp	Bokfontein 56	BOK 56	Pta-6166	150 ± 30
Rocker Stamp	Dassiefontein 99	DAS 99	Pta-6203	200 ± 35
Large Spatulate Stab and Lift	Laeufontein 23	LEE 23	Pta-6022	200 ± 40
Double Punctate	Leopards Vlei 27	LV 27	Pta-5362	200 ± 45
Rocker Stamp	Notgedacht 4	NOO 4	Pta-6160	210 ± 50
Pointed Spatula Stab and Lift	Buitensfontein 95	BUI 95	Pta-6204	240 ± 40
Large Spatulate Stab and Lift	Volstruisfontein 95	VOL 95	Pta-6033	240 ± 50
Double Punctate	Hartebeesfontein	HAR 179	Pta-5506	240 ± 60
Large Spatulate Stab and Lift	Haaskraal Shelter	HAA 1	Pta-6029	250 ± 70
Large Spatulate Stab and Lift	Leeufontein 192	LEE 192	Pta-6023	260 ± 60
Large Spatulate Stab and Lift	Vergelegen 179	VLG 179	Pta-6031	270 ± 100
Rocker Stamp	Niekerksfontein	NIE 144	Pta-6206	270 ± 45
Double Punctate	Vinkelfontein 4	VIN 4	Pta-2843	320 ± 40
Double Punctate	Cypherwater 52	CYP 52	Pta-5502	330 ± 60
Pointed Spatula Stab and Drag	Zoetvlei 304	ZOE 304	Pta-6207	350 ± 30
Pointed Spatula Stab and Lift	Welegelegen 208	WEL 208	Pta-6201	350 ± 45
Double Punctate	Niekerksfontein 64	NIE 64	Pta-5364	350 ± 50
Rocker Stamp	Geelbekfontein 69	GEE 69	Pta-5943	360 ± 50
Ovoid Stab and Lift	Buitensfontein 84	BUI 84	Pta-5149	370 ± 50
Rocker Stamp	Volstruisfontein 499	VOL 499	Pta-6161	400 ± 80
Double Punctate	Modderfontein 12	MOD 12	Pta-5380	410 ± 50
Quill - Vertical Gash	Paardevlei 233	PAA 233	Pta-5148	410 ± 70
Rocker Stamp	Middle Mount 100	MID 100	Pta-2844	440 ± 45
Rocker Stamp	Vergelegen	VLG 275	Pta-6157	450 ± 50
Rocker Stamp	Buitensfontein 95	BUI 95	Pta-6156	480 ± 60
Rocker Stamp	Sneekuil 69	SNE 69	Pta-5940	510 ± 50
Rocker Stamp	Middle Mount 100	MID 100	Pta-2846	580 ± 50
Rocker Stamp	Middle Mount 100	MID 100	Pta-5942	600 ± 40
Rocker Stamp	Volstruisfontein 95	VOL 95	Pta-5941	940 ± 100

around these intercepts. Ranges for near-intercepts are also shown (Table 2). These values are plotted in Figure 5 for all but the oldest outlier. The sequence begins soon after AD 1400 and runs to AD 1500 before a wiggle in the calibration curve generates three probable dates for a group of three vessels from either the early AD 1500s or the early AD 1600s. The period AD 1550-1600 yielded very few probable dates. The overall shortage of dates from this century appears to be real and not a by-product of calibration ambiguities. This contrasts sharply with the following century which produced nine firm intercepts with the calibration curve.

The next main wiggle in the calibration curve creates three age options for a string of four vessels dating either to the late AD 1600s or to the late 1700s, *i.e.* soon after the arrival of the first European settlers in the valley. There follows a string of four more vessels dated to either the late AD 1600s, the AD mid-1700s or the very early AD 1800s. The record for the 18th century AD thus becomes entirely broken up by the calibration process.

The two youngest dates are free of ambiguities, and date to the mid- and late-19th century AD, with earlier near-intercepts.

Rocker stamp vessels are clearly the earliest in the sequence. Although they make a rare appearance in the mid-12th century AD (Table 2), they really dominate in the AD 1400s (Fig. 6). In the first half of the AD 1500s two rocker patterns are caught in the first calibration wiggle and have double dating options. Given the preceding dominance of rocker, the earlier dates seem

Table 2. Calibration intercepts for radiocarbon dated fibre tempers. Intercepts in bold; one-sigma range thus: -1899; near-intercept range thus: 1689-1733.

Decoration Motif	Uncalibrated Date (yrs. BP)	Calibrated Dates (AD)
Rocker Stamp	140 ± 40	1689-1733, 1813-1844-1902
Rocker Stamp	150 ± 30	1689-1733, 1813- 1826 , 1834, 1878-1893
Rocker Stamp	200 ± 35	1671-1683-1693; 1727-1745-1780; 1794-1807-1816
Large Spatulate S & L	200 ± 40	1671-1683-1698; 1721-1745-1780; 1794-1807-1820, 1852-1867
Double Punctate	200 ± 45	1669-1683-1698; 1721-1745, 1807-1820; 1852-1867
Rocker Stamp	210 ± 50	1666-1680-1698; 1721-1755, 1804-1820, 1852-1867
Pointed Spatula S & L	240 ± 40	1660-1671-1683; 1745-1780, 1794-1807
Large Spatulate S & L	240 ± 50	1657-1671-1686; 1738-1780, 1794-1810
Double Punctate	240 ± 60	1654-1671-1689; 1733-1780, 1794-1813
Large Spatulate S & L	250 ± 70	1648-1689-1689; 1733-1813
Large Spatulate S & L	260 ± 60	1648-1686-1683; 1745-1807
Large Spatulate S & L	270 ± 100	1525-1560; 1632-1883-1693; 1727-1816
Rocker Stamp	270 ± 45	1648-1663-1674; 1775-1798
Double Punctate	320 ± 40	1532-1547; 1635-1648-1660
Double Punctate	330 ± 60	1514-1586; 1624-1645-1663
Pointed Spatula S & D	350 ± 30	1519-1572; 1628-1639-1648
Pointed Spatula S & L	350 ± 45	1507-1596; 1618-1639-1651
Double Punctate	350 ± 50	1507-1596; 1618-1639-1654
Rocker Stamp	360 ± 50	1497-1532, 1547, 1835-1651
Ovoid Stab and Lift	370 ± 50	1485-1525, 1560, 1632-1648
Rocker Stamp	400 ± 80	1447-1507, 1506, 1618-1648
Double Punctate	410 ± 50	1456-1497-1532; 1547-1635
Quill - Vertical Gash	410 ± 70	1447-1497-1642
Rocker Stamp	440 ± 45	1444-1468-1507; 1596-1618
Rocker Stamp	450 ± 50	1440-1462-1507; 1596-1618
Rocker Stamp	480 ± 60	1427-1447-1485
Rocker Stamp	510 ± 50	1421-1437-1456
Rocker Stamp	580 ± 50	1399-1414-1430
Rocker Stamp	600 ± 40	1396-1408-1421
Rocker Stamp	940 ± 100	1022-1168-1252

