Rock Art in the Vaal-Orange River Basin: an overview (K.W. Butzer)

Introduction

The rock engravings of South Africa are found in the center of the country, and are concentrated in the lower Vaal and middle Orange river basins. Volume I of this documentation presented the site of Klipfontein (west of Kimberley), the richest of its kind in subsaharan Africa (Fock 1979). Volume II covered 53 engraving sites and 7 with paintings found along the southwestern margin of the Kalahari, but focused on Kinderdam (near Vryburg), an unusually diverse and informative complex (Fock & Fock 1984). This, the third volume, deals with 134 sites, mainly along the Harts, lower Vaal, Riet, and middle Orange river valleys -- a vast area of almost 70 000 km^2; all but 12 of these sites have engravings only, while only one has both paintings and engravings. The most important locality in this area is Driekops Eiland, on the Riet River, southwest of Kimberley. It has the second largest concentration of engravings in subsaharan Africa, and was first investigated in the 1870s. It also is one of the sites that is not dominated by animal representations but by "geometric" designs, that have repeatedly been subject to speculative interpretation as one or other sort of alphabet.

The presentation of this third volume is again explicitly documentary, rather than interpretive. Both the authors and the general editors feel that the empirical task of objective recordings must come first. There are other grounds to clearly separate descriptive analyses from interpretation: modes of interpretation are quite ephemeral (Davis 1987) and, when injected too heavily into a documentary study, they subsequently place the value of that groundwork into question. It is the authors' goal to provide a meticulous inventory of the various sites, supported by several types of permanent record, but analyzed according to a neutral, technological framework and terminology. Thus, animals are identified where reasonably possible, but geometric and other designs are deliberately presented in a descriptive fashion only. The abundant photographic plates, rubbings, and latex casts illustrated in the successive volumes, complemented by the complete documentation available in the archives of the McGregor Museum, may therefore serve as the basis for detailed, interpretative analyses well into the future.

In particular, the wealth of geometric and other "designs", especially from sites such as Driekops Eiland, warrant a sophisticated typological matrix and micro-spatial analysis by a computer program of perhaps unprecedented complexity. These are challenges for future researchers. Similarly, there is an urgent need for archaeological excavation at the more amenable sites: whatever surface artifacts once were present have long been picked up at most sites, by archaeological and other visitors. Only through excavation can direct, rather than inferred associations be established between the representational art and particular lithic assemblages.

The matter of dating the rock engravings of South Africa has seen substantial progress during the last decade. The basic premise of our 20-year survey has been that the engravings were the work of ancestral San (Bushmen), and that the peoples representing this general cultural mode and way of life have occupied southern Africa during most of the approximately 10 000 years of Holocene time (Fock 1979). Although present archaeological resolution suggests that this picture is somewhat more complex (Deacon 1984), site-specific geoarchaeological studies show that the oldest rock engravings of the Vaal-Orange Basin are at very least 4000 years old, and more probably go back to the early Holocene (Butzer et al. 1979). Subsequent excavations in Wonderwerk Cave have indeed verified indubitable examples of engraved rocks in strata that are radiocarbon dated to a little beyond 10 000 years (Thackeray et al. 1981), and "possible" engravings of this type have been cited from a level 2000 years older (Beaumont et al. 1985).

Methodology

The different ways that engravings are rendered can offer clues for stylistic sequences that may have temporal implications. However, attempts to categorize rock art have often tended to mix content, style, technique, and chronology. The authors have therefore developed an objective typology

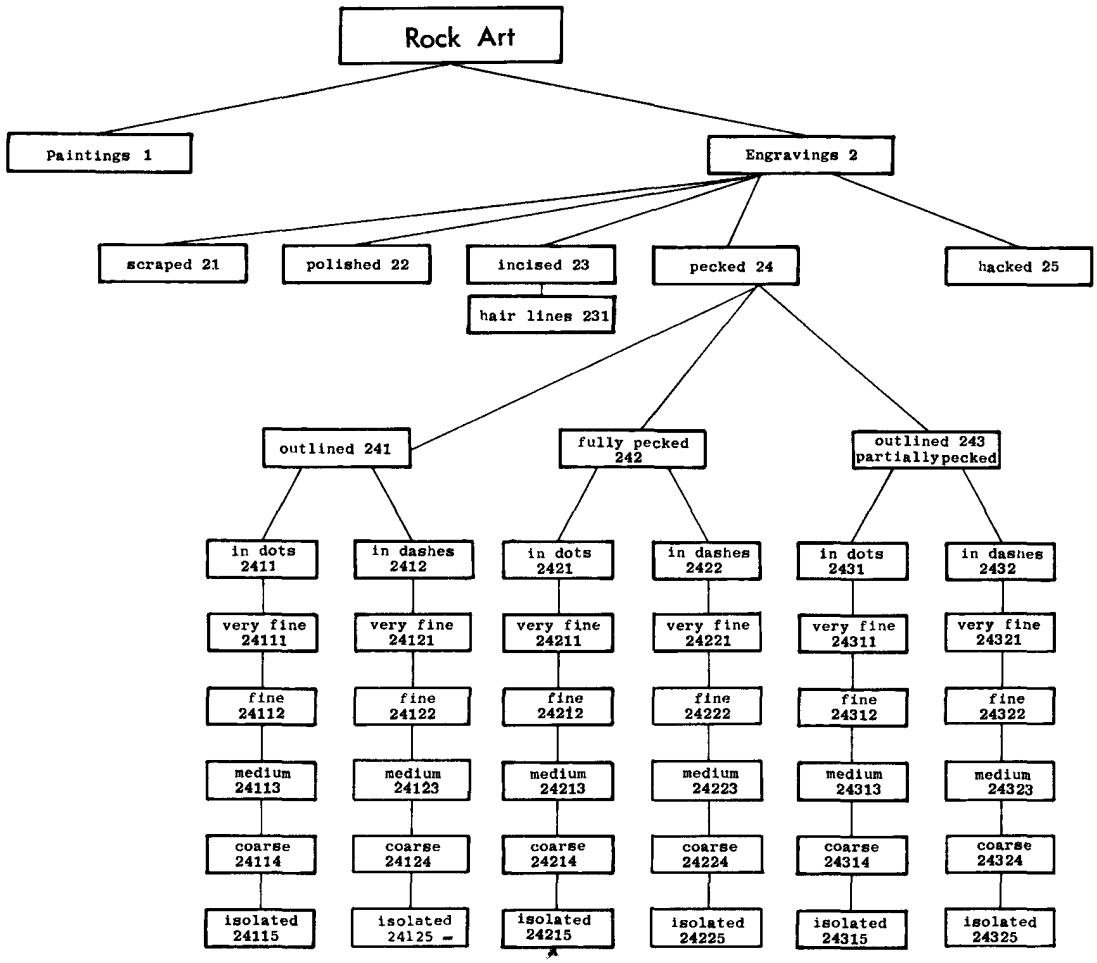

Fig. 196 Decimal classification of techniques.

applied only to engravings and based primarily on technique. This decimal system is illustrated in Fig. 196. The engraving technique is indicated by numbers in brackets at the end of the captions to the figures (Abb.):

Scraped engravings (class 21), produced by graving multiple, closely spaced lines with a finely pointed stone; such engravings are not found in the study area north of the Orange River.

Polished engravings (class 22), produced by rubbing and grinding down the surface to create shallow forms, that are commonly difficult to detect.

Incised engravings (class 23), produced by pressure grooving with a pointed stone; very thin lines of this type, less than 1 mm in width, are called hairlines (231) (Fock 1974 b), very difficult both to recognize and record.

Pecked engravings (class 24), produced by controlled, uniform impact points that form dots (2411) or dashes ("commas") (2412), depending on whether the blows were vertical or inclined. Most engravings were made by these techniques and they can be further subdivided according to the size of the impact marks (coarse to very fine). Stylistic attributes can also be added, since pecked engravings were made in outline (profile) (241), in silhouette (fully pecked) (242), or in a mix of outline and silhouette (with partial pecking of the contained surface) (243).

Hacked engravings (class 25), produced by uncontrolled, irregular blows, vertical or inclined, generally creating large holes (>8 mm).

Such a technological approach can be amplified by stylistic components and systematically applied to recognize spatial variation within a site (e.g. Kinderdam, Fock & Fock 1984), or between site clusters or regions. Study of superimpositioned engravings further allows a measure of relative dating:

(a) Oldest Phase. Hairlines, in the case of superimpositioning, are always found under engravings rendered in other techniques, and consequently are oldest.

(b) Older Phase. Next oldest are certain pecked, outline engravings in which the edges of the relatively fine dots are quite smooth, as a result of weathering rather than abrasion by water or wind. The subjects are animals exclusively, and include no humans or designs.

(c) Intermediate Phase. Of intermediate age are pecked engravings of animals and humans shown in a combination of silhouette and profile, as well as naturalistic silhouettes that leave various character marks unpecked and, more

rarely, a partial or complete outline that provides a vividly naturalistic profile. In the area covered by volume II, this group of pecked engravings is sometimes rendered with a three-dimensional effect ("classical style"), achieved by leaving color markings, skin folds, or bony protuberances unpecked in the case of silhouettes, or through deeper incision of partial outlines that commonly terminate in sharp, deep external profiles. Altogether these "classical and related" engravings are characterized by a measure of accurate anatomical detail and regular peckmarks of homogeneous size.

(d) Younger Phase. Relatively younger are pecked representations of animals, humans, or designs done primarily in outline, with unevenly applied coarse dots (24114) or dashes (24124); animals so shown appear schematic, boxy, and wooden.

(e) Youngest Phase. The youngest engravings are hacked designs or poor animal representations that are unidentifiable as to genus; many appear to have been made with metal tools.

These five phases do not demarcate temporally exclusive time spans but patterns of superimposition at specific sites. They probably overlap, and a site with engravings of one phase need not be of the same age as another characterized by similar technique and style. The fact that hairline engravings are oldest at any site where they occur superimposed by other techniques, does not imply that they are everywhere older than all other representations conforming to the definition of the other four phases. Further, the Wonderwerk hairline engravings mainly are fragments of geometric designs and therefore do not fit within the empirical experience outlined here. Finally, the geo-archaeological evidence suggests that the Intermediate Phase technology and style is older than 2200 B.P., and probably extends well back into the fourth millenium B.P.

None of the rock paintings reported on in this volume correspond to the "narrative" style of the "Bushman paintings" documented from other parts of South Africa. With one exception, these are all "finger paintings" (see PAGER 1971), rather than human, animal, or group scenes; they are shown on the walls of dolomite caves on the Ghaap Plateau or in the Asbestos Mountains. Unique is a site on a granitic inselberg (No. 193) in the Kalahari where such finger paintings are accompanied by primitive human representations, with engravings found nearby (No. 192).

Finally, as explicated in the earlier volumes of this documentation, there are practical limitations to the number of engravings that can be recorded, or plates and illustrations that can be published. Further data can be consulted in the Regional Rock Art Recording Centre of the McGregor Museum.

