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Goldsmith's: Preliminary Study of a newly discovered Pleistocene site near Sterkfontein.

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CHAPTER 4

The Goldsmith's archaeological assemblage

4.1 Introduction

In East Africa archaeological sites have been reported which date back to 2.5-2.6 Mya (see Kibunja 1994; Semaw *et al*. 2003). The oldest artefacts in southern Africa come from Sterkfontein (Member 5), Swartkrans and Kromdraai dating between 2 Mya and 1.0 Mya (Leakey 1970; Clark 1993; Kuman 1994a, 1994b, 1996; Kuman *et al.* 1997; Field 1999). The oldest industry is termed the Oldowan by Leakey (1971) after the Earlier Stone Age sites of Olduvai Gorge. It is the 'simplest' technology compared to later skills of stone tool production. Characteristic Oldowan stone tool types include choppers, cores, flake scrapers, polyhedrons, sub-spheroids and flakes removed from unprepared cores (Leakey 1971; Toth 1985; Schick & Toth 1994; Kuman 1996).

In South Africa, sites preserving the Oldowan industry are limited. Kromdraai B and Sterkfontein Member 5 preserve the only certain artefacts of Oldowan age (Clarke 1994; Kuman 1994b; Kuman *et al.* 1997). Kromdraai B has produced a characteristic core and a flake in a deposit dated at 1.9 Mya with *Paranthropus* remains (Thackeray *et al.* 2002). The scarcity of stone artefacts at Kromdraai B may be due to avoidance of the site by hominids, as the environment was unpleasant for hominids at the time (Kuman in press). The Sterkfontein Oldowan assemblage has yielded a larger number of artefacts associated

with fauna and *Paranthropus* fossils estimated at *ca*. 2-1.7 Mya (Clarke 1994). The assemblage has yielded 3245 artefacts with flaking debris constituting 84% of the assemblage (Field 1999). The assemblage has been interpreted as surface occupation material that has been washed into the deposit from a limited area around the cave entrance.

The presence of developed Oldowan or early Acheulian assemblages is not as scant as the earlier Oldowan industry. Sterkfontein Member 5 preserves the most artefacts (N=701) with 68% of the artefacts weathered and only 4% of the assemblage comprisied of materials < 20mm suggesting that the materials faced long-term surface exposure with the debitage subjected to winnowing (Kuman 1998). Swartkrans, Members 1-3, is suggested to belong to the Developed Oldowan/Early Acheulian (Field 1999). The members are dated between 1.7 and 1.0 Mya and contain both *Homo ergaster* and *Paranthropus* remains (Brain *et al.* 1988; Brain 1993). Stone artefacts in these infills suggest a long period of surface exposure prior to deposition (Clark 1993; Field 1999). The Swartkrans stone tool assemblages have demonstrated a higher degree of direct association with the fauna, suggesting that a portion of the faunal remains were hominid accumulated (Leakey 1970; Brain 1993; Pickering *et al.* 2004). A similar stone tool industry has been documented for Kromdraai A with ninety-nine artefacts estimated at 2.0 Mya to 1 Mya (Kuman *et al.* 1997; Field 1999).

Sterkfontein has also preserved MSA artefacts in the Lincoln Cave, which is divided into Lincoln Cave North and Lincoln Cave South. The Lincoln Cave North dated by the

Uranium series to the MSA, contains cores resembling the Early Acheulian from Member 5 West (Reynolds *et al.* 2003). The Lincoln Cave North sample consists of 5 stone artefacts, three polyhedral cores, one chunk and one irregularly fractured cobble; none of which possesses characteristic MSA features (Reynolds 2000). The Lincoln Cave South assemblage is undated but is comprised of 69 artefacts, which include MSA flakes with faceted platforms and a diabase blade, and 15.9% small flaking debris (*ibid*.), which is uncharacteristic of the Acheulian deposit. The Early Acheulian type cores within both the Lincoln Cave North and South apparently derived from Member 5 West through erosion and re-deposition into the younger infills (Lincoln caves) and both the deposits are assigned to the MSA (Reynolds *et al.* 2003).