more likely. At this point the record is truncated. After the hiatus, rocker stamping is replaced by other designs. A solitary rocker sample gives an AD mid-1600s intercept, but there is also a near-intercept at the end of the AD 1700s, which fits better with the later rocker stamp group (Fig. 6), to which this vessel might belong.

Thereafter, two more rocker patterns are caught up in the calibration wiggle, yielding three optional calendric dates. Given that rocker dominated the end of the sequence, as the excavations more amply demonstrate, common sense dictates that the younger dates should be preferred. The final two rocker samples unambiguously confirm that the excavation results: pottery continued to be made for several decades after European contact.

Large spatulate oblique stab & lift has an extremely narrow range with the first three vessels all dated to the AD 1660s (Fig. 7). The next two dates are caught in the following calibration wiggle and have treble dating options. Given the preceding pattern, it is more likely that the older values are the actual dates.

Double punctate is one of the earliest non-rocker motifs, making a brief appearance at AD 1500, but it does not appear again until the AD mid-1600s at which time it is common (Fig. 8). Unfortunately the next two double punctate dates get split by the calibration curve. The same reasoning as before favours the earlier choice of dates.

Quill at about AD 1500 is the other earliest recorded

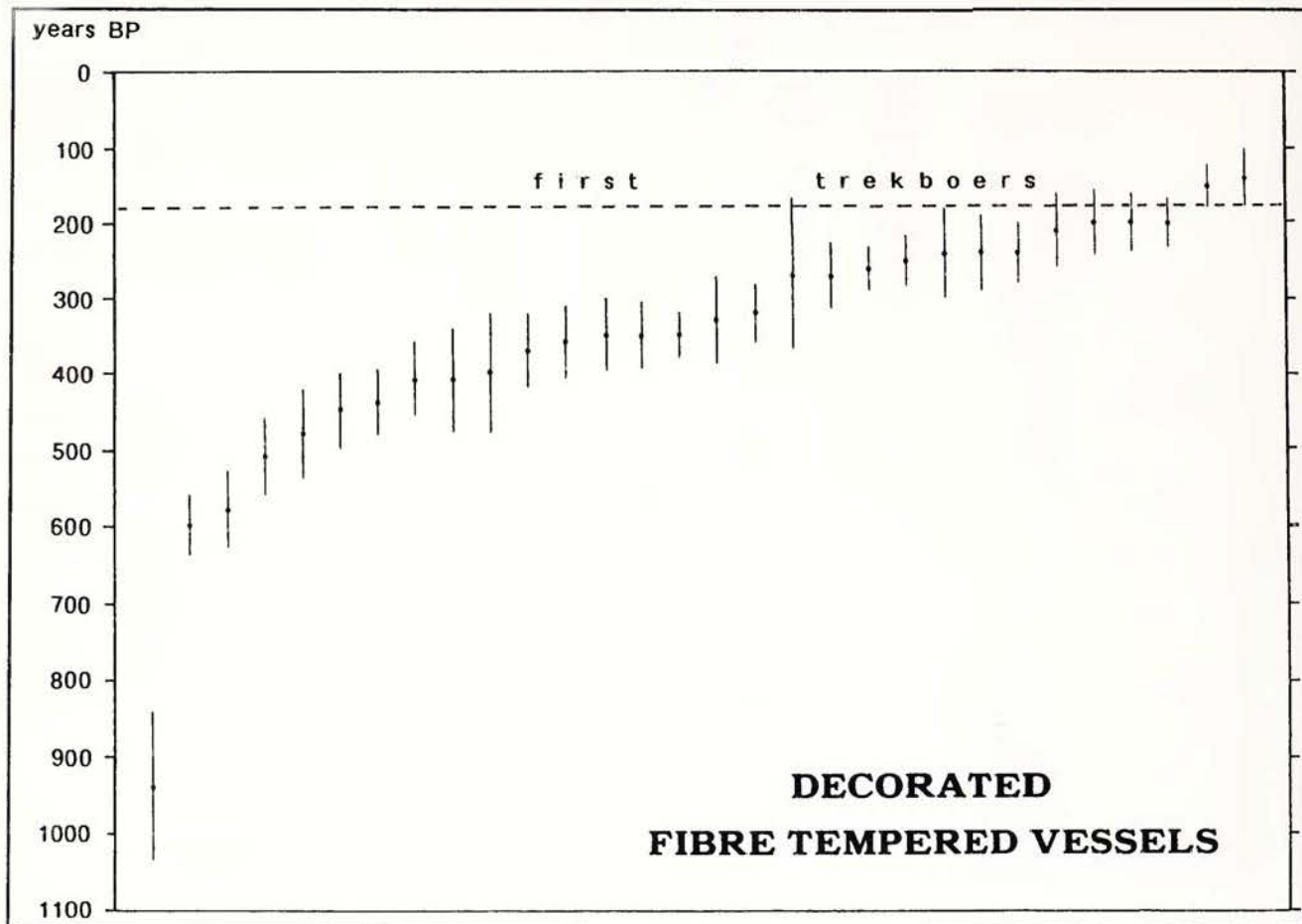


Fig. 4. Uncalibrated radiocarbon ages, with one sigma error bars, of fibre temper in 30 vessels from the upper Seacow valley.