The environment

The present area of investigation is part of the great, interior high plains of South Africa (HELGREN 1979), rising from 900 m elevation along the middle Orange to over 1200 m around Kimberley. The major river valleys are incised some 50 to 80 m below this surface, commonly reaching the Ventersdorp andesite, of Precambrian age. The upland rocks more commonly consist of Dwyka shales and tillites, of late Paleozoic (Permian) age, intruded by Karoo "dolerites" (more correctly, diabase), of early Mesozoic age. The key medium of the rock engravings are such outcrops of andesite and dolerite, and engravings in South Africa are closely delimited by this particular bedrock province (BUTZER et al. 1979). In the area of Transvaal dolomites (Precambrian), forming the Ghaap Escarpment, west of the lower Vaal and Harts valleys, there are few engravings but some sites with paintings.

Three biotic zones intersect in the area. To the east, in the Orange Free State, is the expansive grassland of the High Veld, still inhabited by great herds of game during the 19th century. Closer to the lower Vaal and Harts, this grassland becomes more sparse and, as a result of more recent grazing pressure, has frequently been degraded to a mixture of small shrubs and grass; widely spaced, tall acacias (*Acacia erioloba*) here provide a savanna aspect that, west of the Ghaap Escarpment, is frequently interspersed with thick bush. To the south, along the middle Orange valley, the vegetation has been more sparse, a semidesert of Karoo shrubs and tuft grasses. This transition relates to the precipitation gradient, from about 175 mm in the southwest to 450 mm in the northeast. Rainfall comes primarily in the summer months, and is highly erratic from year to year. The many pans and minor watercourses are generally dry, except during exceptionally wet years, such as experienced during the 1890s and the mid-1970s.

During several episodes of the Holocene, regional climate was somewhat moister (BUTZER 1984). Lakes occupied ephemeral pans and spring discharge was greater ca. 9800-6300 B.P., and again 4500-2400 B.P., interrupted by a long dry spell. A more modest increase in spring discharge accompanied alluviation of the river valleys ca. 2100-1300 B.P., after which there is evidence of deflation by wind or stream downcutting ca. 1200-800 B.P., with subsequent establishment of essentially modern conditions. Pollen evidence in the Transvaal further suggests that temperatures were a little higher ca. 7500-1800 B.P. (SCOTT & VOGEL 1983). These paleoclimatic shifts may explain the southward expansion of several semitropical animals that were not found south of the Orange River during the 19th century but which are represented on the prehistoric art of that area: oryx (gemsbok), blue wildebeest, white rhinoceros, and giraffe (BUTZER et al. 1979).

Early reports on rock engravings

Beyond the general discussion of early reports on rock engravings in the Northern Cape presented in volume I, published comments on sites treated here begin with the missionary FRÉDOUX (1860), who noted such features in the Harts valley. Engravings from the middle Orange, near Hope Town, were also noted at an early date by FRITSCH (1872). In 1886 several engravings from site No. 101 were shown at a colonial exhibition in London, one of which remains in the British Museum. The engravings near the mission station of Pniel received attention in BARTELS (1892), and several originals from here were exhibited in Kimberley in 1892 (WILMAN 1933), three of which later found their way to a museum in Basel. Copies of engravings made by STOW (1905) at Driekops Eiland some 30 years earlier are now to be seen in the McGregor Museum.

A more explicit discussion of Bushman rock art, based on observations in the study area, is due to PÖCH (1909. 1911). A professional monograph on the rock engravings of the Northern Cape was subsequently presented by WILMAN (1933), and the inventory of known sites was augmented in the catalogue of VAN RIET LOWE (1952), based in part on his own efforts in the area during the 1930s. A typology of geometric designs from Driekops Eiland followed (VAN RIET LOWE 1955), but wisely refrained from interpretation. The volume of drawings from Driekops Eiland by SLACK (1962) provides neither context nor analysis.

In addition to these published reports, local farmers as well as visitors to the McGregor Museum have, over several decades, continued to provide information on rock art sites. These data in the museum files proved critical as starting points for the present authors' survey.

The engravings of Driekops Eiland

The first site described in this synopsis is taken out of the geographical sequence followed in the German text, because it is the most important one covered by the present volume. It also provides unique information on problems of relative dating as well as paleoenvironmental resolution, and is therefore presented in its entirety.

Introduction

This key site, with some 3600 engravings, is the second largest by number in South Africa. It is also unique in that almost 90 % of the representations consist of geometric designs. The density of engravings is also unusual, exceeding two per square meter over substantial areas, compared with 0.47/m² in the most densely engraved section of Kinderdam. Both the density and inherent intractibility of designs to an objective typology pose special problems for recording, that are compounded by the often poor craftsmanship and the high degree of patination or water abrasion, or both.

Through the assistance of the McGregor Museum the site was surveyed by Mr. D.ROSS-WATT and systematically photographed by Mr. T.SMITH, after a grid of 6 by 6-meter squares had been laid out. The photographs were taken from atop a ladder, to minimize peripheral distortion, and an average of 6 photographs was devoted to each square, with more detailed photography and rubbings made in the major areas of concentration. All of the engravings are included in the total of 800 pictures now stored in the Regional Rock Art Recording Centre. The documentation included in this volume is limited to about one sixth of the representations, a reasonable sample of the total.

The engravings are found on two andesite surfaces that form the channel floor of the Riet River. The Riet is here incised some 10-15 m into a series of Quaternary alluvial deposits that locally rest on Dwyka tillite, remnants of which are preserved on the extensive, undulating surface of glacially-scoured andesite. As a result of this late Paleozoic glacial erosion, the andesite is characterized by smooth convexities that have a local relief of 3 m. This surface is intensively scratched in deep, parallel lines that represent original glacial striae, which serve to partially obscure the engravings. Futhermore, natural jointing in the rock creates both small cracks and large fissures, that were subject to ancient glacial plucking or more recent, selective erosion by water. The andesite surfaces consequently are interrupted by irregular, linear gaps, presently infilled with river sand (Figs. 114; 115).

Methods of Potential Dating

Critical to a relative dating of the engravings is that they could only be executed at times when the river ran directly over bedrock. However, the suite of Quaternary alluvia indicates that the Riet has alternatingly filled in its channel with sediment (during times of accelerated flood activity), or cut a deeper course, removing such sediment (during periods of diminished flood volume). If the periods of channel erosion can be dated, they would provide potential bracketing ages for the engravings at Driekops Eiland. Such approximate chronological controls are available in the Riet River valley (BUTZER et al. 1979. BUTZER 1984):

ca. 9600 - 7800 B.P.
Accumulation of flood silts and sands, with higher water table in valley, but vegetation similar to that of today;

ca. 7800 - ?6000 B.P.
Floodplain level maintained about 5 m higher than today, and bedrock not exposed in channel;

?6000 - ?4500 B.P.
Some channel cutting, dimensions unknown, bedrock floor probably not exposed;

?4500 - ca. 2750 B.P.
Renewed accumulation of flood silts, stabilizing as a wet floodplain, 7 m higher than at present, with a high water table, a more grassy vegetation, and greater stream volume; bedrock floor not exposed;

ca. 2500 - 2200 B.P.
Rapid channel cutting, exposing bedrock floor;

ca. 2200 - 1300 B.P.
Renewed accumulation of flood silts and sands, stabilizing as a mainly dry floodplain, 2-3 m higher than at present; little or no bedrock floor exposed;

ca. 1200 - 800 B.P.
Mainly channel cutting, with accelerated eolian activity in area; bedrock floor exposed;

ca. 800 - ?150 B.P.
Some accumulation of flood sands, with bedrock floor exposed in a few places only;

ca. 150 B.P. to present
Conditions similar to present, with sand built up during major floods, later removed by gradual erosion; an increasing area of bedrock has recently been exposed.

As a general framework, it can therefore be argued that the Driekops Eiland engravings could only have been executed ca. 2500-2200 B.P. or after 1300 B.P.
Within the area of andesite bedrock at Driekops Eiland, the concentrations of engravings appear to be related more to the availability of exposed rock at any one time, than to deliberate cultural choice. The concentrations are mainly found on relatively high and convex surfaces, or ones that rise gently in a downstream direction (Figs. 114; 115); such micro-areas would be exposed first during a period of downcutting, and would also tend to remain free of temporary sediment. Unlike at Kinderdam, where the spatial patterning of representations can be attributed to cultural processes (Butzer et al. 1979. Fock & Fock 1984), no such case can be made at Driekops Eiland.
A second potential criterion for relative dating is provided by the differential patination of engravings, on andesite surfaces that are generally black and semiglossy, with a coat of clay minerals and ferromanganese compounds (see Dorn & Oberländer 1981). Already in 1873 Stow (1905) noted that heavily patinated petroglyphs occurred in clusters, with fresher, semi-oxidized "copies" of older engravings made in intermediate spaces, and occasional, very late and unweathered scratchings found dispersed across the site. A European name engraving, dated 1916 and found 1 m above the low-water level (+ 1 m), is almost as black as the heavily patinated bedrock, but the letters lack the glossy finish, because the mineral film is thinner. But another European name, dated 1889 and found 5 m above water level at Driekops Eiland II, is quite fresh.
This relationship between rapid patination and repeated immersion in water is verified by the relatively fresh nature of prehistoric engravings above + 2 m that are now being exposed by recent erosion of overlying flood sediments. In fact, the bulk of the engravings show a patination pattern related to elevation and distance from the modern channel: those below + 1 m and adjacent to the water are almost as black as the untouched bedrock, but are not glossy; those between + 1 m and + 2 m, and within 30 m of the channel are somewhat discolored; those above + 2 m or beyond 30 m distance are relatively fresh. These facts caution that contrasts in patina can only be applied to relative dating on small surface segments, where exposure to water or sun are identical.
Comparative "wear" is also sometimes invoked for relative dating. However at Driekops Eiland the 1916 engraving, directly next to the channel, has already been conspicuously worn through abrasion by fluvial sand. Evidence for abrasion is noticeably accentuated in channel proximity, on convex surfaces that face upstream: during flood events, concave-downstream faces are more rapidly covered by temporary sediment. Nonetheless, significant differences in abrasion can be observed on directly juxtaposed or superimposed representations. Outside of fluvial locations, differences in "wear" can be a result of elapsed time of chemical weathering or patination, but in such cases other possible factors such as runoff erosion, sand blast, or lichen growth (mainly in shaded concavities) must first be excluded.

The Engravings

Driekops Eiland I can be divided into two discrete areas, an Eastern and a Western sector (Fig. 116). These differ in thematic range and temporal definition. The basic data are as follows:

	Eastern Sector	Western Sector
No. of 6-meter squares with engravings	116	44
Engraved area	0.418 ha	0.158 ha
No. of engravings	2204	1343
Average density of engravings	0.53/m²	0.85/m²
No. of animal representations	11	325
No. of human representations	1	19
No. of geometric and other designs	1992	999
Percentage 'designs'	99.4 %	74.4 %

The engravings of the Eastern sector extend upstream beyond the low concrete dam (Fig. 116). During 1958 the authors made copies here when the water level was down. There are another 100 representations or so, exclusively geometric designs.