4.2. Classification

Mary Leakey's (1971) classification of the stone artefacts discovered in the Olduvai Gorge sites has been valuable in categorizing stone artefacts from Plio-Pleistocene sites, thus providing the standard for classifying stone tools. These categories, though somewhat refined by some authors (e.g. Kuman *et al*. 1997), are consistent with what exists in the archaeological record and are therefore applied to the Goldsmith's stone tool assemblage. These I applied in conjunction with Kuman's (1996) types:

1. *Manuports* are natural stones without signs of use. These have, however, been brought into sites by hominids with intentions of later use.

2. A core is termed *casual* if it has been minimally flaked, i.e. not more than twice; these types of cores alternatively may simply be cobbles that have been tested for their flaking quality.
3. *Polyhedral cores (Polyhedrons)* are multifaceted cores with scars produced by flaking from two or more different platforms. They usually acquire a sub-spheroid shape if extensively flaked.
4. *Spheroids and sub-spheroids.* These are polyhedrally flaked cores which demonstrate damage from use. Spheroids are usually more spherical than sub-spheroids, which are not consistently round in shape.
5. *Chopper cores* are worked along one edge (unifacial) or on both edges (bifacial) with flake scars adjacent to each other.
6. *Single platform cores*. These are cores dominated by flakes removed from one platform.
7. *Discoidal cores* are cores with flakes removed in a radial fashion, or centripetally towards the centre. This results in a disc-like core.
8. *Flakes* are artefacts removed from cores by percussion and possess the bulb of percussion.
9. *Scrapers* are retouched tools with a steep, wide-angled edge that is suitable for a number of tasks.

4.3. Site formation processes

The size distribution of a stone tool assemblage is an important factor in analysing a collection and reflects important aspects about site formation processes (Schick 1987, 1991). An assemblage dominated by 65% or more of flake fragments less than 20mm in maximum dimension is suggestive of on-site tool manufacture and possibly an undisturbed archaeological assemblage. An assemblage without representation of small debitage can suggest transportation of tools away from the manufacturing site or winnowing of small material by fluvial action or erosion. Schick (1991) cautions on the effect of archaeological retrieval methods on stone tool samples. Sieve mesh of 4mm in size is often used at Stone Age sites but a 2mm sizes mesh, which was used for Goldsmith's material, is preferred for a more complete retrieval of small debitage.

4.4. Materials

The Goldsmith's stone tool assemblage consists of only thirteen specimens with no associated stone flaking debris. The stone tools were excavated and sieved from the same dump that yielded most of the fossil fauna. All artefacts were recovered from loose dump material. Although the artefacts were associated with the bones, some of which were encased in breccia blocks, none of the stone tools displayed any adhering breccia remains but all are stained with manganese. The presence of stone tools at Goldsmith's site is not a unique occurrence in the Cradle sites; it is however, a rare one. Only Swartkrans, Kromdraai and Sterkfontein, which are near gravels, preserve a substantial amount of

cultural assemblages, while Drimolen, Kromdraai B, Gladysvale and Cooper's have produced small numbers of stone artefacts (Kuman 2003). The rarity of tools in these sites makes the Goldsmith's artefacts a significant discovery. The artefacts may also, eventually, be useful in estimating the age of these or other deposits at the site as they are more time specific than many faunal taxa.

4.5. Methods

The stone artefacts were collected under R.J. Clarke's supervision. No formal excavation procedures were necessary as the tools were lying loosely in the dumps, but all sediment was screened with a 2mm mesh to retain all materials 2mm and larger.

The stone specimens were described under:

- Specimen number
- Tool type (after Leakey 1971)
- Raw material
- Size (maximum length and breadth)
- State of weathering (fresh, weathered or very weathered)
- Staining
- Decalcified or solid breccia adhering

I measured each tool's maximum length (the longest dimension) and breadth (the widest dimension) using manual calipers to establish the size range of the stone assemblage. To

determine the state of weathering, the specimens were noted as fresh, slightly weathered or very weathered based on my own observations. I assigned a *slightly weathered* condition to artefacts with sharp edges and *weathered* to tools with blunt edges and altered surfaces. A *very weathered* condition I assigned to tools with coarse surface texture. Stone artefacts made on river cobbles were noted if the cortex showed the characteristic impact marks associated with river gravels.

4.5.1. Organization of dorsal scars

As part of a basic description I calculated the number of flake scars present on the tools and determined their directions. To assess the quantity of dorsal scars, only scars with a maximum length of 6mm or more were analysed, scars under the 6mm are not conventionally recorded (Kempson 2004).

