The Late Iron Age stone-walled settlements built by Sotho/Tswana speakers form part of this rich cultural heritage, and it is these that were under investigation in this research. Previous archaeological survey and research has shown that Sotho/Tswana speaking peoples occupied the Vredefort Dome area during Late Iron Age (from 1400 - 1800 AD), as well as most areas in the southern African region. Evidence of these occupations is the stone wall settlements we see on the landscape today (Fig. 1).

This research was carried out in fulfillment of a Masters in Science degree in Archaeology which was awarded by the University of Cape Town in June 2008. One of the objectives of this research was to identify and map distribution of stonewall settlements over a much wider area of the Vredefort Dome. Aerial photographs are used as basic sources of information in various disciplines. However they come in various editions and the choice of which to use depends very much on the purpose of study, as opposed to the date of the edition. Late Iron Age research has made use of this source in studying the stonewall settlements of Sotho/Tswana speakers. For this purpose the scale of the original job was very important as the photographs needed to be viewed under various magnifications before they pixilate and blur the view.

Due to the distinct visibility of stonewall settlements on aerial photographs other researchers have successfully used aerial photographic data source in archaeological surveys. For instance Mason surveyed the then Transvaal region in 1968 [1]; in 1976 Maggs undertook a survey on the Highveld identifying three main settlement patterns in the region – Type N, Type V and Type Z (Fig. 1)[2]. A limited area of the dome was surveyed by Taylor in 1979, identifying three types of stonewall patterns – Group I, Group II and Group III (Fig. 2)[3].

**Chronology of settlement types:**
- **Group I** (Type N) between AD 1500 and AD 1570
- **Group II** (Type Z) between 1650 AD and 1800 AD
- **Group III** between AD 1700 and AD 1800

This research continued to explore and manipulate aerial photographs as rich sources of information by means of incorporating the geographic information systems (GIS) application in analysing the archaeological evidence.

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**Fig. 1:** The distribution of Late Iron Age sites in the Free State [2]. The study area is marked with red box.

**Fig. 2:** Taylor's Groups I, II, and III [3].
Taylor’s settlement survey in the Vredefort Dome covered a limited sample area [3]. This left room to carry out a more extensive survey of the area and an aerial photographic survey provided a means to achieving this and this formed the basis on which the research was undertaken. This paper is a brief presentation of the results of this research, demonstrating how GIS applications were used to observe and make deductions on the basis of generated data.

Every archaeological project has a site, and a site has context. Often the project seeks to derive information that will aid in the understanding of the site and its context; the spatial relationship between structures; the architecture and use of space. This process results in the building of a database for the site. This gives detailed geographic information about the site, its location and locality and all attributes pertaining to the site. This information is useful for the production of analytical maps and in answering some of the questions that may not have been so easy to explore otherwise. The use of GIS in the research made a significant contribution to the data of what is known about the Vredefort settlements, while at the same time offering opportunity for future research.

**Distribution of settlements**

Through the use of these applications it was possible to display a relatively accurate map of settlement distribution in the Vredefort Dome from identified of settlements units. Homesteads were mapped to represent the settlements distribution and density of the Sotho/ Tswana speakers in the Vredefort Dome. This indicated settlement preferences between different settlement types. The sites’ distribution was examined within the environmental context of the area; the purpose being to investigate the correlation between this settlement distribution and the biophysical factors such as topography, geology, and vegetation (Figs. 3, 4 and 5), assessing whether any of the biophysical factors significantly made any part of the landscape more attractive and suitable for settlement location.

From the aerial visuals and satellite images (Fig. 6) the Vredefort Dome is an obvious ring-shaped structure. The meteorite impact is evident on the physical landscape of the site, a series of folded hills and ridges that ‘ripple’ outwards from the central area. The subsequent erosion patterns have also disturbed and worn down this landscape. These hills and ridges are most visible in the north-western quadrant of the dome. It is clear from the site survey that sites are located predominantly and most densely in this area of the Vredefort Dome and not in others. On the basis of the photographic survey, some areas are virtually empty of settlement such as the central area (Fig. 6). No sites were identified to the east of the Vaal River; and those settlements found to the south of the Vaal River cluster within the hills and ridges found there. The settlement emphasis on the north-western edge of the Vredefort Dome with virtually no sites at the centre, is clear. This general distribution follows a southwest-northeast line that clearly correlates with the topography of this region.

The results identified three settlements types in support of Taylor’s classification. All homesteads were mapped and tabulated, giving rise to 582 individual homestead units. Of these 582 homesteads, 73% were Group I settlements, while Group II
contributed 24%, Group III and other indistinguishable types made up the remaining 2%. The density of these types varied, with Group II being the most dominant after Group I settlements. This made Group III the least common settlement type (Figs. 7, 8 and 9).

From the different settlement types identified in this region, it is evident that the Vredefort Dome was occupied by various groups of Sotho/Tswana speakers at different times during the pre-colonial period. The distinctive settlement types are evidence of this variability. It is clear, however, on a general inspection of the overall distribution of the settlements that the settlements preference favored some areas and not others. In order to assess what factors contribute to this, the author described what these preferences are and then examined the overall settlement distribution and the specific preferences of settlement types.
in relation to the local environmental context.

Group II settlements occupied relatively lower altitude areas but are located mostly on hill-tops. It seems that this settlement pattern is less optimal in terms of distance to fields, compared to Group I settlements. Other than the altitude, the settlement preference by different settlement types as dictated by crop cultivation potential is not that distinct. This raises the possibility that there are other factors that could have influenced choice of settlement location.

In comparison to other settlement aggregations in South Africa such as Molokwane and Marothodi [5], the Vredefort Dome appeared to be much smaller in size without any distinctively larger homesteads within the settlement, which could be evidence of a less stratified social organisation.

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References


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