The animal representations of the Eastern sector include 7 hacked, unidentifiable mammals (Pl. 88,2), as well as pecked outlines of antelope and a bird (Pl. 72,1), a bird footprint (Pl. 68,3), and a stylized roan head (Fig. 120). The last is noticeably less distinct and more worn than an adjacent oval, crossed with three bars. Fig. 127 is interpreted as a human figure, in analogy with Fig. 129 of the Western sector. Two of the designs may represent "tasselled bags" (Pls. 64,1; 70,2), and another (Pl. 62,2) was identified as a "leather rucksack" by Frobenius (1901) on the basis of one of Stow's drawings.

Striking is that the geometric designs of the Eastern sector show concentrations of certain forms in a few squares: clusters of dots in 4/K (Pl. 61,1) and 6/K (Pls. 63; 64); ovals filled with parallel lines and one or more vertical bars ("grid ovals") in 4/E (Pl. 60,2), 5/E (Pl. 61,2), 5/G (Pl. 65,1) and 11/D (Pl. 70,1); circles with an interior cross ("crossed circles") in 5/G (Pl. 65,1); concentric circles in 6/G (Pl. 62,2); rectangles with parallel lines and vertical bar in 6/K (Pl. 64); strings of short, but irregular parallel lines with one or two perpendicular bars ("fish spines") in 8/C (Pl. 67,3), 12/C (Pl. 71,5), and 12/D (Pl. 71,1); and cellular arrangements ("Kraal layouts") in 4/E (Pl. 60,2). Whether such clusters had special ideographic or ritual significance, or whether they simply represent mechanical repetitions of a motif, is difficult to decide. Also striking is a design that resembles a capitalized letter "T", mainly with a pedestal and commonly ornamented by parallel rows of dots; this pattern, always unpatinated and relatively young, is concentrated in 6/K (Pls. 63; 64). There also are geometric figures consisting of two to six simple strokes ("glyphs") that resemble Semitic "letters", but these are done with comparatively little care and never arranged in any sequence.

Van Riet Lowe (1955: Fig. 1) illustrated 126 designs, by no means a complete inventory, that serve to show that many of the geometric designs are part of a continuum, so for example the various "grids", "T"s, circles/ovals, or designs with "rays". It is equally well possible to suggest a gradation between the "fish spine" design and various "gridded" ovals, circles, or rectangles on the one hand, or "millipede" forms on the other. These characteristics explain why a typology will be difficult to devise, except in the form of an interlinked matrix of similar forms, without clear boundaries. Some are, of course, quite unique, e.g. Fig. 128, which recalls Fig. 229 of Fock & Fock (1984), represented at Catharina in the Kalahari. Given such problems, it is presently impossible to interpret composite arrangements, e.g., those illustrated in Figs. 118, 119, 121-126, as to whether they were functionally, organically, or randomly grouped.

The Western sector has a much larger selection of animal representations. These were almost always done in a pecked, naturalistic style, sometimes in outline but often in silhouette or mixed form. But most are moderately to strongly abraded by stream action, and sometimes clustered quite densely, and are correspondingly difficult to identify: 72 % of the 325 animal representations cannot be identified according to genus. By contrast, juxtaposed geometric designs are often distinctly less abraded and therefore younger, so in contrast to an antelope (Pl. 83,1) or unidentifiable mammals (Pls. 83,2; 84,2). A similar difference in abrasion is visible between a European name and an animal (Pl. 76,4), or between a group of geometric designs and a human representation in 104/F (Pl. 76,1 and 2; Fig. 127, as redrawn from a rubbing). In some cases, fully pecked animals are relatively unworn because they are on a sheltered, concave part of a rock, so an eland (Pl. 81,2) and an aardvark (Pl. 82,2). In other examples, an animal is almost as waterworn as geometric designs, e.g. the eland in Pl. 76,5, and the design in Pl. 88,3 are strikingly worn. On one irregular rock surface, the raised, lower part of an antelope is waterworn but the head and back are not (Pl. 74,1). Photographs of rubbings generally provide the best record of waterworn engravings, e.g., Pl. 84,1 and 2 versus Pl. 84,3.

Some noteworthy animal representations include a quagga from a frontal perspective (Pl. 82,1), a zebra (Pl. 76,3), two hippos and a hartebeest (Pl. 75,1), an elephant (Pl. 87,3), an ostrich and three elands (Pl. 81,1), a rare springbok (Pl. 85,1), one antelope superimposed on another (Pl. 85,2), a human surrounded by animals, including an equid (Pl. 85,3), and three wild dogs, probably hunting dogs (Pl. 85,4). A particularly impressive cluster of animals appears in square 111/E, which was redrawn in Figs. 131 and 132.

A human figure stands at the center. A kudu bull (Pl. 86,1) is also prominently shown, as is an eland (Pl. 87,1) and an ostrich (Pl. 86,2), with a sharp outline but waterworn interior peckmarks. Figs. 131 and 132 show that animals are rendered in outline as well as silhouette; in the lower right corner of Fig. 131 a human, a bird and a zebra in silhouette are superimposed on an eland in profile. In as far as can be determined, silhouette representations (mainly pecked with medium-sized dots, 24213) are mainly younger than those in profile (24113).

Pl. 88,1 shows a small antelope in outline (done by "dash" marks) and a partial eland (pecked with medium-sized "dots") that were produced by W.SIERTS in the author's presence in November, 1965 (SIERTS 1968); the task took only 4 minutes and 45 seconds. The corresponding square (114/F) is shown by a circle on Fig. 116, so as to avoid possible confusion.

An inventory of the animals and humans in the Western sector follows:

Unidentified Mammal	235	68.31
Antelope	34	9.88
Human	19	5.52
Eland	11	3.20
Ostrich	9	2.62
Equid	6	1.74
Elephant	5	1.45
Hartebeest	3	0.87
Wild dog	3	0.87
Giraffe	2	0.58
Hippopotamus	2	0.58
Rhinoceros	2	0.58
Kudu	2	0.58
Quagga	2	0.58
Zebra	2	0.58
Springbok	2	0.58
Bird	2	0.58
Roan	1	0.29
Oryx	1	0.29
Wildebeest	1	0.29
	344	99.97

The geometric designs of the Western sector tend to be placed in open spaces between the mainly more waterworn, i.e. older, animal representations. A few also extend to well below modern low-water level, whereas no animal engravings are found under + 1 m; this not only suggests that more andesite rock was exposed but that the river was prone to drying up almost completely at the time the bulk of the geometric designs were produced.

Several arguments can be advanced to suggest three temporal phases for this category in the Western sector. The youngest can be readily recognized as relatively fresh and poorly rendered "copies" of older geometric designs (Pl. 80,2). The other two are more difficult to isolate, on the basis of different themes, type frequencies, and care in execution. Circles enclosing a field of dots and ringed by "rays" ("sunflowers", possibly tasseled bags) are unique to the Western sector (Pl. 83,1.2; 84,2), as are multiple concentric circles, separated by successive rings of "rays" (Pls. 76,1; 78,2), done with great care; crossed circles are absent. Altogether circles, ovals or rectangles with "rays" are more than three times as common in the Western area, rectangles twice as frequent, whereas dot clusters and grid ovals are much less common. The Western sector has typical "ladders" - -long rows of regular, short lines linked by a central line (Pl. 82,3.5) -- that may represent better examples of "fish spines". A swastika-like design (Fig. 130) is unique. These examples list objective differences that are reflected both qualitatively and statistically.

A sample of some 375 designs in the Eastern sector was compared with some 110 from the Western, in terms of broad categories:

	Eastern Sector	Western Sector
Grid ovals	23.0 %	14.0 %
Crossed circles	18.0 %	7.0 %
Elements with 'rays'	11.0 %	36.0 %
Rectangles with grids	4.5 %	9.5 %
'Fish spines' and 'ladders'	11.0 %	21.0 %
Dot clusters	11.0 %	5.5 %
'T's	6.5 %	7.0 %

On these various criteria, it can be estimated that, excluding the fresh or "copied" engravings, only about a third of the geometric designs in the Western sector correspond in theme, style and quality with those of the Eastern sector; the remainder are thematically distinct, often more elaborate or better done and, on the whole, slightly to somewhat more worn. As a group, the Western engravings therefore appear to be older than the Eastern ones. To what degree the "older" geometric designs in the Western sector overlap in time with the local animal engravings is uncertain; in the case of juxtapositions, the "older" geometrics are less worn than outline animals (Pls. 83,1.2; 84,2), but commonly are in similar condition as silhouette representations (Pls. 76,5; 82,4; 85,3.4; 86,3). The "older" designs have much the same spatial distribution as the animals, and are not found below + 1 m. A degree of temporal overlap is therefore probable with the Intermediate Phase animals.

The following, relative sequence is therefore tentatively offered:

Youngest Phase:	Hacked designs and "recopied" items;
Younger Phase:	Other geometric designs in Eastern sector and "younger" designs in the Western;
Intermediate Phase:	Silhouette animals, also some in naturalistic profile, as well as "older" designs of Western sector;
Older Phase:	Other outline animals.

This temporal scheme can be related to the alluvial history of the Riet River as follows:

Intermediate (? and Older) Phases:	ca. 2500 - 2200 B.P.
Younger Phase:	ca. 1200 - 800 B.P.
Youngest Phase:	after 800 B.P.

Other archaeological evidence near the site is limited to a "Smithfield" lithic scatter at the car park, just above the valley; river shell from here was dated 340 B.P. (Butzer et al. 1979). The location is described as "Bloem's Homestead" by 19th century sources, after the Kora chief Jan Bloem. Although the large stone ring walls of the Riet valley have been regarded as Kora settlements by some (Du Toit 1964), more recent excavation indicated that these "Type R" structures belong to pastoral San (Bushman) groups, whose presence is verified from the 16th century to A.D. 1837 (Humphreys 1979). These people may have been responsible for the Youngest Phase engravings.

A final comment concerns the repertoire of geometric designs. The "younger" designs at Driekops Eiland most closely resemble those from Rocklands, near Postmasburg on the Kalahari margin (Fock & Fock 1984: Fig. 258), in terms of forms and execution. But the range of "older" designs has no close counterparts at any other site, despite basic commonalities. One reason for this is that certain designs are present or uniquely elaborated at a very few sites. Such designs may have represented group "markers" or had other, group-specific, ideographic or symbolic value. In any event, further systematic research in this direction promises to be of great interest.

Engravings in the Harts drainage

The Harts River, with its headwaters in the southwestern Transvaal, is one of the few streams that carries water almost all year round. In its lower part the sinuous channel is cut up to 8 m deep into Quaternary sediments (Helgren 1979) and/or andesite bedrock, before joining the Vaal River at Delportshoop (Fig. 1b). A total of 11 sites were recorded in this area.