Seven dorsal flake scar pattern states were applied (Field 1999; Kuman 2001; Kempson 2004).

1. *Unidirectional* pattern, flake scars are oriented towards one direction from the platform.
2. *Unidirectional and Transverse* scars are positioned from two directions, usually from the platform, and transverse to it.
3. A *transverse* pattern has scars angled perpendicular to the platform.
4. *Transverse and Opposed* scars are the result of flaking from both lateral sides of a flake.

5. *Radial* scars result from centripetal flaking.
6. An *irregular* organization of scars is oriented in no particular direction.
7. Not possible to decipher.

4.6. Results

The Goldsmith's stone tool assemblage consists of thirteen stone artefacts. Three stone tool types were recognized: cores, flakes and manuports. All stone artefacts are stained with manganese. Table 7 provides a detailed catalogue of the stone tool sample. All scales are in centimetres.

4.6.1 Artefact Typology

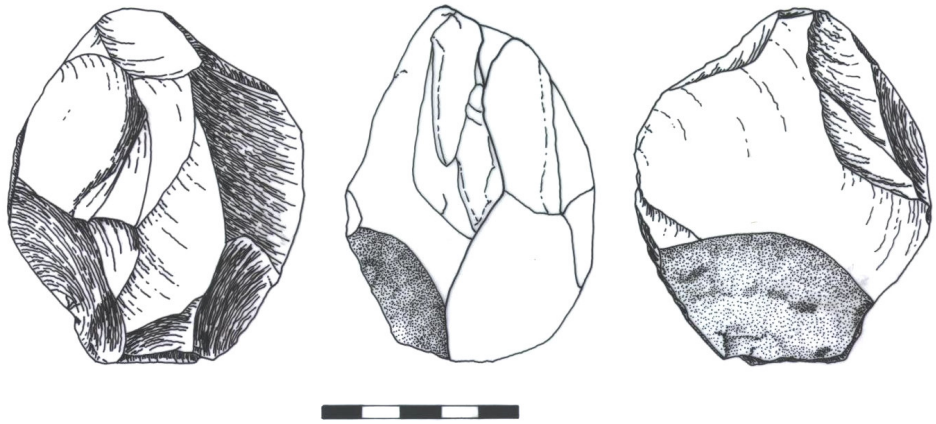
Table 7. Catalogue of stone artefacts, Goldsmith's site.

Specimen no.	Tool type	Raw mat.	Length	Width	Weathering	Stain.	Matrix	Direction
GSST 1	Flake	Quartzite	56	40	Weathered	Mn	absent	N/A
GSST 2	Polyhed core	Quartz	90	58	Weathered	Mn	absent	Multiple
GSST 3	Casual core	Quartz	91	79	Weathered	Mn	absent	Unidirect.
GSST 4	Disc core	Quartz	67	62	Weathered	Mn	absent	Radial
GSST 5	Polyhed core	Quartzite	76	20	Weathered	Mn	absent	Multiple
GSST 6	Polyhed core	Quartzite	114	75	Weathered	Mn	absent	Multiple
GSST 7	Manuport	Quartzite	92	49	Weathered	Mn	absent	N/A
GSST 8	Flake	Quartzite	51	31	Weathered	Mn	absent	N/A
GSST 9	Manuport	Quartzite	142	59	Weathered	Mn	absent	N/A
GSST 10	Manuport	Quartzite	140	65	v. weathered	Mn	absent	N/A
GSST 11	Polyhed core	Quartzite	86	69	sl. weathered	Mn	absent	Multiple
GSST 12	Flake	Quartzite	48	34	sl. weathered	Mn	absent	N/A
GSST 13	Core	Quartzite	56	48	sl. weathered	Mn	absent	Radial

