SEHONGHONG, SOUTHERN AFRICA

I. SUMMARY

The site of Sehonghong in southern Africa is important because it is one of the few sites in southern Africa that contains an uninterrupted sequence of Middle Stone Age (MSA) and Late Stone Age (LSA) assemblages. The site is helpful in the dating of the transition between the MSA and the LSA. The evidence from Sehonghong also enriches our understanding both of the nature of the MSA/LSA transition and of our knowledge of the late MSA in southern Africa. MSA materials from the site span a period of 50,000 years (70,000-20,000bp), a period that was marked by increasingly cool temperatures as well as by lowered faunal and botanical diversity. Sehonghong is even more remarkable considering that many sites in southern Africa, including Klasies River Mouth Cave, were abandoned c. 70,000bp as the climate worsened. It is noteworthy that the MSA at Sehonghong covers the very period during which occupations in southern Africa become scarcer. The rock-shelter at Sehonghong would not have been an ideal environment for hominids, but the deteriorating climate in the years leading up to the Last Glacial Maximum (LGM) may have encouraged hominids to become more efficient and more productive in their toolmaking, tool use, and resource procurement behaviors (i.e. obtaining meat, plant foods, and raw materials for toolmaking). The site was re-used over many thousands of years, although it was never occupied on a permanent basis. Sehonghong may have been exploited seasonally as environmental conditions worsened, and the site was possibly part of a network of sites visited by groups of hominids that wished to supplement their resource supply.

II. EXCAVATION

Excavations were carried out at the site of Sehonghong from July 21 to August 31, 1971 as part of three seasons of fieldwork in the Lesotho area between 1969-1975. The site was excavated by a team led by P.L. Carter. Instead of investigating each individual stratigraphic layer, a portion of the cave’s interior was excavated using a sequence of spits. A total of eight square meters of space was excavated, which is just a fraction of the area of the whole rock-shelter. The excavation was completed using a series of 10cm thick spits within a one square meter grid. The natural stratigraphy of the cave was difficult to establish as each layer is not of a uniform depth, and the layers do not follow a level plane. Each spit contains a few different layers or at least parts of layers, and this makes the discernment of the natural stratigraphic layers very difficult. The excavators analyzed the
spit contents and made an attempt to reconstruct the divisions of the natural layers (Carter 38-44). The use of spits limits the ways in which the data can be synthesized and interpreted, especially because large portions of the cave remain unexcavated. Because the artifacts and bones associated with one complete horizontal occupation zone cannot be analyzed together, it is relatively difficult to discern the presence of activity sites associated with behaviors such as tool manufacture/use, meat butchering/processing/eating, home base living, etc.

III. LOCATION

Sehonghong is located in the eastern part of modern-day Lesotho, which is situated in southern Africa. The site is located in a rock-shelter that is 86m long by 19m deep. Sehonghong is approximately 1800m above sea level, and it is part of a sandstone outcrop about 20 m. above a tributary of the Orange River. The site straddles two vegetation zones—one is characterized by nutritionally poor alpine grasses and the other is distinguished by sweet grasses that are edible on a year-round basis. There are marked seasonal and daily temperature oscillations. Rain falls in the summer, while snow typically falls in the winter months.

IV. DATES

There are a total of thirteen radiocarbon dates associated with the ten Major Layers (labeled I through X) of the site. Six of these dates are associated with MSA assemblages. The following table illustrates how the dates correspond to distinct MSA assemblages (Carter 36, 81-2):

<table>
<thead>
<tr>
<th>Major Layer</th>
<th>Name Given by Carter, et al.</th>
<th>Associated Radiocarbon Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Layers I-III</td>
<td>MSA 3</td>
<td>No radiocarbon date (too old)</td>
</tr>
<tr>
<td>Major Layers IV-V</td>
<td>MSA 5</td>
<td>32,150+770bp (uppermost layers)</td>
</tr>
<tr>
<td>Major Layers VI-VII</td>
<td>MSA 6</td>
<td>Two dates: 30,900+550bp 28,870+520bp</td>
</tr>
<tr>
<td>Major Layer IX</td>
<td>MSA 9</td>
<td>Three dates:19,860+220bp 20,240+230bp 20,900+270bp</td>
</tr>
</tbody>
</table>