Killarney (Nos. 63-64) (Pl. 5)

At Site No. 63 there is a carefully pecked group of animals near the base of a small hill on the north bank of the Harts, including a rhino in "classical" style, a kudu cow, eland and ostrich, and geometric designs. Site 64 is located 80 m further north, on strongly weathered rock. The 10 engravings include a giraffe.

Home Rule (Nos. 65-66) (Pls. 6-9)

The largest site in the Harts valley is Home Rule, where andesite is exposed along a 1 km stretch to elevations of over 3 m. All but one of the 190 engravings are found on the south face, in the lee of cold winter winds. Human representations are particularly common, placed in two groups suggesting travel as they walk in a row, carrying bags. One woman wears a kaross. The animals, dominated by giraffe and eland, also include two cows, reported here for the first time. Two engravings show an animal within a circle, possibly a trap. Most of the geometric designs are found on a terrace well above the channel. On the northern side (No. 66) there is a group of 4 people, 2 of them women, one with a U-shaped bow over her head.

Tlaping (Nos. 67-68) (Pls. 9-12)

This site with 150 engravings forms an extension of Home Rule, where the andesite outcrops recede and allow development of a pond. The engravings at No. 67 belong to two temporal groups. The older includes excellent rhino and giraffe representations, as well as elephants and a hunting scene, where the hunter carries bow and arrow and faces a much larger rhino, drawn in the "classical" style. One of the giraffes has its head turned, another is shown at an anatomically correct gallop. The other engravings are much younger, done with a shallow pecking technique; the identifiable forms include an equid and geometrics. Site 68 is nearby and is limited to some pecked designs and an eland.

Modimo (Nos. 69-70) (Pl. 13)

A few engravings of the "Intermediate Phase" are here found along a dry tributary about 15 km from Taung. A group of people, with a man and a woman with a child on her back, is fully pecked, while other people and animals are shown in outline form. Site 70 is on a gentle, rocky rise and includes a large ostrich next to a group of small antelope. There also are a hyena and 4 elands, 2 of them copies, with a crude, superposed star. There are 30 engravings in all.

Orley (No. 71) (Pl. 14)

The 12 engravings span two different periods. Rhino, zebra, ostrich, and roan are older than eland and an even younger representation of a mounted man. All are on andesite in a poorly drained area.

Doornhoek (No. 72) (Pl. 14)

There is a hill here on the Vaal-Harts watershed with a panoramic view of both rivers. Thirty three engravings are found on the exposed andesite rocks, including a barking jackal with open mouth, surrounded by several designs. There also are a sheep and a bird although there is no variation in technique or patination in this cluster.

Newlands (No. 73)

Wilman copied engravings here, with carefully rendered geometrics and plants as well as animals, inluding an aardvark and a hare. She also reported a circle of stones, possibly belonging to a hut. The present owners would not allow us access to the hill in question.

Engravings in the Vaal Basin

The Vaal River flows 1355 km from the continental divide, but our survey was concerned with the lowermost 443 km, between Christiana and the Orange River confluence. As it passes through the grassveld, its banks are low and followed by gallery woodland. Engravings are found at 42 sites, on andesite blocks along the banks or exposed on low hills at greater distance.

Kalkfontein (No. 74) (Pls. 15-16)

This site is 15 km east of Christiana, about 200 m from the river. Some 255 engravings are now found concentrated on an andesite outcrop, and they belong to three different episodes. Some faint hairlines constitute the oldest group, but most belong to the "Intermediate Phase", and a few box-like animals suggest the youngest. There are 107 finely done geometrics and many elaborate apron-like or bag designs. Most animals are shown in profile or silhouette. Of note are 8 hippos and a white rhino about to charge. Nearby there is a stone circle, 20 m in diameter, the stones of which lack engravings, as well as the remains of a corbelled hut.

Engravings in the Modder and Riet Valleys

The Modder and Riet rivers drain the western Orange Free State, where 9 engraving sites were recorded for comparative purposes, in addition to 8 further locations in the northern Cape Province. HUMPHREYS (1972) has studied 95 sites along the middle Riet valley that are ascribed to the "Type R Settlements". They represent hunter-gatherers who also practiced livestock herding during the 17th and 18th centuries. BATTISS (1948) has reported a goat engraving (at Site No. 122) that may belong to this archaeological complex. An unrelated burial at Weltevrede has been dated at 3360 B.P. The largest site of the Riet valley is Driekops Eiland.

Susanna (No. 116) (Pl. 52)

Dolerite blocks on a low hill preserve engravings of eland (two periods), rhino, warthog, antelope, as well as modern names.

Olifantsfontein (No. 117) (Pl. 53)

Most of the engravings from this dolerite site are now in European museums, and included an interesting group of people as well as a range of animals (see HOLUB 1881). Eland and ostrich are still recorded at the site.

Banksdrift (No. 118) (Pl. 53)

A dolerite hill is located near a ford across the Modder River, and its rocks are covered with at least two generations of superimposed engravings. The oldest includes a warthog with a newborn. A group of slabs removed by HOLUB (1881) was examined in Vienna; they include representations of zebra, eland, roan, warthog, baboon, ostrich, and one human. Similar slabs now in Prague inluded a hyena.

Koffiefontein (Nos. 119-121) (Pl. 53)

There are three sites on dolerite outcrops within this town's limits, each facing the Riet River. They total 75 engravings and span the range of hairline, scraped, and pecked-outline techniques. Two bag-like designs belong to the "Intermediate Phase", as does an eland superposed by younger animals. A scraped antelope suggests affinities to the style of the Karoo. At the Commonage (No. 120) there are several stone circles

(12-50 m diameter), abundant Smithfield artifacts, as well as potsherds and a goat representation.

Afvallingskop (No. 122) (Pl. 54)

Two prominent dolerite hills about 1.5 km from the Riet are here separated by a level surface with several large stone circles, belonging to the "Type R Settlements". The 34 engravings include a "Younger Phase" honeybadger and hyena, older eland representations, an ostrich in silhouette, and a blesbok with turned head in "classical" style. BATTISS (1948) noted a Cape buffalo and a younger goat engraving. A crested crane is also shown.

Koppieskraal (No. 123)

A low ridge of dolerite here includes 23 engravings, of which springbok, generally rare, is of note. Also present are hippos, quagga, lion, and baboon.

Pramberg (No. 124) (Pl. 55)

A dolerite ridge here includes representations of a hippo ("Oldest Phase"), with additions of wavy lines suggesting water; a very recent horse engraving (done with iron tools) shows the head turned so that the nostrils are visible.

Ritchie (No. 125) (Pl. 55)

The site is located on an andesite barrier that creates a small water fall. There are some 25 identifiable engravings, including geometrics in the younger style of Driekops Eiland, as well as eland, rhino, and elephant.

Aswegenshoek (No. 126)

WILMAN (1933) reported engravings from here, including many human representations, partly as groups. The site could not be located.

Moirdale (No. 127) (Pl. 56)

The Riet has cut its channel into andesite near this site. The 14 engravings belong to two phases, for example an eland superposed by a wildebeest. A rhino is shown with hints of perspective; it and a lively group of 11 people are younger.

Doornlaagte (No. 128) (Pl. 56)

A small, steep hill on this farm has 69 engravings of varying age, strongly patinated and difficult to identify. An eland in outline form and another with elements of the "classical" style can be noted, as well as a number of disc-like designs.

Driekops Eiland I and II
(see separate description)

Christiansdrift (No. 131) (Pls. 90-93)

A small dolerite hill 2 km north of the Riet has a concentration of 289 engravings belonging to three periods. The oldest are hairlines, including a fine eland. There is an immense elephant done in profile, and a poorly proportioned giraffe. The younger group includes animals done in silhouette with suggestions of their coat patterns. Elephant and hippo are particularly common, although eland are dominant, but geometrics are rare. The 15 human representations frequently suggest headdresses. An ox-wagon with driver was done with iron tools.

Mierkraal (No. 132) (Pl. 94)

Andesite is exposed on the channel floor and the geometric designs rendered here recall those of Driekops Eiland, 1.5 km upstream.

The Ghaap Plateau and Asbestos Mountains

The Ghaap Plateau runs north and west of the Orange and Vaal rivers, extending to the Vryburg area. The dolomite rocks form a prominent escarpment towards the valley, and locally there are accumulations of calcareous tufa. The australopithecine find at Taung comes from such a deposit. The Asbestos Mountains adjoin the Ghaap Plateau to the west. Paintings were found in a number of caves in both areas (sites 133-137, 139-141, 148-149,153), and in some cases engravings were found in open country nearby (sites 142-147, 150-152). Elevation of the caves has no relation to the presence of paintings. At Rietfontein (No. 134) they are first found under a low overhang, and extend up into the caves proper. In the case of Ochre Cave (No. 133), much of the cavern is under water during floods. In Wonderwerk Cave (FOCK & FOCK 1984: 157-159, No. 58), the entrance is 12 m above the sur-

rounding plain. At Rocklands (Fock & Fock 1984: 139-143, No. 45), there are engravings on top of the Ghaap Plateau, while a cave in the adjacent escarpment (Kransfontein, No. 138) has an engraving but no paintings.
The paintings were done by finger, and include short and long strokes, wavy lines, dots and circles of about 1 to 1.5 cm in width, that form various patterns. Exceptions to these geometric designs are a possible bees' nest at Rietfontein and human representations in the Eindgoed shelter (No. 192).

The Orange River Valley

The study area includes a 470 km-long, intermediate stretch of this 2,250-km river, adjacent to the Vaal confluence. The channel has cut down as much as 75 m into Dwyka sediments and andesite, and the valley walls tend to be steep above a narrow floodplain. The environment is arid to semiarid, rainfall increasing from southwest to northeast. Agriculture is only possible with the help of irrigation, and the vegetation is of Karoo type and used mainly for sheep grazing.
In historical times the Orange River has formed an ethnic as well as an ecological boundary. To the south there are few representations of giraffe, for example, since this is a warmth-dependent animal. Engravings south of the Orange tend to be shallow in their execution, and appear to be younger than those north of the river, where other techniques were mainly used. The southernmost site done in a "northern" style is Kareekloof (No. 167), whereas the engravings at Biesjespoort (No. 197), north of Kakamas, give hints of the styles used in Southwest Africa (see Scherz 1970). Some 44 sites have been recorded in this subregion.

Disselfontein (Nos. 170-174) (Pls. 112-125)

This site complex on the southern margin of the Orange valley form 5 clusters (Sites I-V) spread over some 9 ha. During flood stage the river expands from 50 m (Pl. 112,2) to a width of 400 m; dunes are active on the floodplain, one measuring 50 by 100 m. Near the old farmhouse is a perennial spring, now used to irrigate a citrus grove. The house is occupied by a Griqua farmhand, who has decorated it with motifs (Pl. 112,1) very different from those photographed on a farmhouse near Kalkfontein. The workman knew the engravings and showed us a conspicuous example.