ESA type artefacts

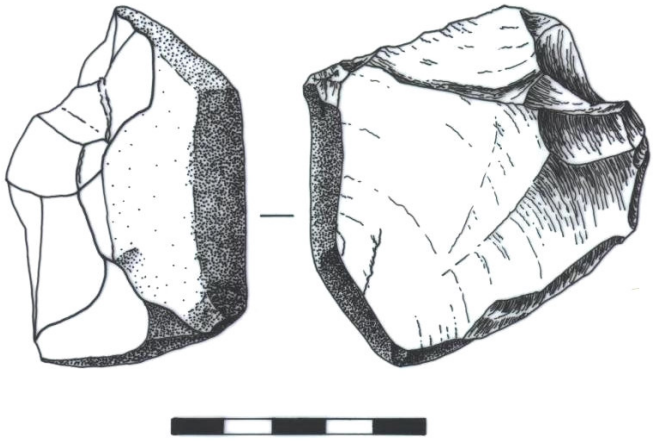
- GSST 2 (Figure 9) is a weathered, quartzite polyhedral core with a maximum dimension of 90mm and a width of 58mm. The cortex indicates that it is made from river gravels.

Figure 9, GSST 2.



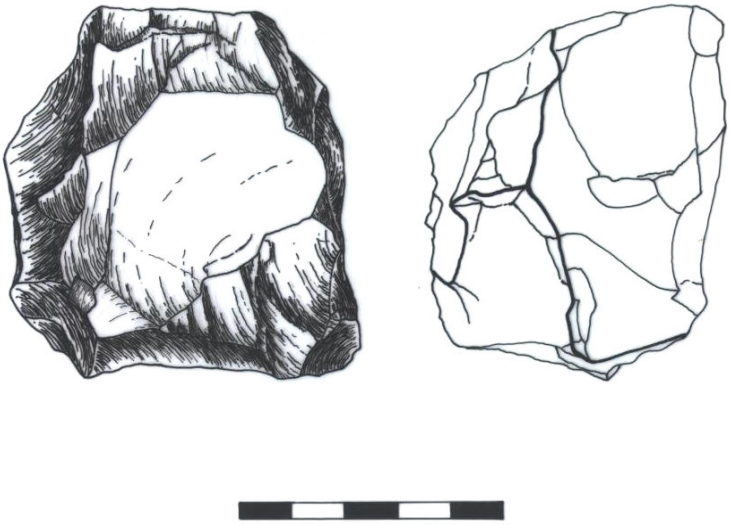
- GSST 5 (Figure 10) is a weathered quartzite polyhedral core with a maximum dimension of 76 m and a width of 20mm. The cortex indicates that it is made from a river gravel cobble.

Figure 10, GSST 5.



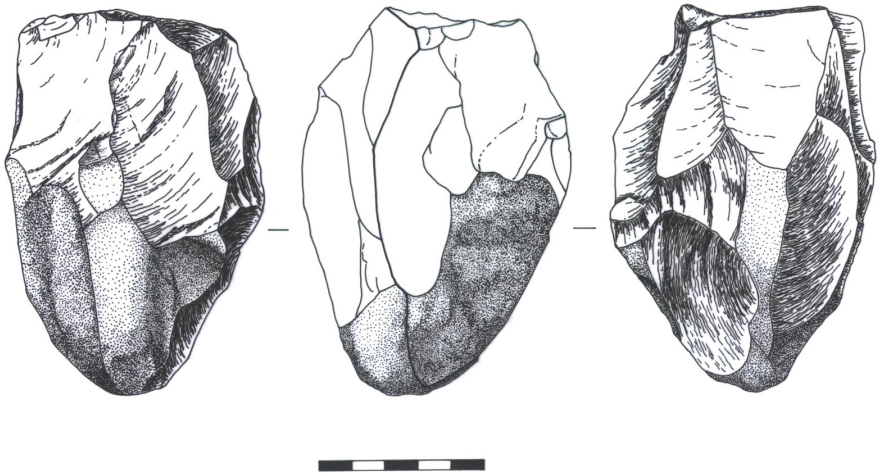
- GSST 11 (Figure 11) is a slightly weathered quartzite polyhedral core with a maximum dimension of 86mm and a width of 69mm. This core has no cortex to indicate if it is from river gravels.

Figure 11, GSST 11.



- GSST 6 (Figure 12) is a weathered quartzite polyhedral core with a length of 114mm and a width of 75mm. The cortex indicates that it is made from river gravels.

Figure 12, GSST 6.



