Spatial Information Technology and Heritage Management in the Southern Gauteng Province, South Africa.

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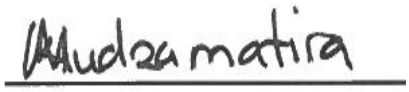
Declaration

I declare that this thesis is my own unaided work for submission for the degree of Doctor of Philosophy at the University of the Witwatersrand. The degree is by publication, and my publications and submitted papers are detailed in the text. The thesis has not been submitted before for any degree or examination at any other University.

Witness Mudzamatira



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Abstract

Development is one of the major factors that destroys heritage sites in Africa. The destruction of heritage, such as pre-colonial stone walled structures (SWS), has often gone unnoticed due to the lack of technologies to help researchers fully understand the nature of the damage. The use of spatial information technologies in recent years has made it possible for researchers to account for the effects of developmental damage on heritage structures such as SWS. These technologies also assist in planning the future conservation of heritage. SWS are part of the pre-colonial history of southern Africa. Effective conservation of SWS arises from a comprehensive understanding of the causes of destruction and devising strategies that eliminate and reduce the risk of developmental damage. Here, spatial information technologies present useful tools that improve the understanding of the impact of development on heritage sites. Understanding this impact will improve heritage legislation, policy and conservation in South African.

Firstly, the study used Geographic Information Systems (GIS) to test the effectiveness of Cultural Resources Management (CRM). The study revealed evidence for lack of proper CRM. Secondly, the study used interviews to assess awareness about SWS and their destruction. The general public expressed their lack of awareness, while the custodial communities revealed their knowledge of SWS and their disgruntlements over their exclusion from the management of this heritage. Thirdly, the study looked for strategies to improve heritage awareness in the area. Educational strategies, social media, Google Maps, 3D technologies among others were suggested to improve awareness.

Dedication

This thesis is dedicated to my parents Simon and Patricia Mudzamatira, the best gift God gave me. You have never discouraged me from furthering my education. Your support and sacrifices are more than I could ask for.

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I want to acknowledge my supervisor Prof Karim Sadr, for accepting me into the PhD Degree program. I can proudly say that I came to Wits not knowing a lot, but in a few months Karim was able to guide me with wisdom, knowledge and mentorship which has played a pivotal role in my academic life. I feel blessed to be guided by someone so knowledgeable, yet so humble. My experience with Karim has been life-changing. His is a person so committed to sharing knowledge and guidance. He has been patient with me and assisted me in bringing out the best in myself.

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CHAPTER 1: INTRODUCTION

1.1 Introduction

Development is one of the major factors that destroys heritage sites in Africa. The destruction of heritage, such as pre-colonial stone walled structures (SWS), has often gone unnoticed due to the lack of technologies that help researchers fully to understand the nature of the damage. The use of spatial information technologies in recent years has made it possible for researchers better to account for the effects of developmental damage on heritage structures such as SWS. These technologies also assist in planning the future conservation of heritage. In this thesis, I use spatial information technologies to understand the impact of several types of development (infrastructure, railways, roads and mining) on heritage and I strive to fill knowledge gaps in the factors that destroyed and still destroy heritage in South Africa. I do this with a particular focus on the southern Gauteng Province in South Africa. In this study, I accounted for many SWS that have been destroyed by each type of development, evaluated public awareness of their destruction and assessed opinions and sentiments about heritage. Lastly, I suggested strategies that can be used to enhance awareness and education of SWS.

To fully understand the concept of what was lost, why it was lost and why we still lose heritage, I give a brief background of the study, starting with the contrast between heritage professionals and communities as one of the significant factors of heritage destruction in Africa. Heritage professionalism has been centred on physical conservation, while the traditional communities are oriented towards the spiritual aspects of heritage landscapes. I argue that this contrast in opinions is the core of why heritage management strategies have proven difficult for many years. This thesis strives to use information technologies to reveal the validity of this argument and raise concrete evidence through the case study of southern Gauteng Province of why the disjunction between heritage professionals and communities has hindered and still hinder effective heritage management. Through this thesis, I will outline why it is essential to understand previous causes of heritage destruction and show how current research can assist in bridging the gap between the public and heritage professionals.

To introduce this thesis, I assess what Ndukyakhe Ndlovu in his studies has often referred to as the “top down approach” between communities and heritage professionals, filled with mistrust that started from colonialism and proceeded to post-colonial heritage management in Africa (Ndlovu, 2009; 2011; 2014; 2019). I strongly agree with his conclusions, but my thesis will provide further evidence of this approach and how it has affected heritage management in pre-1994 and post 1994, South Africa. I further argue that without collaborative approaches and digital awareness to attract the current public, SWS are at a considerable risk of destruction from development.

Colonisation played an essential role in the social, political and economic factors that affected heritage management in South Africa to date. From colonialism, heritage institutions were given the responsibility to account for heritage lost. The role of heritage institutions was to keep an

informative record, cataloguing, referencing, listing and declaring heritage items which are essential tools to use (Negri, 2009). But who gave this responsibility and why? For the colonial powers, controlling African heritage and oral history would underwrite the local authorities, by creating an indirect colonial rule (Schmidt, 2014). Biased interpretations of oral history and heritage played a pivotal role in dissolving indigenous ownership of heritage and history in both colonial and post-colonial Africa. Both colonial and post-colonial heritage management sought to use heritage to push for a political agenda.