Site I (No. 170):
Some 2 km upstream of the spring the Orange cuts through an andesite gorge, where water has polished the black rock surfaces. The engravings are equally patinated, and those of Site I are under water at flood stage. Additional engravings may be covered by dunes. The 12 visible ones are dominated by "designs", including 2 tasselled bags and some dots. There also is an eland, apparently dead (Pl. 113,1).

Site II (No. 171):
On the slope above Site I there are 2 groups of engravings (52 in all), separated by 20 m of dune sand. The first is dominated by designs, including "rayed" ovals, "stars", a "fish-spine", and a zigzag line ("snake") (Pls. 114,1; 115,2). The other group has animals, including a hippo (Pl. 114,3), drawn across a crack in the rock, after it had already been split; these animals are older than the geometrics. Near the latter, on a surface roughed up by sand blast, is a characteristic longhorned bull (Pl. 116,3). Next to it, a fractured rock preserves an identical set of hind legs and a tail (Pl. 116,1), which suggest another domesticated bovine; the forelegs are worn away by wind erosion.

Site III (No. 172):
Beginning on the steep rock faces 500 m downstream of the spring, 79 engravings were located along a 1.5 km stretch, many of them on low rocks in shrubby terrain (Pl. 115,1). Representations of different ages are scattered without patterning, and they are generally shallow as a result of sand blast (Pl. 117,5).
Several groups are of interest. For example, a zebra is shown at a right angle to an ostrich as well as another mammal (Pl. 118,3). Two ostriches were drawn above a dot cluster that probably represents a clutch of eggs (Pl. 117,6), and the dot clusters of Plates 118,2 and 119,5 suggest a similar interpretation. Noteworthy are relatively young engravings of a human above an incomplete giraffe (Pl. 118,1), an association that can be seen from a hundred yards because of the light reddish patina; this suggests that glyphs in exposed places were originally visible from some distance. Several mammals, including one superimposed on an equid, can be poorly recognized on Plate 119,1. A human confronts an oryx in Plate 119,3, with another animal behind. Two running ostriches, with another standing specimen superimposed, can be seen in Pl. 113,4; the perspective used for the pacing bird is unusual.
Plate 119,2 suggests a zebra in a trap, and one of the 8 elephants is shown in Figure 153. The only giraffes (6 in all) of Disselfontein (Pl. 119,4) are found at a spot with a good view; this animal is uncommon south of the Orange. The wild dog, identified by its round ears in Plate 117,2 is generally rare on engravings.

Site IV (No. 173):
Wind erosion has exposed a large andesite outcrop about 2 km south of the river. The rock shows fissures, some of

which appear to postdate the 42 engravings. Of these, 15 are humans and 4 human footprints (Pl. 123,2). In one group scene, 3 men holding long sticks or bows wear headdresses (Fig. 154; Pl. 120,2); one has a kaross suspended below the waist. This composition further includes two elands, one superimposed on an ostrich, two further men -- one with a stick, the other with a possible net --, a pegged skin, a tortoise, an apparent bag, a crude geometric with 4 large rays, and an unidentified object. Nearby is a probable flamingo (Pl. 121,1), a fractured eland representation (Pl. 121,2), a baboon (Pl. 121,4), and an approaching secretary bird, exhibiting a fine gravitational stride (Pl. 122,2). A man apparently jumping over a mammal (? aardvark) (Pl. 124,1) is not of the same age, since the first is done in coarse dots (24213), the latter in fine silhouette pecking (24212). Another mammal, possibly a hunting dog, is shown near a "rayed" disk (Pl. 124,2), while on Plate 125,1 an eland, done in profile technique, is superimposed by a silhouette ostrich in which the line of the back has been recessed, reminiscent of the "classical" technique.

Site V (No. 174):

There is a 75 m-high ridge, 300 m northwest of the spring, that provides an excellent overview in all directions (Pl. 112,2). A small tributary stream runs between the steep face of the hill and the farmhouse. The largest concentration of engravings was found on this face, with 178 identifiable features and traces of perhaps 50 more, too weathered and sandblasted to categorize. They span several periods, but 45 are only recognizable as antelopes, and 15 only as mammals. Eland (Fig. 155) is most abundant, with 23 engravings, but 12 humans also suggest considerable importance for this site. There are several group scenes. An eland is found directly next to an incomplete, small antelope (Fig. 156). A mammal, with horns added later, appears to be grazing at the feet of an ostrich (Pl. 122,1). A wildebeest seems to be jumping over an unidentified mammal in Plate 122,3. The front quarters of an eland in profile can also be seen above an eland in silhouette (Pl. 122,4). A (? secretary) bird with a wavy line hanging from its beak (? a snake) (Pl. 123,1), has a counterpart in what appears to be a prone eland with lines running out of its mouth (Pl. 124,3).

Also interesting are a silhouette eland, with its own hoofprints indicated under the forelegs (Pl. 123,3), and a spotted hyena in characteristic pose (Pl. 123,4). The finest engraving is an oryx in which the chocolate-colored longitudinal mark remains unworked (Pl. 4,3)

The cattle shown at Disselfontein are particularly important, and 3 such engravings are found at Site V (Pls. 116,2; 117,1, and possibly Pl. 116,1).

Brandfontein (No. 176) (Pls. 126-130)

The farm Brandfontein has been subdivided, so that the engraving area now also belongs to Doktorskraal. They are dispersed over 0.7 ha. on a low andesite ridge that forms a "terrace" above the Orange (Pl. 126,1). The 646 engravings here are older than 32 unpatinated engravings of the Younger Phase (Pl. 127,1) found on the lower slope face ("steilhang"), or 21 "recent" engravings a little further east and done with iron tools (Pl. 130,1). The older engravings are distinguished by a glossy, reddish varnish not found at other Orange Valley sites or at other andesite sites further north. Apart from being the largest Orange site, the Brandfontein "terrace" cluster is distinguished by 54 % geometrics and other designs.

Many of the andesite blocks have 2-8 cm holes, natural rather than artificial, that are commonly incorporated into geometrics and other designs (Figs. 157; 158; Pls. 127,4.5; 128,1; 129,3) but were ignored in the engravings of animals (Fig. 159; Pls. 128,2.3; 129,2.4.5; 130,2). Plate 127,2 shows a human next to a spiral, but the hole in the rock was not included in the composition (compare Fock & Fock 1984: Fig. 106). Next to this are 12 giraffes (Figs. 161; 162), one of them measuring 49 by 120 cm (Fig. 161; Pl. 130,2), the largest engraving of the site and possibly once visible from the north side of the river. There also are 16 rhinos and 8 hippos, which would have had difficulty descending to the river by this trail. Noteworthy is an unidentified bovid with enormous horns (Fig. 164), and a good representation of a buffalo (Pl. 126,2). A rhino and an ostrich are shown together in Fig. 168. Two of the 6 wildebeest can be identified as of the "blue" species. Eland is the most common animal, occurring singly or in groups; one is rendered with a shading technique (Pl. 129,5), while another has a small, superimposed antelope (Fig. 165). Plate 129,1 shows an eland on a block that has since split, with the new faces heavily patinated, suggesting it is older than the others.

One of the animals is identified as blue antilope (*Hippotragus leucophaeus*) (Fig. 170), a form hunted to extinction during the late 18th century. On the basis of reports and fossil materials it had been assumed that this animal had a more southerly distribution (Klein 1974). There also is a good frontal section pertaining to longhorned cattle (Fig. 163).

The geometrics and other designs were done with some care and show a similar, strong patination to the animal representations. Many are found in associations, so a "rayed" disc next to an oryx (Fig. 166), a zebra front with a pattern on the neck (Fig. 167), an antelope whose horns are fused with a grid design (Pl. 129,2), an ostrich and a mammal with a "rayed" element (Pl. 128,3), and a large elephant with a spiral over a hind leg (? a trap) (Fig. 169). In general, spirals, concentric circles, and "stars" are the most common

geometric elements, which were not repeated in the cluster of Younger engravings on the lower face.
The hacked engravings made with iron tools mainly show horsemen, but include donkey, domesticated dog, and a bus.

Slypsteen (Nos. 177-180) (Pls. 130-135)

An aerial photograph (Pl. 131,1) shows the general terrain, and the farm subdivisions can be ignored except for W15 75, which identifies the major concentration of engravings (Site I) and the only one known to us until 1970. This location is also important because we first found engraved cattle here in 1965 (Fig. 171; Pl. 133,3), a phenomenon still denied by Willcox (1971), but confirmed by examples elsewhere (Fock 1968. 1972 c). A Griqua farmworker from Slypsteen (Pl. 132,3) who had seen us record Site I in 1968, informed us 2 years later that he had found further sites while searching for lost sheep. These new sites augment the range of themes.
The Slypsteen engravings belong to different periods. An eland recalls the "classical" technique (Pl. 130,5), and the majority pertain to the Intermediate Phase. The huntsman with raised rifle and the surrounding animals (Pl. 133,6) are recent but nonetheless indigenous. A horse (Fig. 172) is strikingly different and was scratched out in a hairline technique with an iron tool; the technology and the swan neck, with small head and legs, are common among Karoo engravings, where the style persists among contemporary shepherds, and includes automobiles.

Site I (No. 177):
In this area the Orange River bends slightly to the north, with engravings found on the plateau 30 m above the channel. Of the 115 engravings, 18 are of unidentified mammals and 16 of generic antelopes (Fig. 173). Eland is absent, despite 16 representations elsewhere on Slypsteen, but there are 12 human and 12 ostrich engravings (e.g., Pl. 130,3). Most of the features occur singly, rather than in groups, so a human figure with upraised arms (Pl. 132,1). Oryx and elephant are illustrated (Figs. 174; 175).

Site II (No. 178):
Here 51 engravings are found along a deeply incised tributary stream. Noteworthy is a group of humans and a footprint (Fig. 176; Pl. 132,2), better rendered and lighter in patination than a group of 4 elands, 3 other antelopes, and several indistinct peckings (Pl. 134,5).

Site III (No. 179):
This site was discovered because of the conspicuous rhino (Pl. 132,3), which is relatively young. There are 14 human engravings, mostly in groups, also a hunter with a bird (Pl. 135,3), the former with headdress, a stick across the shoulder, torso covered with a kaross, and staff in hand. There also is a rhino, fused with a design, with another hunter and an ostrich below. A simpler ostrich is shown in Plate 135,2.
Of the 4 elands, a good but incomplete example is singled out in Plate 130,4, as is the partially recessed and carefully pecked eland of Plate 133,4, with indistinct legs. Another eland (Pl. 133,2) was found 200 m closer to the farmhouse; it was under a bush and the weathering gives an older appearance.
One of the 3 characteristic, long-horned cattle is illustrated (Pl. 131,2), and there is only one but quite elaborate design (Pl. 133,5).

Site IV (No. 180):
The recent hunt scene (Pl. 133,6) and the horse (Fig. 172) are located here, but there also is a large and particularly fine eland (Fig. 177; Pl. 130,5) among the 9 engravings.