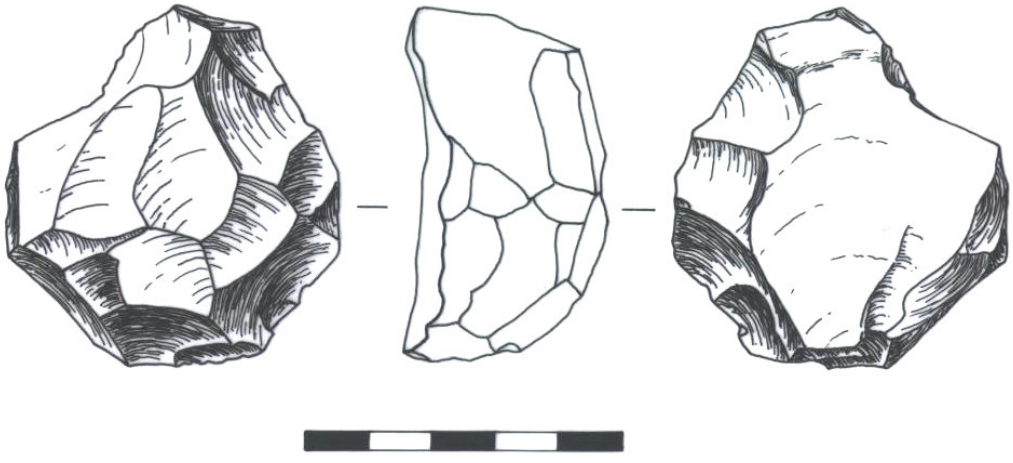
- GSST 4 (Figure 13) is a weathered, quartz radial core with a maximum dimension of 67mm and a width of 62mm. The cortex indicates that it was made on a river gravel cobble.

Figure 13. GSST 4.



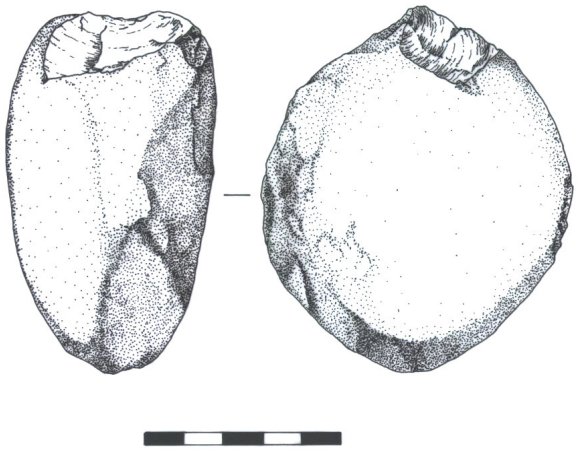
- GSST 13 (Figure 14) is a slightly weathered quartzite core made on a river cobble with a maximum dimension of 56mm and a width of 48mm. Its upper surface suggests that it had a preferential flake removed.

Figure 14, GSST 13.



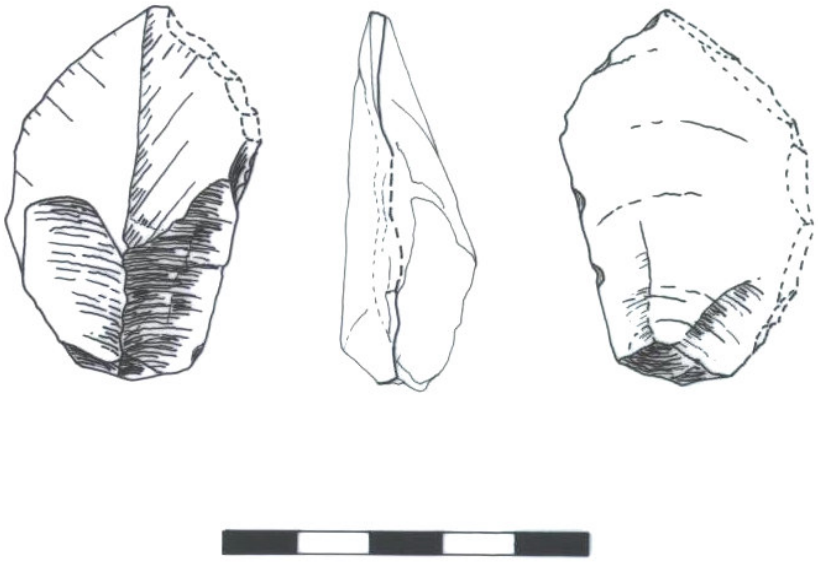
- GSST 3 (Figure 15) is a quartz casual core 91mm long with a width of 79mm. The cortex suggests that it is produced from a river gravel cobble.