An example is the British indirect rule over eastern Bunyoro awarded to Buganda under the 1900 Uganda Agreement (Schmidt, 2014) and South African apartheid control over heritage sites and land. The last Five hundred Year Project (FYP) reveals examples of how history and anthropology were used to justify colonial land grabbing by purporting that African societies had mobility, a concept primarily challenged by the FYP (Maggs, 2010). The concept assumed that, because communities were mobile, they were therefore not culturally attached to particular places of their landscapes such as ancestral graves, agricultural land and settlements (Maggs, 2010).

The results of such an approach were conflicts in colonial and post-colonial eras. Schmidt (2010) states that in Eritrea, there was conflict between the various heritage stakeholders and the post-colonial government over the sharing of information on ancient histories (Schmidt, 2010). In Zimbabwe, the Mungate community were at loggerheads with National Museums and Monuments of Zimbabwe (NMMZ) over the use of the sacred landscape and rock art at Domboshava (Chirikure & Pwiti, 2008). In South Africa, the Bakwena Ba Mare a Phogole are at loggerheads with the land restitution commission and Joburg City Parks over control of their land and SWS (Phatlane, 2019). All these examples reveal the status of the relationship between archaeology professionals and communities. In this light, I also argue that political influence and power determine the heritage management discourse.

I categorise the political phases that influenced heritage using Shepard (2002)'s analysis of three phases which are imperialism, colonialism and nationalism. These phases influenced a political discourse in archaeology which still dictates heritage management today. During imperialism and colonial periods, archaeological discoveries and practice in Africa were "non-professional". The process of colonialism saw explorers leading expeditions across Africa headed by army officers who moved from west to east (Dakar to Djibouti) (Shepard, 2002) and the famous south to north (Cape to Cairo) ambition which Cecil John Rhodes led. During these expeditions, participants recorded information about the people, languages, customs, geography, geology, traditions and archaeological finds (Holl, 1990). Thus, it is logical enough that the early archaeological reports were written by the army and medicinal officers, school teachers, priest and other non-archaeological professionals (Holl, 1999: 298). From the onset of these periods, colonialism and archaeology were a symbol of power and knowledge (Shepard, 2002). Archaeology provided a powerful form of legitimation in supporting colonial and post-colonial ideas (Sherpard, 2002). In this thesis, I argue that archaeology in Africa was never created to

oppose development and colonial projects; instead, its intentions were in support of heritage development and created a subject matter that was non-inclusive of custodial communities.

In the colonial era, especially the beginning of the 1920s saw the rise of archaeology as a profession and it fell into the hands of white American and European trained professionals (Shepard, 2002; Ndlovu, 2019). The responsibility granted to the heritage institutions led by these professionals encouraged radical colonial principles that influenced heritage legislation and policy. South African archaeology from the 1960s through to the 1990s was mostly colonial (Trigger, 1990). Many scholars have attributed that the state has dominantly owned heritage management through heritage institutions that use archaeologists as the voice of the dead (Prins, 1996; 1998). White minority professionals dominated the field, using indigenous South Africans as mere labourers (Ndlovu, 2019; Shepard, 2002). For the archaeology professionals, indigenous people could only do excavating, carrying, cleaning, sieving, sorting, labelling, bagging, backfilling and cooking (Ndlovu, 2019). But, did this history play a part in why most Africans, primarily black South Africans, feel marginalised and not interested in archaeology? What has been the impact of the colonial influenced heritage management? Does the superiority complex of heritage professionals still overshadow consultations with indigenous communities in Cultural Resources Management in post-colonial South Africa? In answering these questions, I was curious to assess the impact of colonial structures through the impact of development on SWS in southern Gauteng Province, explore opinions of the community stakeholders and finding relevant and practical solutions to increase awareness.

Recent research by scholars like Ndlovu and Smith (2019) gives a detailed analysis and account of how academia, heritage institutions, and education was apartheid influenced, resulting in the discrimination of indigenous people against owning their heritage. The European concepts of heritage management advocates for fossilisation of heritage (Ndlovu, 2011a). For materiality to thrive in archaeology, it had to exclude the owners of the heritage. This approach led to most of the heritage management principles and legislation that discriminate against indigenous communities. A deep trench was created between the relationship of the minority white South Africans and the majority of indigenous South Africans, resulting in most heritage professionals being labelled colonial, while heritage professionals saw communities as non-professionals, who cant manage heritage. Ndlovu and Smith (2019) mentions Tony Humphreys' examples from the apartheid-era works of Ray Inskeep, Tim Maggs, and Revil Mason, and how these have argued the unfairness of labelling the aims of all South Africa-based archaeologists as colonialist. But how substantiated are these conclusions with regards to colonial influence in heritage management in my study area?