General Discussion

The present volume documents 134 rock art sites in the lower Vaal-middle Orange basin, an area of some 70 000 km². Only 12 of the localities have paintings, and the number of paintings at each is small. By contrast, the number of engravings is immense, with over 10 700 inventoried for 123 sites, most of which include representations of humans, animals, as well as various designs or objects. The most prolific site is Driekops Eiland, with some 3 600 representations. This can be compared with 2 400 at Kinderdam (Fock & Fock 1984) and almost 4 600 at Klipfontein (Fock 1979) where, however, the range of themes and the aesthetic quality of representations is greater.
In total, over 20 000 engravings have been inventoried in volumes I to III, warranting some interim discussion and preliminary conclusions. The more important sites, with 25 or more engravings, are shown in Fig. 197. As a basis for discussion, the identifiable subjects were divided into humans, animals, and designs or objects. A median percentage for each category was derived for each of the 10 site groupings utilized in these 3 volumes: Klipfontein, Kinderdam, the Kalahari sites around Vryburg, the dolomite sites of Kuruman and further north, the Olifantshoek area, the Harts basin, the lower Vaal valley, the Riet-Modder region, the Ghaap escarpment and plateau, and finally the Orange valley.

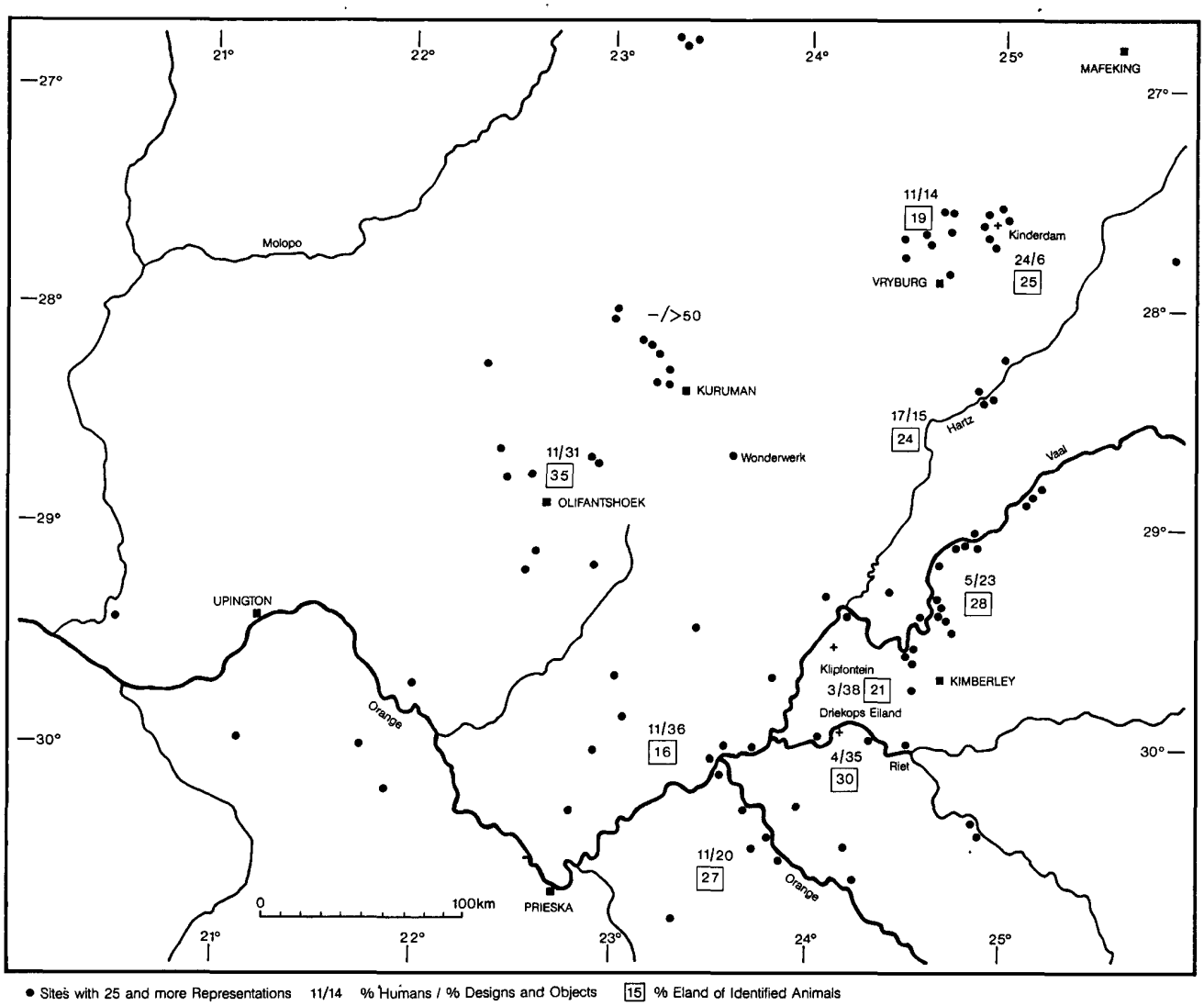

Fig. 197 Thematischer Aufbau der größeren Fundstellen / Thematic Composition of Major Sites

Human Representations

The relative importance of human representations varies greatly from region to region. Excluding the almost exclusive geometrics and other designs of the Kuruman area, percentages range from 3 % at Klipfontein, 4 % in the Riet valley, and 5 % along the lower Vaal, to 25 % at Kinderdam, with a constant 11 % in other Kalahari areas, on the Ghaap and around the middle Orange. There also is a high intersite variability (coefficient of variation [CV] 124.5 % for Vaal and Riet, 76.5 % for Vryburg and Harts, 85.2 % for Orange, Ghaap, and Olifantshoek).

As a general rule, human representations were executed with less care and attention to detail than were animals. Few human forms show identifiable clothing, although in some cases a simple kaross, hanging from waist or shoulders can be seen, and some individuals wear a headdress. The great majority are males, and bows or sticks are commonly carried. Female representations are not abundant, but these include two "birth events" as well as evidence of steatopygia, both of which seem to infer fertility. Group scenes of several people or of humans together with animals, and occasionally with what we interpret as "trees", are not uncommon. In some cases a hunt scene is suggested, occasionally supported by a person camoflaged in an animal skin, although the shamanistic role of a sorcerer cannot be excluded in such cases. A number of dance scenes can also be identified sometimes in apparent association with eland, suggesting "eland dances". To what degree the various scenes are intended to be narrative statements or symbolic representations, or a combination of both, is difficult to ascertain.

At large sites, such as Kinderdam or Klipfontein, there is evidence for considerable intrasite variation in the ratio of humans shown. At Klipfontein (see Fock 1979), a random sample of 571 engravings in the six recording areas showed a range of variability from none to 14.5 % human figures. At Kinderdam (see Fock & Fock 1982: Fig. 11) there are even more striking concentrations of human representations in certain squares that do not correspond to concentrations of animals or "geometrics". Different parts of the site seem to have served different functional or symbolic purposes, an inference supported by the partial or total absence of engravings on some rock outcrops of similar physical type. At both the small and large scale, namely intrasite and intersite variability, such disjunct or uncorrelated distributions suggest that different sites or parts of sites (i) had different functions or symbolic value, (ii) were used at different times, or (iii) represent use by different groups or peoples. We are inclined to believe that ritual functions and symbolic values were the primary variables.

Related to the human representations are the human footprints readily identifiable with their five toes. These have been added to the "human" category. These curious features play a prominent role at Kinderdam and the Vryburg sites, and can also be found further west and north, in the Kuruman area and even Namibia (Scherz 1970). But they are rare in the area documented by volume III. Except for one human foot at Nooitgedacht, they are only found again in small numbers at 8 sites of the Orange River. They may reflect a thematic notion that did not experience general diffusion; they may also have been territorial markers, or identified points of ritual or symbolic significance. In any event, their distribution within Kinderdam (Fock & Fock 1984: Fig. 21) differs sufficiently from that of the human figures to suggest a distinct functional or thematic role.

Animal Representations

With exception of the Kuruman group of sites, animal representations typically account for 60 to 75 % of the rock engravings in any one area. Over 45 % can be identified to at least the generic level. Almost all are animals directly recorded in the northern Cape Province at the time of first European contacts.

Many of the animals shown are characteristic of open country, whether grassland or grass savanna, with interspersed bush and scattered deciduous trees or scrub, commonly thorny. Such forms include zebra, quagga, warthog, giraffe, springbok, oryx, hartebeest, black and blue wildebeest, aardvark, hunting dog, cheetah, as well as ostrich. Others of the identifiable animals are characteristic of bush or thickets, and the margins of wooded areas or aquatic habitats. These include elephant, white and black rhinoceros, hippo, impala, waterbuck, roan and sable, kudu, buffalo, leopard, as well as flamingos and herons. Using a sample of 1 946 such habitat-specific animals identified, it is possible to show that the representations do indeed reflect variations in regional ecology (Butzer et al. 1979): 37 % bush or semiaquatic forms in the Vryburg sites and at Kinderdam, 38 % in the Vaal and Harts valleys, 56 % in the densely vegetated area around Klipfontein, 31 % in the more open Orange River setting, and 28 % in the almost treeless Karoo landscapes. There is, then, a satisfactory degree of ecological "credibility" in the rock art animal assemblages.

That said, it is equally important to emphasize that some key animals are grossly over or under- represented. Numerically, springbok was by far the most common animal in the northern Cape during the early 19th century, yet it is rarely shown on the engravings. Eland was not abundant in the region in historical times, but it is the most common animal shown at almost every site with animal engravings. Springbok is relatively difficult to take and provides comparatively little meat, whereas eland is a fairly docile and ungainly animal that yields much meat. Here is then a strong element of cultural bias, superimposed upon the basic ecological framework of available animals.

In addition, there is the question of whether eland had additional symbolic value (Pager 1975. Vinnicombe 1976). Median percentages of eland representations, with respect to only those animals identified to at least the generic level, are also shown in Fig. 197. They range from 16 to 35 %, and the low to moderate intersite variability (CV 11.5 % for Vaal and Riet, 52.6 % for Vryburg and Harts, 57.9 % for Orange, Ghaap, and Olifantshoek) underlines the consistent prominence of eland representations. There is no relation to local ecologies: the highest ratio is in the Olifantshoek area, an arid domain where eland will always have been uncommon. It is therefore probable that eland had a high symbolic or ritual value, considerably exceeding its real frequency or its net caloric yield.