Figure 15, GSST 3.



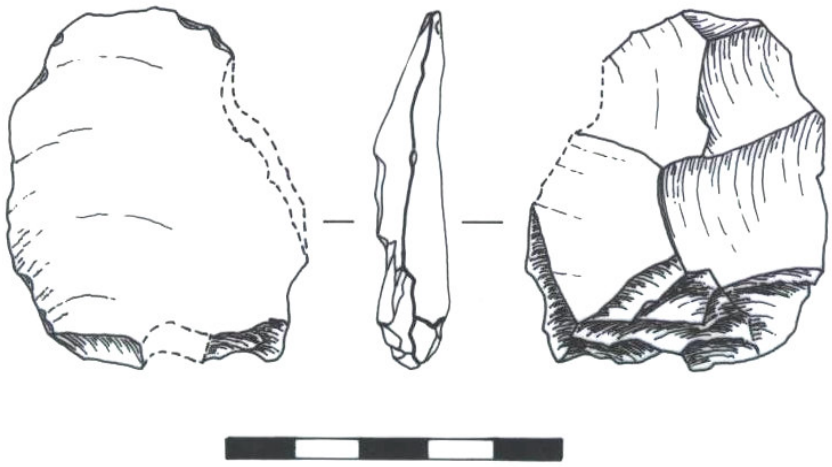
- GSST 8 (Figure 16) is a weathered quartzite flake, which is 51mm long and has a width of 31mm. The cortex suggests that it is made from a river gravel cobble.

Figure 16, GSST 8.



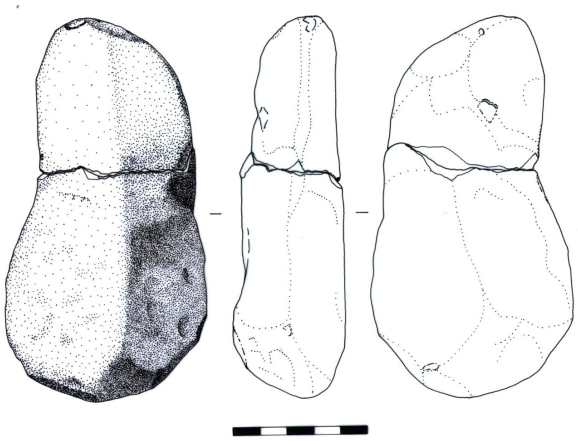
- GSST 1 (Figure 17) is a weathered quartzite flake with a length of 56mm and a width of 40mm. The cortex suggests that it was produced from a river gravel cobble.

Figure 17, GSST 1.



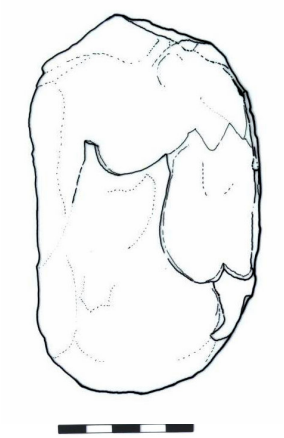
- GSST 9 (Figure 18) is a quartzite natural cobble (manuport), with a maximum length of 142mm and a width of 59mm. The cortex on this manuport indicates that it was made from a river gravel cobble.

Figure 18. GSST 9.



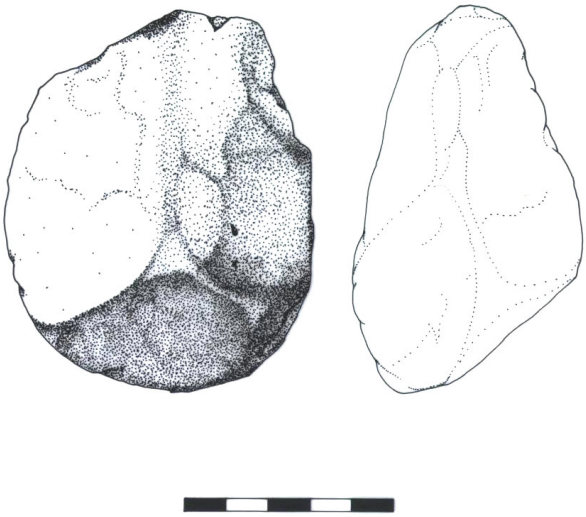
- GSST 10 (Figure 19) is a very weathered diabase manuport, which has become exfoliated due to decay. It has a maximum dimension of 140mm and a width of 65mm. The cortex indicates that it is made from river gravels.