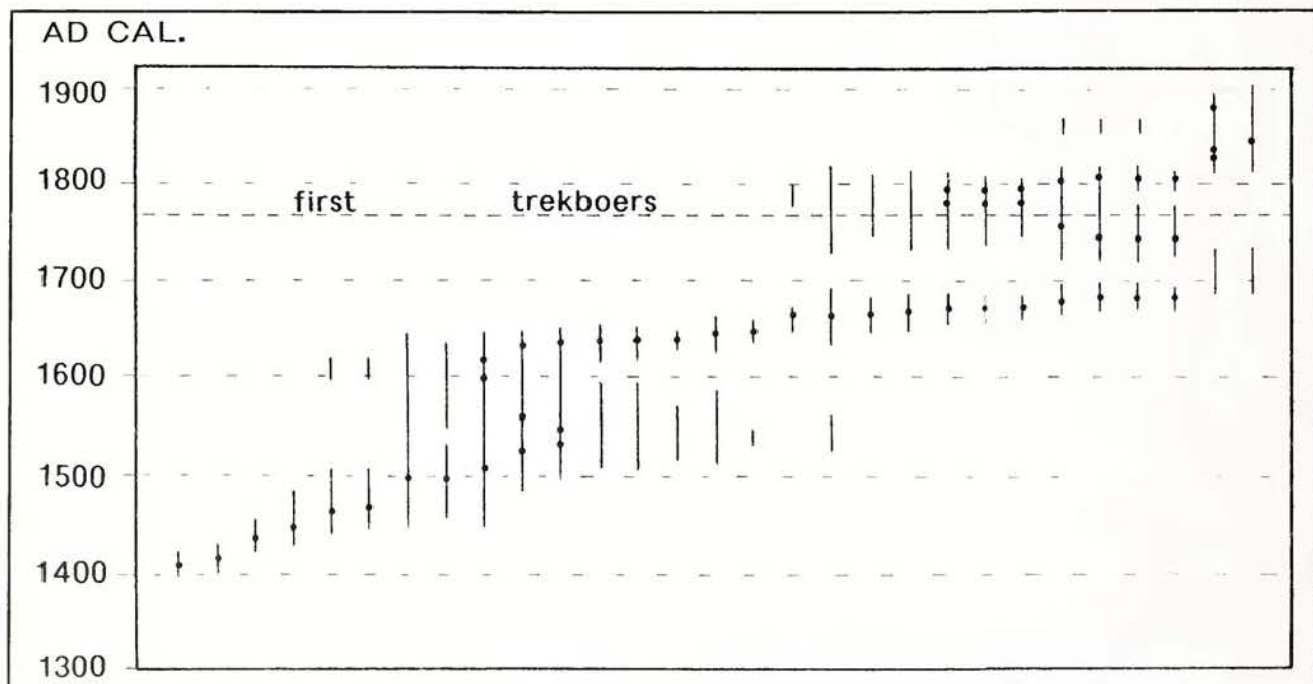


Fig. 5. Calibrated calendric ages, with one sigma error bars, of fibre temper in 29 vessels from the upper Seacow valley.