Despite this demonstrable cultural bias, the engraved fauna appears to suggest an environmental shift, in addition to the ecological gradient mentioned above. Several species (white rhinoceros, giraffe, oryx, impala, waterbuck, roan and sable, blue wildebeest) were rare south of the Riet and unknown south of the Orange during the early 19th century. These are "northern", semitropical forms of lower latitudes, or areas with milder winters than those experienced in the modern Karoo. These semitropical forms increase from 6 % among the Karoo engravings, to 11 or 12 % in the Orange Valley sites and at Klipfontein, to 23 or 24 % in the Vaal-Harts and the Vryburg area sites (Butzer et al. 1979). Even so, four of these eight species were never represented south of the Orange River. This again confirms the overall ecologi-

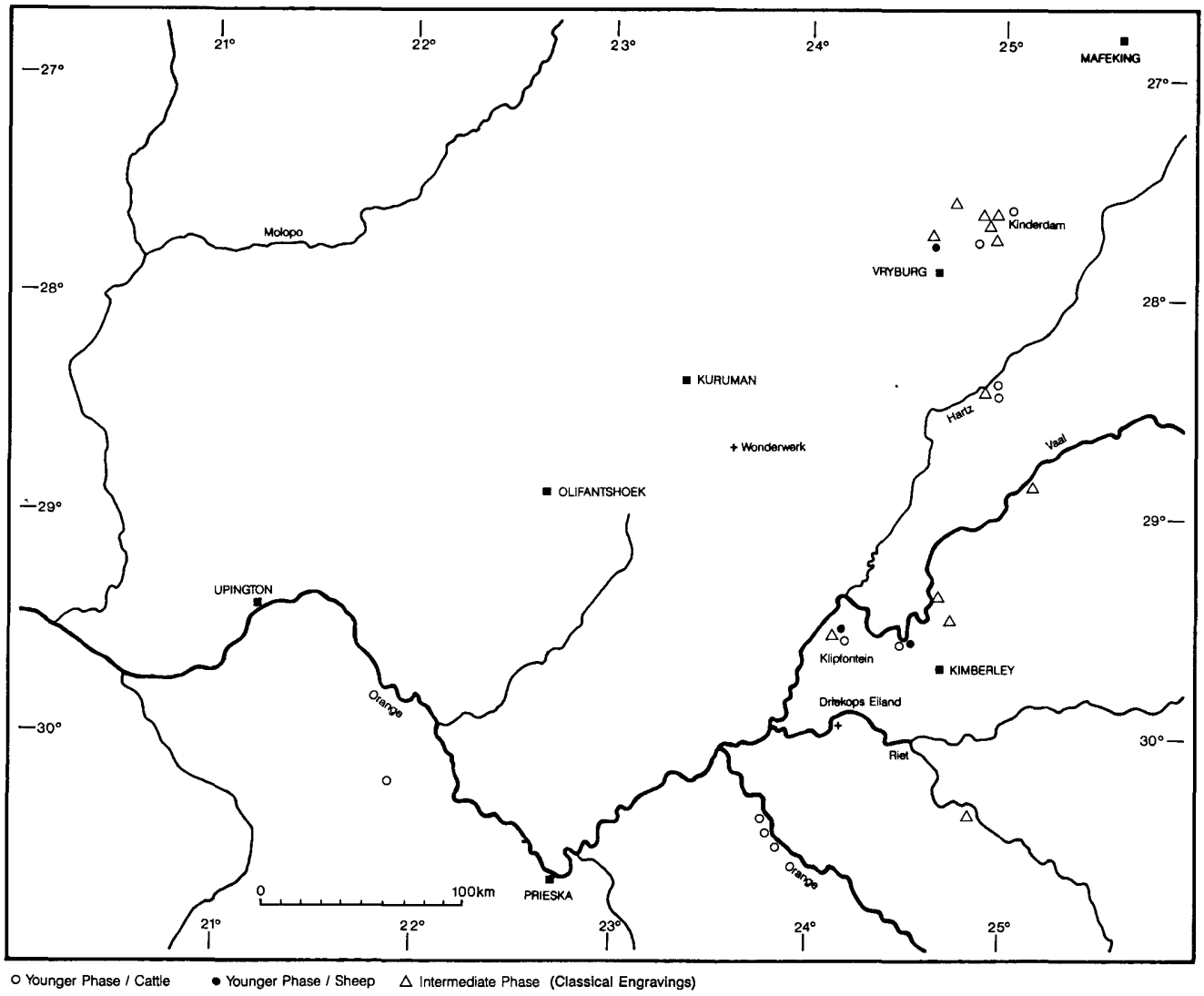

Fig. 198 Haustiere / Domesticated Animals

cal veracity of the rock engravings. But there are representations of oryx, blue wildebeest, white rhinoceros and giraffe south of the Orange, well beyond their historical range. Although the engravers were mobile people, a faunal shift may be indicated, specifically, a period of milder winters. However, the uniquely comprehensive Holocene pollen sequence from Wonderkrater, in the central Transvaal, does not indicate significantly warmer temperatures after 5000 B.P. (SCOTT & THACKERAY 1987).

The "classical" technique of animal representation has been described above. Fig. 198 shows the distribution of sites at which the "classical" technique is present. The numbers of sites as well as representations are small, and limited to the eastern part of the region. Given such small numbers, no inferences are possible as to whether "classical" engravings help to delimit a particular ethnic area during the Intermediate Phase of the engravings, whether they represent diffusion from the Vryburg site cluster, or whether they even record the work of a small number of possibly itinerant "specialists". Less debatable is that they are concentrated at sites where the overall aesthetic qualities of Intermediate Phase engravings are particularly high, and specifically where the combined use of the silhouette and profile techniques is common.

In terms of other representational techniques, hairline engravings are equally rare in the area covered by this volume: 3 sites in the Vaal valley (Nos. 74, 100 and 102), 2 near the Riet River (Nos. 119 and 131), and one near the Orange (No. 154). Scraped engravings, common among the shallow engravings of the Karoo, are also rare and limited to single sites in the Riet (No. 119) and Orange (No. 190) areas. Other hints of the Karoo techniques, namely shaded engrav-

ings, have been noted at Brandfontein (Pl. 129,5). Finally, a recent horse engraving at a Riet site (No. 124) shows the front legs in a position also reminiscent of the Karoo engravings. The Karoo sites exhibit a distinctive mix of style and technique. In this perspective the profile-and-silhouette technique, in conjunction with true "classical" engravings, also appears to characterize a distinct stylistic focus. Its core was in the lower Vaal Basin, the Vryburg area, and the western Transvaal. But strong influences are still discernible in the Riet sites Nos. 122 and 128, as well as at Disselfontein and Slypsteen on the middle Orange.

Of particular interest are the engravings of domesticated animals. Sheep are recorded at Klipfontein (4 individuals, in part fully pecked, but poorly proportioned, Fock 1979: 73), Pniel (1 individual), and at Content (5 individuals, with limited patina and in an outline style that emphasizes characteristic markings, reminiscent of the "classical" style) (Fock & Fock 1984: Figs. 176; 177); the Content sheep examples can be identified as of the fat-tailed variety. Cattle are recorded at Home Rule (2 individuals, one fully pecked and outlined), Tlaping and Pniel (1 each), at Vlakplaas (2 individuals) and Kinderdam (by exception, a short-horned specimen, Fock & Fock 1984: Pl. 57,1), and at Klipfontein (5 individuals) (Fock 1979: Fig. 61; Pl. 125), towards the north. In the Orange River area cattle are shown at Disselfontein (as many as 5 individuals, one fully pecked and the best one done in profile), Brandfontein (7 individuals, one fully pecked and outlined), Slypsteen (4 individuals), and Eindgoed (4 relatively recent, 3 older than a donkey representation but fresher than wild animals). Almost all are long-horned cattle (Fock 1968. 1972 c). Goats are certainly shown at Klipfontein (3 individuals) (Fock 1979: Pls. 127-128). The matter of domesticated stock, ephemerally or more permanently kept by Later Stone Age people in the northern Cape since at least 1200 B.P. -- long before the intrusion of Iron Age peoples, is no longer controversial (Deacon 1984. Klein 1986). Noteworthy is that several of the sheep and cattle representations pertain to the Intermediate Phase: sheep at Klipfontein, cattle at Home Rule, Disselfontein, and Brandfontein. The remainder of the examples singled out here belong to the Younger, rather than Youngest Phase style and technique of representation.

Geometrics and Other Designs

A major component of the rock engravings consists of geometric and other designs. These belong to both the Intermediate and Younger phases, judging by three criteria used in conjunction: quality of execution, superimpositioning with older and younger animal representations, and differences in patination -- both between adjacent geometrics and between geometrics and adjacent animals. These two temporal classes may overlap, but they allow some broad generalizations.

Engraved designs of the Intermediate Phase are best represented at Klipfontein (Fock 1979), Catharina (No. 34) and Rocklands (No. 45) (Fock & Fock 1984), and Driekops Eiland II. They tend to be more regular and deeper, and of greater aesthetic appeal. They also include a greater variety of distinct design-categories, that commonly are more elaborate and executed with some care. Most of the complex "objects" that can be tentatively identified among these designs, partly on the basis of ethnographic counterparts (see Fock 1979: Pl. 143), belong to the Intermediate Phase: dress features (kaross), decorated and tasselled bags of several shapes, traps, or pegged-out animal skins.

The more abstract motifs overlap widely, despite stylistic changes and differences of frequency within any one cluster of adjacent sites. Intersite variation is notable, and shifting temporal patterns at one location may not apply in another area. Designs used during the earlier period tend to be replicated, with variations, at the same site, if younger geometrics are also present; many of the primitive Youngest Phase themes are blatant copies of older ones. The most economical explanation is that the oldest designs visible at a site continue to influence the subsequent selection of themes, although the persistence of particular symbols among identity-conscious groups cannot be excluded. Equally ambiguous is that certain motifs are unique to one site, such as the "T"s at Driekops Eiland, or isolated in a few dispersed sites, so the crossed elements at Driekops and Stowlands. Certain other themes, such as the "kraal layouts", are few in number but found in widely dispersed sites. As argued in the introductory section and in the discussion of Driekops Eiland, only a detailed and sophisticated computer study of the entire documentary base can hope to disentangle these patterns and devise appropriate interpretations.

The distribution of "older" and "younger" sites with 25 % or more geometrics and other designs shows that the Intermediate Phase localities are concentrated in the northeastern sector of the study area (Fig. 199). In a generalized manner, this is also where the classical engravings and the bulk of the older animal representations are to be found, but specific correlations are poor. Humans, animals, and designs are, of course, commonly found in close juxtaposition, but the concentrations or overwhelming dominance of geometrics and designs at some sites is not readily explained.