Figure 19, GSST 10.



- GSST 7 (Figure 20) is a weathered quartzite manuport with a length of 92mm and a width of 49mm. The cortex suggests that it is produced from a river gravel cobble.

Figure 20, GSST 7.



MSA type artefacts

- GSST 12 (Figure 21) is a weathered quartzite flake with a maximum length of 48mm and a width of 34mm. It possesses ventral thinning of the platform. No cotex is preserved on this flake.

Figure 21, GSST 12.



4.7. Interpretation

4.7.1. *ESA type artefacts*

The sample interpreted as Earlier Stone Age artefacts consists of four polyhedral cores, one casual core, two flakes, one discoidal core and three manuports. The dominant raw material within the represented ESA stone artefact sample is quartzite (eight of the eleven stone artefacts are quartzite). Only three artefacts represent quartz. The tools' sizes range from 31mm to 79mm with a mean of 56mm. Nine artefacts are weathered, one is very weathered while one is slightly weathered. The high representation of polyhedral cores and their character is consistent with the Oldowan or Early Acheulian assemblages published from Sterkfontein, Swartkrans and Kromdraai (Field 1999). If the stone

artefacts do belong to either of these industries, their age is likely to be between 2Mya and 1 Mya.

4.7.2. *MSA type artefacts*

One flake (GSST 12) is characteristically Middle Stone Age in nature. The flake has ventral basal thinning, a technique best associated with the Middle Stone Age (MSA) period (Singer & Wymer 1982) and not associated with ESA flakes (Kuman pers comm.). Two of the artefacts, GSST 1 and GSST 13, do not possess specific features associated with any of the Ages discussed above. However, GSST 13 is a probable MSA type core. While the organisation of the flaking suggests that it is a prepared core for preferential flake production, the technique is not so refined to be clearly diagnostic of the MSA. However, the core has edges that are sharper than the rest of the sample, and the relatively fresh nature of the piece may suggest that it is younger than most of the artefacts represented. It is therefore more likely to belong to the MSA, especially because GSST 12 confirms the presence of MSA artefacts.

4.7.3. *Site formation processes*

An obvious feature regarding the stone artefacts is that there is no associated stone flaking debris, which would characterise an undisturbed assemblage. The three flakes in the collection do not match or conjoin with any of the cores in the assemblage. All the stone artefacts are manganese stained. Unlike the fauna, no stone tool is encased in breccia and none bears evidence of adhering breccia. Inspection of the *in situ* breccia and infill also did not demonstrate the presence of stone artefacts. All the tools show some

degree of weathering, suggesting that they were exposed on the surface prior to incorporation into the infill. GSST 1 for example is heavily weathered on the ventral surface and slightly weathered on the dorsal surface. This differential degree of weathering implies that the ventral surface was in contact with the ground while the dorsal surface was exposed. Absence of stone chips < 20mm, the slightly weathered nature of the artefacts and the fact that no stone artefacts have been discovered from the *in situ* breccia suggests they could be from colluvium deposits or from breccias now dissolved. Eleven of the artefacts suggest that they are from river gravels, indicated by impact marks on the cortex and by smooth, rounded edges. The stone tools do not suggest long distances of transport, as they are not rounded. The distance between the river gravels and Goldsmith's is still to be determined. Therefore the stone artefacts possibly represent a surface colluvial accumulation or alternatively tools that once were contained in two additional breccias (ESA and MSA) that became decalcified.

4.7.4. *Association with the palaeontological assemblage*

The presence of the stone artefacts within a predominantly faunal collection, which does not bear signs of stone tool modification, is a notable feature of this site. The stone tools were discovered on only one portion of the dump (on the south-western corner of the main dump) and were absent on other dumps. No stone artefact is visible within the *in situ* infill. Therefore it is probable that the artefacts derive either from surface sediments or from two additional breccias separate from the bone bearing infill. On present evidence the artefacts do not appear to originate from the same breccia as the fauna. Moreover, the associated fauna does not bear stone tool marks, strengthening the interpretation that the fauna and the stone tools may derive from different assemblages.