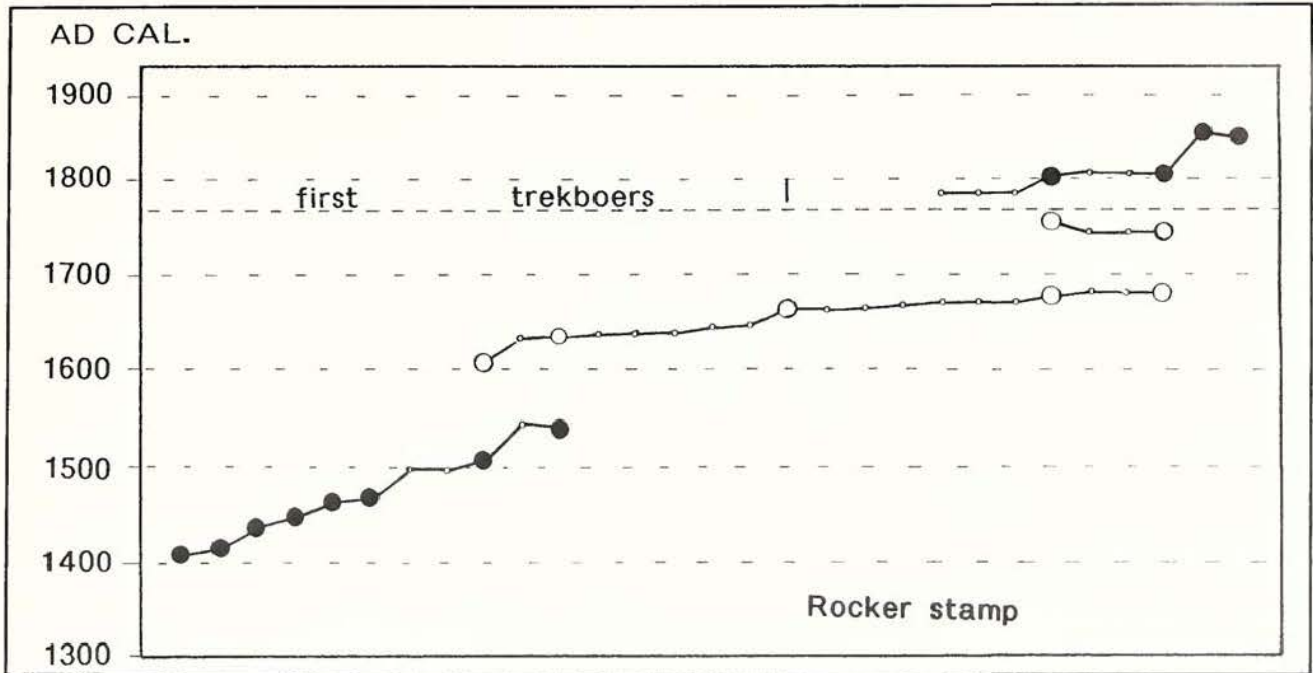


Fig. 6. Slope of the calibrated ages given in Fig. 5, with some close intercepts averaged. Most probable ages of rocker stamp sherds are shown as black circles.

non-rocker motif, with the first double punctate (Fig. 9).

Ovoid stab & lift has a split date and could belong to the end of the first rocker phase or the earlier end of the non-rocker sequence (Fig. 9). With only one date, it is impossible to determine which is to be preferred.

Pointed spatula stab & drag (on a lugged vessel) and pointed stab & lift are both firmly dated to about AD 1640, hinting that these look-alike patterns could be the work of one potter or of related potters. Common sense dictates that the younger stab & lift pattern, with its dates split by the following calibration wiggle, is more likely to group with the previous two (Fig. 9).

DISCUSSION

Early Rocker Stamp and the Khoi Tradition

In the provisional sequence based on excavations, Khoi ware is the first to appear in the upper valley, along with undecorated fibre tempered vessels. Khoi ware is generally associated with Later Stone Age herders. An early rocker phase was not recognised in the excavated sequence (Fig. 2). Although the earliest dated rocker stamp sherd (AD 1168 cal.) is older than any directly (T/L) dated Khoi ware (Sampson *et al.* in prep.), there are charcoal dates from near buried Khoi sherds that are earlier. Also, most of the dated Khoi sherds are older than the main sample of early rocker dates (AD 1400-1550 cal.), although there is some overlap.

Although very rare rocker stamp sherds were recovered at depth alongside Khoi sherds in a few shelters, these lone rocker sherds were assumed to be churned downward from the uppermost levels (Sampson *et al.* 1989). In fact, the context of the deeper rocker sherds was sound. The error was compounded in Lame

Sheep shelter (Fig. 10) where it was assumed that very young rocker sherds were churned into the top of the Khoi horizon. In fact, they represent the early rocker phase and are in perfect stratigraphic order. The top part of the general sequence is missing altogether from this deposit. With the stratigraphic integrity of the Lame Sheep shelter now restored, the positions of the earliest Khoi sherds, lower than the charcoal date of 1350 ± 50 BP (uncal.) (Pta-6302), need not be called into doubt. The calibrated intercept for this date is at AD 696 with the one-sigma range between AD 670-779. These may be the earliest recorded Khoi in the upper valley. Likewise rare sheep remains in these levels (Fig. 10) may also be the oldest currently known livestock in the upper valley (Voigt *et al.* in press). Direct dating of the sheep remains is planned.

Early Rocker Stamp and Comb Stamp

The early rocker phase (AD 1400-1550 cal.) overlaps with most T/L dates on comb stamp ware (Sampson *et al.* in prep.). This suggests that the same stylus (probably a notched shell edge) could have been used to make both motifs. If the shell is moved in a stab & lift motion, rather than a rocking motion, a comb stamp pattern is the result. In practice, the two motions were hardly ever combined. Of the several hundred rocker vessels, represented by many thousands of sherds in the surface collections, only eight sherds have a combined rock and lift pattern. Extreme care is needed to distinguish between rocker and comb if the imprints are closely spaced. For example, a sherd from MID 100, destroyed in an early pilot study, was misidentified (from a colour slide) as comb stamped (Bollong *et al.* 1993: table 1). Later another MID 100 sherd, identified as rocker from