One possibility is that they are linked to certain micro-ecologies or that they were limited by suitable rock surfaces exposed at only specific times. To examine these propositions, sites were classified as to their geomorphologic context: (i) those found on boulder or extensive bedrock surfaces exposed in river channels or floodplains, contexts related to available water and varying sediment covers; (ii) sites found on

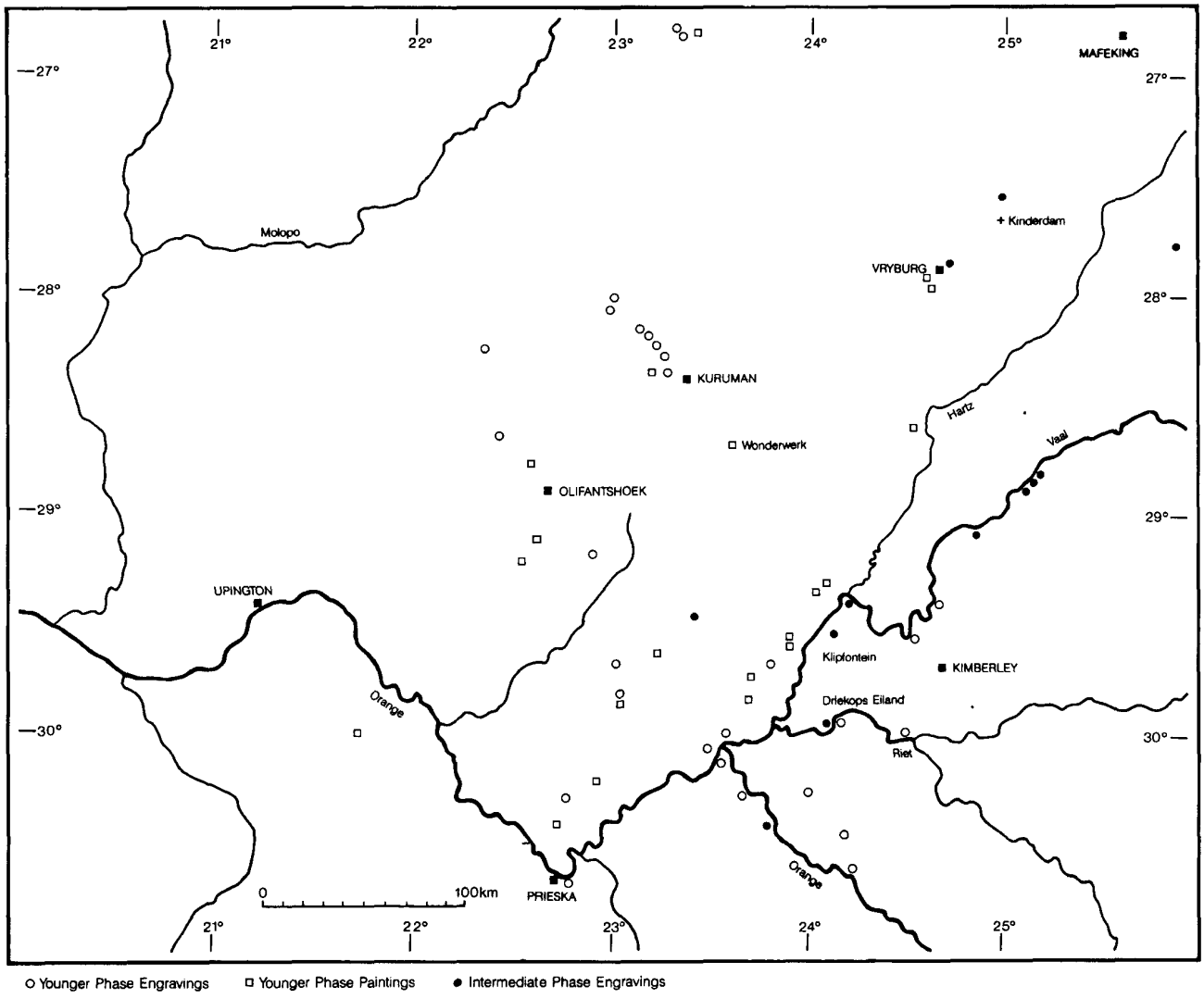

Fig. 199 Geometrische und andere Muster / Geometrics and other Designs

higher surfaces or uplands, but adjacent to small streams, springs, or seasonal lakes and marshy ground, where water is a prime criterion; and (iii) sites found on hills or ridges with no adjacent water sources today, but where springs or wet ground may have formerly been found nearby.

Site Context	Sites with Intermediate Phase Geometrics	Sites with Younger Phase Geometrics	Sites with 'Classicals'	Sites with Cattle or Sheep
River channel/ floodplain	4	10	1	2
Higher ground near water	6	10	6	8
Hills/ridges not now near water	3	8	6	6

It is apparent that sites with concentrations of "geometric" engravings are fairly evenly distributed in the three geomorphologic contexts, but there is a slight preference for Intermediate Phase sites to be on higher ground near water. Ecological criteria therefore fail to elucidate either their unique existence or their broader regional distributions.

For purposes of comparison, those sites with animals shown in the "classical" style, as well as those with domesticated cattle or sheep, were classified according to the same categories. Their distribution is different. The "classicals" are almost never found in valley bottoms, probably because streams were in the process of building up alluvium in their floodplains at the time; they are common in "high and dry" contexts, perhaps because there also was more water. Cattle and sheep engravings are most common in sites on higher ground near water, and rare in valley bottoms. This may be

explained by the locations of the best pastures on grassy upland plains and the need of a copious water supply for herds of livestock. The apparent logic to the situation of the "classical" and domesticated animal sites serves to emphasize the enigma of why the geometrics sites lack such an ecological rationale.

The Paintings

The paintings of the northern Cape Province are presently known from 19 sites north of the Orange and west of the Vaal rivers, i.e. the southern Kalahari and the Ghaap Plateau. There are no engravings at these sites, 8 of which have been described in volume II. Only one site is found south of the Orange, at Eindgoed (No. 192); this locality is unique in that it has some crudely painted, human figures and that several engravings are also found nearby (No. 193). Animal representations are also only found at a single site, Wonderwerk Cave. Otherwise the themes are limited to a small repertoire of schematic designs. The absence of "scenes" or groups, and the very rare representation of people and animals, distinguish these from the "Bushman paintings" found in other parts of South Africa (Rudner & Rudner 1970. Scherz 1970. 1975. Pager 1971. Vinnicombe 1976).

The Kalahari-Ghaap examples instead belong in the category of simple "finger paintings". The colors used are mainly maroon, but white, black and orange-yellow are also in evidence. The most common features are a series of short parallel lines, rare among Intermediate Phase engravings but fairly common among those of the Younger Phase. Various types of "ladders", simple grids, wavy lines, and amorphous "tectiforms" are also common and have counterparts among rock engravings. Occasional, double rows of dots and an isolated handprint have few counterparts among the engravings. The concentric circles, "suns", and other "rayed" elements characteristic of so many engraving sites are totally absent. The painted geometrics therefore represent only a small selection of the motifs found among the engravings.

The painted sites are overwhelmingly found in caves (7) or rock overhangs ("shelter") (11), with only two found on rock faces directly exposed to the elements. It is uncertain to what degree such sheltered sites have unduly favored preservation or visibility, on the one hand, or were once explicitly linked to ritual purposes, on the other.

The aberrant, painted animal figures of Wonderwerk Cave (Fock & Fock 1984: Fig. 292, Pls. 5-7) are done in the equivalents of both the silhouette and profile (in part, naturalistic) techniques and, in view of the long radiocarbon-date sequence of art pieces from the excavations (Thackeray et al. 1981), may well represent Intermediate Phase work. The remainder of the paintings, on the basis of their motifs and the limited range of designs, can best be assigned to the Younger or even the Youngest Phase. The engravings sites of the Kalahari-Ghaap region, often found not too far from localities with paintings, show only a limited overlap in terms of style and repertoire, even those assigned to the Younger Phase. This may reflect differences of age, differences of ritual or symbolic site function, or distinct identity-conscious (ethnic) groups. The still ambiguous role of Khoi and Late Iron Age groups (Tswana) in the southern Kalahari during the 15th to 18th centuries suggests that interpretation should await further systematic archaeological excavations.

Chronology

The evidence from Driekops Eiland indicates that the Intermediate Phase animals and geometrics were there engraved about 2500-2200 B.P., that the Younger Phase geometrics date about 1200-800 B.P. and the Youngest Phase copies and hacked designs from the 16th to 19th centuries.

Other sites provide complementary geomorphologic and paleoclimatic evidence that serves to broaden this chronological framework. At Klipfontein there is evidence of defunct spring-heads, indicating a watertable 1.2-2.0 m higher than today; there also are Holocene lake beds, the base of which is dated 6820 B.P., in the small pan below the active and defunct springs known as Bushman"s Fountain (Butzer et al. 1979). Adjacent Intermediate Phase engravings along the channel in between are distinctly waterworn up to 75 cm above the unusual highwater mark of 1974 (the pan has remained dry since 1977), inferring they are older than the last significant moist interval and perhaps coeval with an earlier one (Butzer et al. 1979). At least a substantial part of the Intermediate Age engravings must predate the moist interval that began at Driekops Eiland about 2100 B.P., and may be contemporary with that ending about 2750 B.P. The pollen from the youngest, undisturbed pan sediments suggest a thicker bush vegetation, similar to that now found north of the Vaal River (Butzer et al. 1979). This would appear to be reflected in the strong bush component of the fauna depicted at Klipfontein.

Another informative site is Content, in the Vryburg district (Fock & Fock 1984: 105-112), where engravings are found on small boulders across an undulating upland plain. Animals of the Intermediate Phase have recently been exposed by the erosion of 10-25 cm of loose, sandy soil, and some are still partially buried under this cover of wind-blown material. Younger engravings, with little patination, are only found above the rock discolorations that mark the parts formerly buried. Blowing sand had mantled parts of the Intermediate engravings before the Younger ones were made (Butzer et al. 1979). The critical period of accelerated eolian activity

can be assigned to either the dry interval of 2500-2200 B.P., or that of 1200-800 B.P. However, we would place these unusually fine Younger engravings before 1200 B.P., so that the Intermediate ones would be older than 2500 B.P.

The geomorphologic context of the "classical" engravings is also pertinent. Schanzkop (No. 91) is the only site where "classicals" are found in a major valley bottom, but even here the engraving in question is up on a rock face that rises directly above the channel; it would also have been exposed when the floodplain was filled in with 5 m of sediment. This general absence of "classical" engravings on the rocky channel floors of the larger rivers is consistent with evidence from Klipfontein and Content that "classicals" -- and probably most Intermediate engravings -- were contemporary with the wetter period of stream alluviation before 2500 B.P.

In sum, these various attempts at tying the rock art into a chronology of environmental change can be outlined as follows:

3000 B.P. (or earlier) to 2500 B.P.
"Classical", Intermediate, and possibly also "older" engravings; climate moist and streams aggrading.

2500 to 2200 B.P.
Intermediate engravings continue, especially on stream floors; climate dry, streams downcutting, eolian activity.

2200 to 1200 B.P.
Younger engravings, possibly overlapping with Intermediate; earliest domesticated animals; climate relatively moist, streams aggrading.

1200 to 800 B.P.
Younger engravings, wild "explosion" of geometrics; climate dry, streams downcutting, eolian activity.

After 800 B.P.
Youngest engravings, possibly overlapping at first, environmental conditions intermediate or mixed.

An adequate number of systematic excavations at several promising sites will be required to confirm, tighten, or revise this tentative chronology and paleoclimatic framework.