A date of ~20,000bp can be assigned to MSA 9, although the three radiocarbon dates are not stratigraphically consistent with each other. For example, the oldest date (20,900bp) is linked to the uppermost MSA layer, while younger dates correspond to stratigraphically deeper rock. The radiocarbon dates do confirm that a date of around 20,000bp is likely. This is supported by findings from the nearby site of Melikane, where the uppermost MSA layer has been securely dated by a
terminus ante quem of 20,000+170bp (Carter 215). Despite the lack of a radiocarbon date, a date of 70,000bp can be ascribed to MSA 3 based on the distinct, weathered appearance of the artifacts from this level (Carter 85). The stones exhibit a pattern of patination and a worn condition that imply a considerably older date for these artifacts.

V. PALEO-ENVIRONMENT

MSA temperatures were colder than present conditions in Lesotho, and there are several forms of evidence for this. The excavation uncovered two regions of rock that have been altered by frost, the younger of which is associated with the LGM c. 18,000bp. The presence of these features indicates that the climate was much cooler during at least two extended periods of time. There is also evidence of rock-spalling at a level that coincides with the radiocarbon dates of 30,900bp and 32,150bp, and it is possible that the older block of frost-jammed rock corresponds to this period. Occurrences of rock-spalling are usually triggered by cold temperatures, while a buildup of pressure is another possible cause. It seems unlikely that these incidences of rock-spalling are related solely to temperature, as the rock associated with the LGM does not exhibit rock-spalling.

Analysis of the carbon content of equid teeth from the region can also be used to determine MSA vegetation and climate. Grasses that grow in temperate areas (C3 grasses) are differentiated from sub-tropical grasses (C4 grasses) by the different proportion of two carbon isotopes that are contained in each. This ratio can be calculated by analyzing the bones of the animals that fed off of these grasses. Thus it is possible to determine whether an equid consumed more C3 or C4 grasses in its lifetime by analyzing the carbon isotope ratios in its bones. An analysis of equid teeth from Melikane, a site about 25km south of Sehonghong, shows that C3 grasses were consumed at high levels from 42,000 to 20,000bp. For example, it has been estimated that C3 grasses constituted at least 75% of the food eaten by equids that lived 20,000bp (Carter 24). The high consumption of C3 grasses implies a high proportion of C3 grasses in the environment. The presence of C3 grasses indicates comparably lower temperatures during the period from c. 40,000 to 18,000bp and also supports the theory that there was a significant depression of vegetation zones during the Last Glacial (Carter 23). Temperatures were probably about 5.5°C colder than now, although it is unlikely that the area was blanketed by a year-round snow cover (Carter 26).

VI. ARTIFACTS

The MSA levels at Sehonghong are dominated by flakes and blades. For example, in the MSA 9 assemblage, flakes and blades constitute 46.3% and 35.8% of all utilized artifacts,
respectively. In the MSA 3 assemblage, the proportion of flakes and blades is 59.2% and 36%, respectively. Other tool forms are present, including hammerstones, anvils, and possibly one palette (or grindstone) associated with MSA 5. This would represent the only grindstone from the MSA occupations at Sehonghong. This tool form is usually associated with the LSA, and this lone example may denote the intrusion of another, more recent layer in the MSA assemblages. Flakes are also the most prevalent unmodified tool in all MSA assemblages; for example, 55.7% of the unmodified artifacts from MSA 9 are flakes. Other unmodified tool forms include chunks, chips, spikes, cores, and hammerstones. Formally retouched artifacts are rare, and in all MSA levels they constitute less than 1% of the total assemblage. The most common retouched tool form is the scraper.

These MSA tools are not necessarily representative of one regionally distinctive MSA industry. The excavators connect the MSA 3 assemblage with the Howiesons Poort Complex due to a large backed segment that is part of the assemblage, but many of these artifacts have also been linked to the MSA I industry (Carter 189). MSA 5, 6, and 9 are defined as examples of the MSA II industry, which is a large blade industry. Not much discussion is devoted to the classification of the stone tool technology in Carter, et al., as different scholars have assigned the tools to different southern African industries.