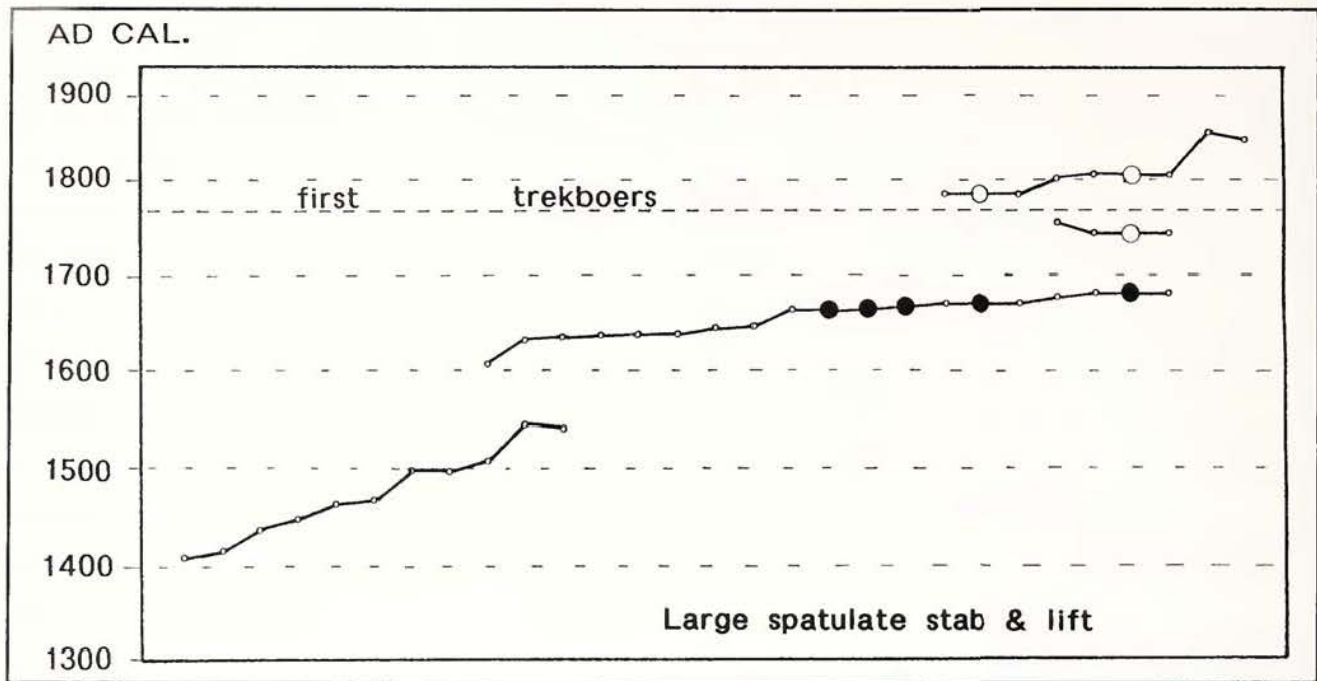


Fig. 7. Slope of the calibrated ages given in Figure 5, showing the most probable positions (black circles) of large spatulate oblique stab & lift sherds in the sequence.

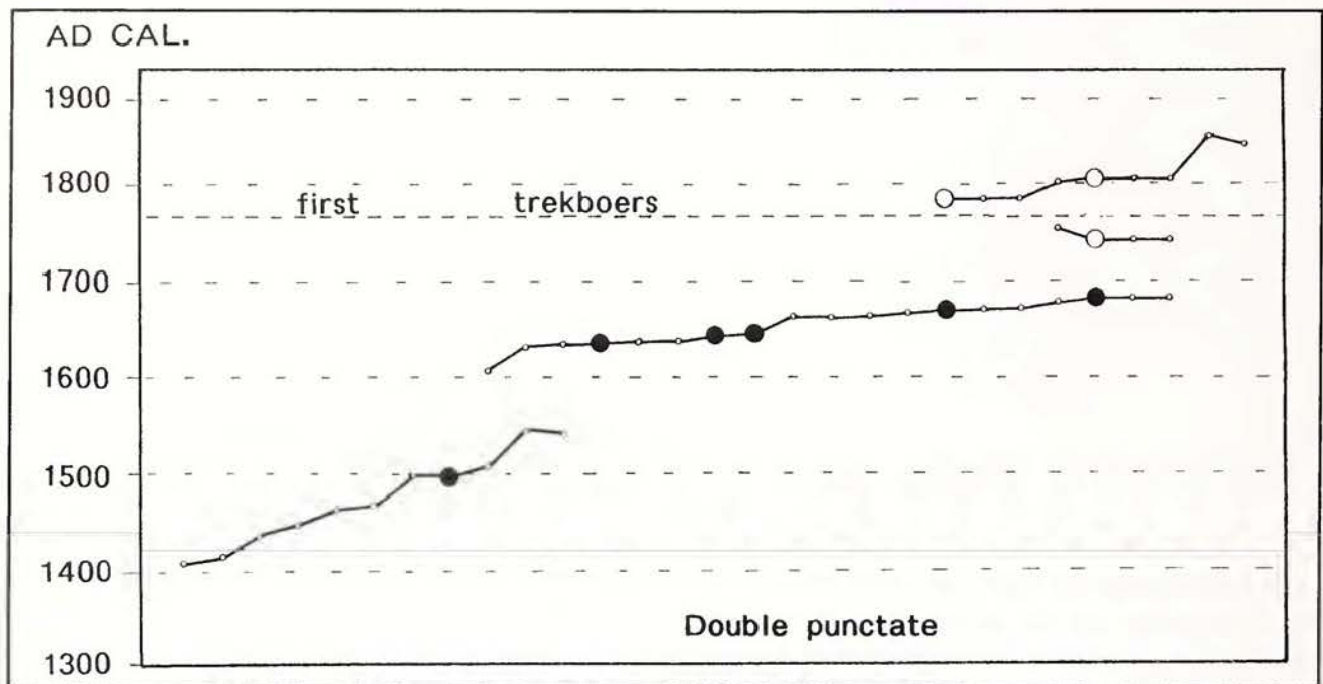


Fig. 8. Slope of the calibrated ages given in Figure 5, showing the most probable positions (black circles) of double punctate sherds in the sequence.

its plasticine imprint, yielded a near-identical date (Table 1). When the slide was compared with the imprint, it became clear that the pilot sherd came from the same rocker stamped vessel.

Although comb stamp sherds were restricted to the west side of the upper valley (Sampson 1988; Ridings & Sampson 1990), dated early rocker sherds have a wider distribution (Fig. 11). It may be that early rocker patterns

occur in areas where comb stamping was conspicuously absent. Until early rocker motifs can be consistently distinguished from later ones, this proposition cannot be tested.

The 16th Century AD

The dearth of dates between AD 1550-1600 (cal.) is exacerbated by the scattering effects of the calibration