The MSA toolkit at Sehonghong seems to have been used mainly for cutting activities. Among utilized tools, simply damaged, straight edges are prevalent in the MSA 3, 5, and 6 assemblages (Carter 173). This suggests that the artifacts functioned as cutting tools, and the dominance of this kind of edge in all three assemblages indicates that comparable activities were being undertaken at Sehonghong over time. An activity shift may have taken place c. 20,000bp, as there is an increase in the percentage of utilized artifacts with highly damaged edges and a resultant decrease in the number of simply damaged edges in the MSA 9 assemblage (Carter 189). The differences between the MSA 9 assemblage and the other MSA toolkits may also be due to the small sample size of utilized artifacts in the MSA 9 compared to the other assemblages. Microwear analysis can be used to determine how the tools were really used, although no such studies have been conducted as of yet. Stone tools may have also carried some kind of symbolic significance, and ochre pigment was applied to one sandstone fragment associated with MSA 6. This is the only occurrence of ochre in the MSA or early LSA at Sehonghong, although the pigment was used frequently in the later LSA.

The raw materials used in the MSA toolkit varied over time, and several trends can be observed from MSA 3 (~70,000bp) through MSA 9 (~20,000bp). No non-lithic artifacts (i.e., bone
tools) were found at the site in any assemblage. The use of lydianite, a fine-grained flint-like hornfel, decreases over time in each successive level. Dyke material, a coarser-grained hornfel, is used frequently in MSA 5, but after this time, it experiences a gradual drop in popularity that continues through LSA times. The use of crypto-crystalline silicas (CCS), a locally available fine-grained stone, increases in MSA 6 and 9 assemblages and culminates in the successive LSA bladelet industry that lies directly above the MSA assemblages. This Sehonghong bladelet industry, which is associated with slender bladelets (between 15-25mm in length) made from CCS, has been dated from 17,820-12,250bp. MSA blades were more frequently composed of dyke materials, as the larger, longer MSA blades required a different material. CCS, which is a more delicate, brittle rock, would have limited the size of the blades and would have made the production of blades longer than 25mm very difficult (Carter 85). The use of dyke material rather than CCS shows an awareness of the limitations and properties of different raw materials.

Bladelets were not an important component of the MSA toolkit at Sehonghong, and less than 1/3 of blades from MSA 9 are less than 25mm in length, while this number jumps to 80% in the LSA bladelet industry (Carter 83). This percentage drops to 0-16% in older MSA assemblages. Continuity with the more recent bladelet industry is demonstrated by the gradual decrease in blade length and width over time and by the presence of spikes in the MSA assemblages. The mean blade length of the MSA assemblage from one spit was 42mm, while the mean blade length from a more stratigraphically recent MSA assemblage was 23mm (Carter 171). In general, the blades from MSA 9 are more slender than blades from MSA 5 and 6. Spikes, which are thought of as by-products of bladelet cores, constitute 0.1% of the MSA 9 assemblage. The mere presence of spikes in the MSA assemblages denotes a connection between the MSA and the early LSA bladelet industry.

Although the MSA toolkit is more limited in terms of actual tool types in relation to that of the LSA, there is evidence that the MSA was a time of improvement in technique. Toolmaking practices became more efficient, tools and materials were curated, and the size and range of viable materials increased (Carter 173). Deteriorating climate leading up to the LGM may have incited hominids to intensify and improve their toolmaking, foraging, and hunting skills. An efficient, time-saving tool technology would have been beneficial in a time of declining environmental conditions and lower resource availability. The reduction in blade length and width in the 12,000 year period leading up to the LGM and to the height of the bladelet industry may be evidence of this climate-induced shift in toolmaking behaviors.

The MSA artifacts from Sehonghong argue for a late MSA/LSA transition and negate the possibility of a MSA/LSA changeover between 40,000-60,000bp. The MSA 6 and 9 assemblages
definitely belong to the MSA and not to the LSA, and this is indicated by the large size of the blades and by the presence of cylindrical blade cores in both assemblages. These cores are larger than regular blade cores, and they only occur in MSA assemblages (Carter 195).