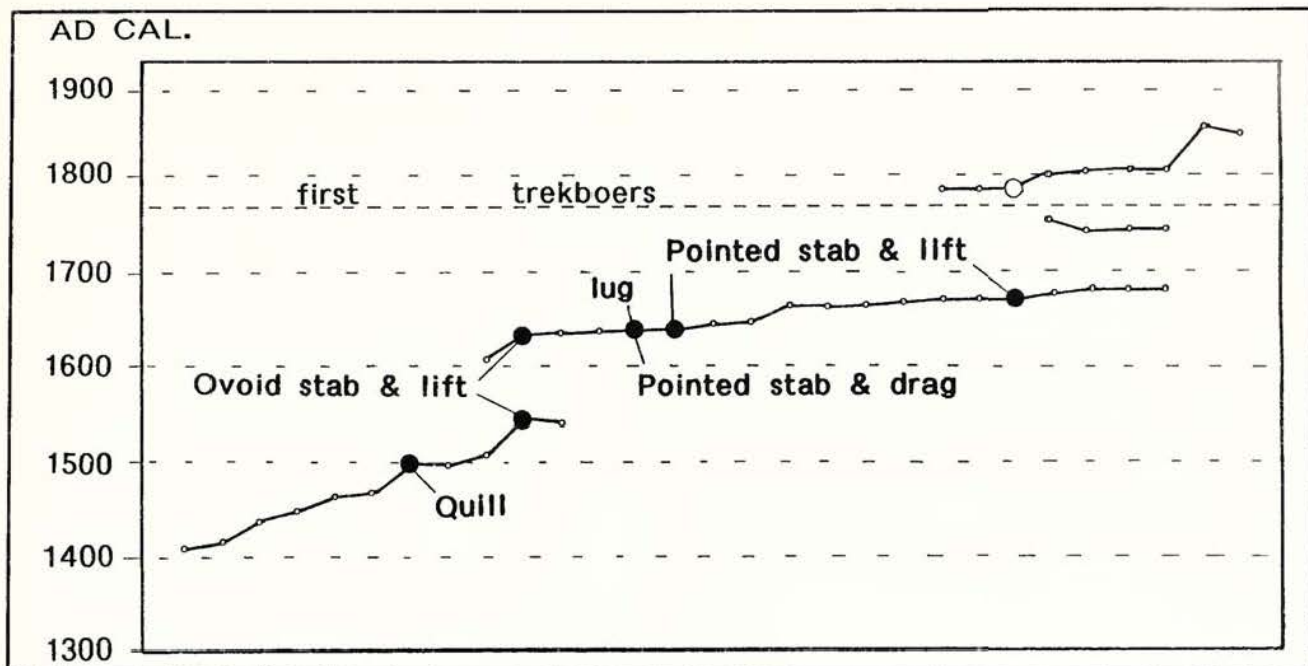


Fig. 9. Slope of the calibrated ages given in Figure 5, showing the most probable positions (black circles) of quill, ovoid stab & lift, and pointed spatula sherds in the sequence.

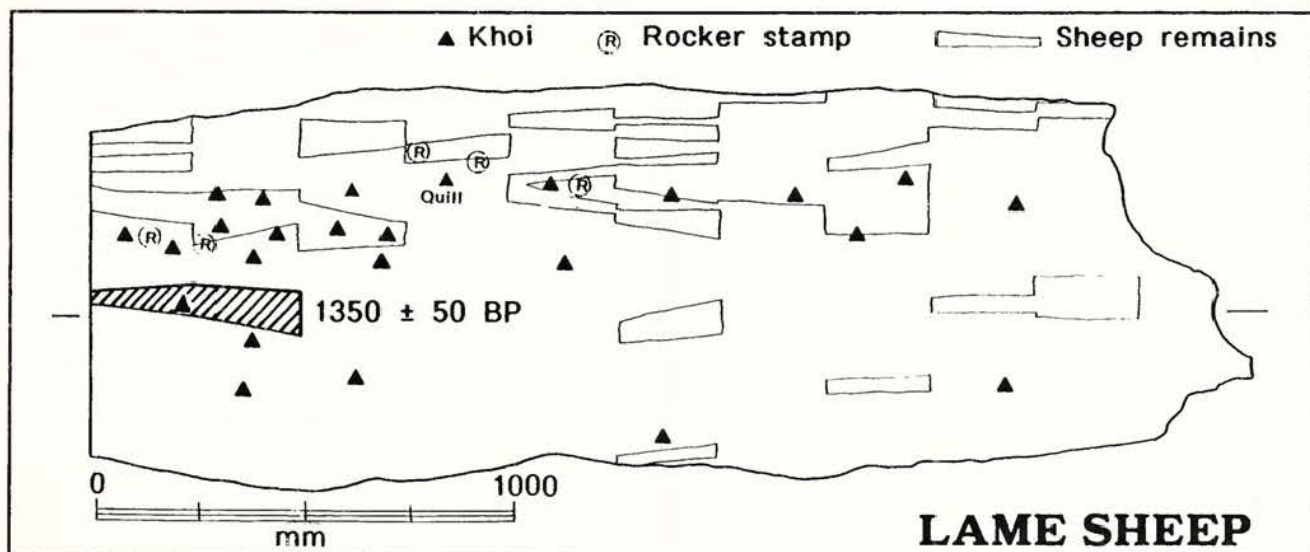


Fig. 10. Composite section of Lame Sheep shelter, with projected positions of the early rocker stamp sherds in relation to Khoi sherds, livestock remains and a charcoal date.

wiggle covering this century. If the gap is real and not sampling noise, does it reflect an occupational hiatus in the upper valley? Given that it occurs during the Little Ice Age, a global event which must have intensified the harshness of upper Karoo winters, this possibility requires further investigation. Although no such break is visible in the compressed rock shelter fills, further radiocarbon dating of charcoals from those fills should replicate this gap if it is real.

The 17th Century AD

The concentration of dates between AD 1600-1700 BP

(Fig. 5) has been exaggerated by the calibration wiggles which overlap both the early and later parts of the century. However, there are nine dates spanning the central portion of the century which are not split by multiple intersections with the calibration curve. This contrasts sharply with the sparse record of the preceding century and raises the question whether pottery output was on the increase because population was also increasing.