VII. FOOD REMAINS

Equids like the mountain zebra and quagga dominate the MSA faunal remains and account for roughly 40.8% of all faunal remains (Carter 229). Bovids occur more often in LSA levels, which may be due to climatic differences between the MSA and the LSA. The efficient digestive system of equids allows them to subsist on rougher, less nourishing grasses, which would explain why they were able to survive on the nutritionally poor C3 grasses of the MSA. Bovids would have been at a digestive disadvantage in this instance. Hominid hunting/scavenging activities cannot be determined from the evidence at hand, as the investigation is hindered by small sample sizes and by the spit excavation technique (Carter 220). It seems likely, however, that any meat in the hominids’ diet would have come from the large equids that were well suited to survival in the area. Also, the bones that are present at the site are in a very fragmentary condition, which could indicate either trampling or possible deliberate breakage by hominids as part of marrow extraction. No bone fragments bear cutmarks or undeniable signs of hammerstone percussion damage, but neither do they exhibit signs of carnivore chewing or manipulation.

Sehonghong is the only known site in Lesotho at which any plant remains have survived from the MSA. The vast majority of botanical remnants come from Holocene LSA deposits and include flower heads and grasses. Plant material is largely absent from the MSA levels, although samples of twigs, bark, and wood were found in association with MSA 9 from c. 20,000bp. Problems of preservation explain why more plant material was found in more recent Holocene LSA levels. As discussed above, the analysis of equid teeth from Melikane indicate that C3 grasses were common in the period from 40,000bp to 20,000bp, though these grasses have not been preserved from the MSA.

VIII. ACTIVITY AREAS

As stated above, the spit excavation technique is not conducive to an analysis of the spatial arrangement of tools and bones across the landscape. The excavators have not attempted to use the available evidence to reconstruct the way in which the cave space was divided in prehistoric times. Evidence of burning in antiquity as well as more organized hearth structures are present at the site from MSA times onward. Charcoal was found in Major Layer II (associated with MSA 3), while
hearth complexes were found in conjunction with stone and bone debris in Major Layers IV and V (associated with MSA 5). A patch of blackened earth rich in carbon was found in Major Layer VII (associated with MSA 6). Finally, Major Layer IX (associated with MSA 9) contained numerous well-defined hearth complexes that were juxtaposed with artifacts and faunal remains (Carter 35-6). The association of the hearths with animal remains can be interpreted as evidence of hominid meat eating activities like meat drying and/or cooking. The charcoal in these locations was used in the carbon dating of the site. As the MSA climate of Sehonghong would have been cold relative to today, hearths would have provided the hominids with much-needed warmth and with a central place for gathering. Firewood would have been scarce in the area, so fire would have been a valued commodity.

Sehonghong was re-used fairly continuously throughout the MSA and LSA beginning around 70,000bp, and it is one of the only sites in southern Africa whose deposits span the transitional period between the MSA and early LSA c. 40,000-18,000bp (Carter 237). The site was probably not occupied on an extended or permanent basis, as the MSA climate would have been harsh and plant and animal resources would have been sparse or of low quality. Hominids probably came in from more hospitable nearby areas in Natal or in the Orange River Valley to use the Sehonghong area on occasions when they needed to supplement their diet. The deteriorating climate of the period leading up to the LGM may have made it necessary for hominids to intermittently expand into different areas to obtain certain resources (Carter 233). The rock-shelter was probably used more extensively during the summer months, as the lowered LGM-era temperatures and the depression of vegetation zones during the Last Glacial would have made the cave unappealing in the winter months (Carter 226). A comparison of current radiant temperatures inside Sehonghong and nearby Melikane reveal that Sehonghong is markedly cooler than its neighbor during the winter months (Carter 225, Fig. 6.1). Although the mean temperature in the area would have been lower in MSA times than now, the relationship between the climate of Sehonghong and Melikane would have been comparable. Moreover, firewood at Sehonghong would have been even more rare in the winter months, and the evidence of repeated fires in the cave suggests summer use. All of the grasses that have been preserved from the LSA levels would have been edible during the spring and summer months alone, which argues for seasonal use of the site in the LSA. Nutritionally poor C3 grasses typical of cooler climates were probably the most common vegetation during the MSA as well, and these grasses would have been palatable for a limited time of the year. No hominid bones were discovered at the site, and this may be due to the fact that large parts of the cave have not been excavated. The
absence of hominid remains can, however, be seen as support for the theory that the cave was used by different groups of hominids only briefly as a stop-off point for food or raw materials.

WORKS CITED