Similar increases in radiocarbon dates from the northern Cape region in general may be noted (Beaumont & Vogel 1984). This period may also be marked by

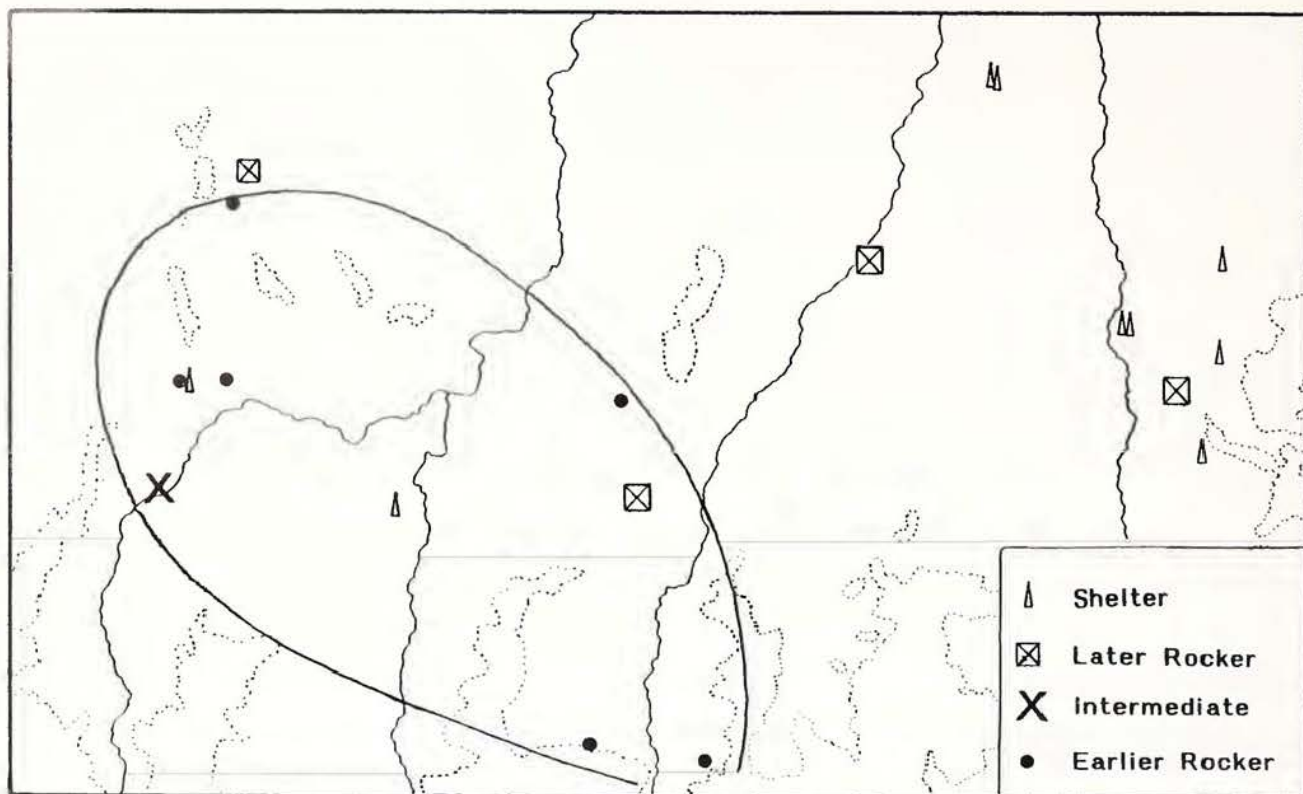


Fig. 11. Map of the distributions of earlier and later rocker stamp sherds in relation to excavated rock shelters.

increased grass pollen in hyrax dung (Scott & Bousman 1990) and by increased bone densities in the shelter fills (Sampson & Plug 1993). The increases in rainfall and carrying capacity which these data suggest could be related to increased pottery output. Split dates notwithstanding, the results show clearly that the 17th century AD was dominated by non-rocker motifs.

Double Punctate Chronology

The provisional sequence (Fig. 2) designated the double punctate motif as the exclusive marker of the third phase immediately predating European contact. This is clearly not so. Four of the six dated sherds predate the trekboer arrival by at least 150 years, one by 270 years (Fig. 8). These results do not fit expectations. The two youngest sherds date to either a century before the Europeans or a few years after their arrival. The latter dates would fit expectations. Also, there may have been changes in double punctate stylus tip and in execution through time. The oldest was executed with a rounded tip with a small notch, whereas the AD 17th Century specimens appear to be done with pairs of hyrax incisors at a very oblique entry angle. The youngest two are distinguished by a steep entry angle into the clay surface.

Large Spatulate Chronology

In the provisional sequence (Fig. 2) the large spatulate designs were restricted to the second phase, predating the double punctate motif. Direct dating refutes this position. Three large spatulate oblique stab & lift motifs are younger than double punctate and two even overlap with

the youngest double punctates (Figs 7 & 8).

A composite section through Haaskraal shelter (Fig. 12) shows all large spatulate stab & lift sherds in a narrow band just below the European livestock and artifacts (Plug *et al.* 1994; Voigt *et al.* in press). They also occur below numerous refitted rocker sherds from a single bowl (Hart 1989; Bollong 1994) associated with abundant European livestock. The large spatulate stab & lift motif may be peculiar to this brief livestock-free horizon. Although this same horizon can be detected at other shelters, they have too few large spatulate sherds for the relationship to be tested elsewhere.

The Early 18th Century AD

The paucity of dates between AD 1700-1750 (cal.) is again exaggerated by the scattering effects of another calibration wiggle. Again, calibration effects alone may not be responsible for the gap, and again the question arises whether it reflects sampling noise or a decline in pottery output during this half century. Attempts to date the widespread drop in bone midden density seen in many rock shelter fills at this time (~200 BP uncal.) become entangled in the same ambiguities and it remains impossible to ascertain whether this was a time of lowered carrying capacity.

The Later Rocker Stamp Phase

Direct dating supports the last phase of the provisional sequence (Fig. 2) in that the youngest two sherds are both rocker stamped. Whether rocker reappeared in the upper valley shortly before the trekboer

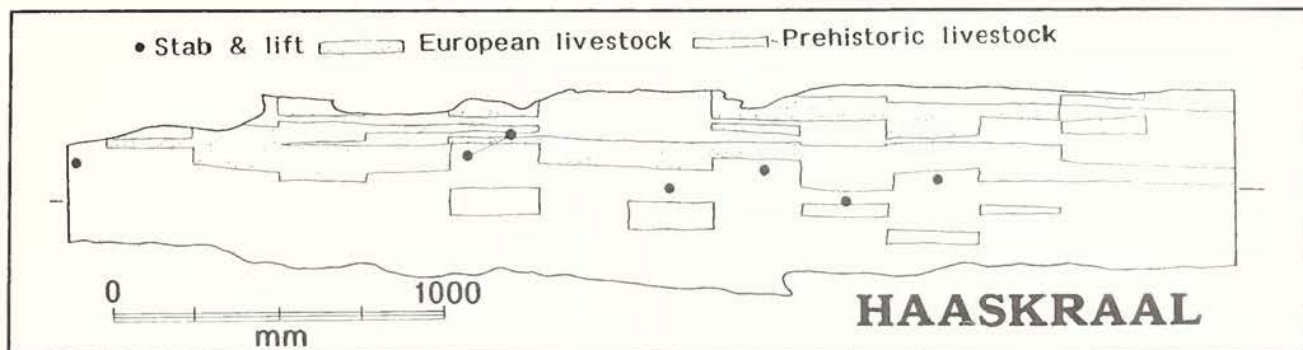


Fig. 12. Composite section of Haaskraal shelter, with projected positions of large spatulate oblique stab & lift sherds in relation to livestock remains.

arrival (AD 1770), or shortly before European goods appear in rock shelter fills (AD 1830) is not resolved because of the calibration effects. The youngest two dates verify that Bushman ceramic production continued inside the Colonial frontier well into the nineteenth century. Rocker sherds were recovered with late AD 19th century artefacts in most shelters. This final date verifies this association and demonstrates that the superficial deposits are not substantially churned, as was originally suspected.

Some non-rocker sherds may date to after the European arrival, but none post-dates AD 1830 when the Europe presence is first registered in the rock shelter fills.

Dated, later rocker motifs came mainly from the north end of the study area (Fig. 11), where most excavated rock shelters are also located. This may explain why late rocker sherds were so much more abundant in the shelters. However, later rocker motifs also abounded in the upper levels of Haaskraal and Volstruisfontein shelters on the east side of the upper valley. By this time, Dutch trekboers had established farms in the southern headwaters valleys, so it is unlikely that Bushman pottery was common to the south. Until criteria are established for distinguishing earlier from later rocker stamp patterns, this proposition cannot be tested.

CONCLUSIONS

The provisional four-phase sequence of impressed decorations on fibre tempered ceramics, derived from small samples of stratified sherds in shallow rock shelter fills, must be extensively revised. Only the fourth phase is fully supported by direct radiocarbon dating of decorated sherds.

Rocker stamping must be added to the repertoire of patterns in the first phase. Besides an early outlier at AD 1168 (cal.), rocker patterns were used throughout the AD 15th century, and more doubtfully to the first half of the AD 16th century. They may have lingered on until early the AD 17th century, but calibration ambiguities rob us of certainty. T/L dates on comb stamp vessels yield an identical dating range. As the same stylus edge can be used to make both comb and rocker impressions, they

should probably be regarded as decorative variants of the same ware.

In the excavations, rare early rocker sherds were misidentified as intrusive from the fourth phase, and were taken to signify churning of the deposits. With the integrity of those deposits now restored, charcoal dates with Khoi ware from well below the early rocker stamp horizon are no longer suspect. This suggests that Khoi and undecorated fibre tempered wares were introduced into Lame Sheep Shelter well before AD 700. Khoi ware also overlaps in time with the earliest rocker and comb stamp, and the possibility that the latter two decorations were made by herders rather than by acculturated hunter-gatherers cannot be dismissed.

Also in the first phase, the rare non-rocker quill decoration is verified as a belated addition to the phase. Not enough of the even scarcer cord impressed decoration could be obtained for dating. However, double punctate must be added as another (late) first phase motif. Calibration difficulties prevent us from determining whether ovoid stab & lift belongs to the end of the first phase or to the beginning of the next. This motif was too rare to be fixed in the excavated sequence.

Although a gap at the end of the first phase, coincidentally(?) at the height of the Little Ice Age between 1550-1600, is suspected, our record lacks precision due to calibration difficulties.

The second and third phases of the provisional sequence were not supported by the dating programme and they must be collapsed into one (middle) phase, dated mainly to the AD 17th century. This is because the dates of double punctate and large spatulate motifs overlap in time and they are not discrete time markers. Not all large spatulate variants could be dated, so the range of vertical stab & lift and stab & drag patterns could not be established. Small spatulate decorations also remain untested. The newly constituted middle phase is characterised by a cluster of non-rocker motifs which now includes the pointed spatulate patterns on lugged vessels. At least one rocker vessel may date to midway through the phase.

There may be another hiatus in the record between AD 1700-1750 coinciding with local evidence for lowered carrying capacity, and the absence of livestock.

However, ambiguities brought about by multiple calibration intercepts again deny us any precision. The same calibration wiggle prevents us from determining whether non-rocker decorations persisted into the early post-European times. We are also left uncertain whether rocker stamping reappeared in force just before the European arrival, or coincided with it.

Only the fourth (now final) phase of the provisional sequence is fully supported by the dating programme since the three youngest sherds in the sample are all rocker stamped. If rocker stamping was formerly associated with herders, this calls into question the ethnicity of the stockless "Bosjesman-Hottentoten" whom the Dutch first encountered here. The final date verifies that Bushman potters were still active in the upper valley in the late AD 19th century, a point suggested by the excavated data, but not yet verified from any known written source.

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