To answer this question, I assess the effectiveness of heritage management in southern Gauteng Province by assessing heritage legislation and institutions in post-colonial South Africa. Many scholars have written that post-colonial governments in Africa did not radically transform heritage management (Abungu, 2006; Ndoro, 2004; Pwiti 1996; Pikirayi, 2001; 2011; 2013;

2015), but to what extent has this affected a case study like southern Gauteng Province?

Historically, where change was enacted, conflict and criticism among stakeholders often arose, with heritage institutions being criticised for not being transformative enough and legislation not being effective. For Eritrea, the post-colonial government-led antithetical approach to open academic expression and hostility towards post-liberation criticism on heritage management has led to conflict (Schmidt, 2010). Voices of intellectuals, journalists, writers, civic societies, NGOs, religious groups, university students, pupils and local communities have been suppressed by the government in their bid only to give access to heritage to non-critics of the Eritrean government interests. In South Africa, changes to heritage legislation to recognise communities were regarded as progressive following the recognition of communities in legislation. However, was this effective? In recent years legislation has been criticised for the lack of proactive measures to protect heritage (Ndlovu, 2011a). Based on these conclusions, I was curious to find out if the conclusions were still relevant in southern Gauteng Province's case today.

In its definition, legislation defines the parameters of how to regulate and define the duties of professionals and agencies that have sole control and legal right to manage the survival of heritage. This control to heritage management influenced heritage legislative structures, values and administration that pin colonial and post-colonial archaeology. Ndlovu (2009) has criticised this approach and how its has led to the failure of heritage centres as collaborative institutions in management and presentation of rock art. The conditions given to the Duma Clan by the Council of Amafa aKwaZulu-Natali provincial heritage board to allow communities to perform a traditional ritual in a restricted site with rock art sites at Kamberg Nature Reserve was a sign of control as it limited communities on how they should conduct their rituals. Limited access to heritage sites in post-colonial South Africa reflects a continuous colonial discourse. In this light, many critics have raised concern over the lack of transformation in heritage management of former colonies in Africa (Abungu, 2006; Chirikure *et al*. 2010, Ndoro, 2004; Ndlovu, 2019; Pikirayi, 2001; 2011; 2013; 2015; Pwiti 1996). In the following paragraph, I will look at the nature of non-transformative approach in African case studies.

Post-independence of most African countries saw the advent of nationalist ideologies that had positive and negative impacts on how heritage is managed today. To my surprise, I would have thought post-independence in Africa would present heritage management with a radical transformation led by custodial communities. Regrettably, this has not been the case. In Eritrea, the post-liberation government refused to grant sole control of heritage to various stakeholders, including the academics and communities (Schmidt, 2010). Schmidt (2010: 313) described post-liberation culture directly descended from an isolationist, centrist military culture with its roots firmly grounded in the colonial past which never allowed Eritreans or its professionals to manage their own heritage. In Zimbabwe, post-independence saw the continuation of colonial legislation with a significant conflict between the National Museum (NMMZ) and communities at heritage sites such as Great Zimbabwe and Domboshava (Ndoro, 2005; Pwiti, 1994; Chirikure

& Pwiti, 2008). However, this was not the case for South Africa. Post-colonialism saw enormous transformational efforts in legislation that recognises communities and professional staff at heritage institutions (Ndlovu, 2019).

To some extend, South Africa has been a good reference point for most African countries on how to manage heritage, which saw the Namibia Act 27 of 2004 and the Lesotho National Heritage Bill of 2006 mirroring the South African National Heritage Resources Act (NHRA) of 1999. Regardless of these efforts, serious concerns have been raised by Ndlovu (2009; 2011a; 2014) on the lack of NHRA 1999 to protect heritage in the continuous evolution of the heritage management. Ndlovu (2019) acknowledged the progress made in the transformation of heritage management academic staff and heritage professionals which previously had been predominantly in the hands of whites because of the discriminatory history of South Africa. But, he strongly argued that there are areas that need improvements, for example, to recruit more indigenous archaeologists in decision making positions in heritage institutions to improve the general lack of interest and engagements of indigenous South African public. He argued that this transformation would foster a Pan-Africanist approach in allowing the heritage owners to take charge of their heritage. But why are we still not satisfied with transformation two decades after independence and how has this affected heritage management?

In answering these questions, I quote anti-apartheid activist and articulator of black consciousness, Steve Biko (1978: 95) who once said: "colonialism is never satisfied with having the native in his grip but, by some strange logic, it must turn to the past and disfigure and distort it." According to Chinweizu (1987: 75), "the colonialist history of Africa has composed a song of disorientation. The false image of Africa it concocted was a paralysing bullet for our soul." Frantz Fanon (1967: 168), also wrote, "While the politicians situate their action in actual present-day events, men of culture take their stand in the field of history." Taking into account all these utterances about pre-independence Africa, one would expect a post-colonial South Africa pregnant with ideas to encourage a transformed archaeology. There is a yearning for more transformative efforts in heritage management, recruitment, education, presentation, language…, in order for communities to feel like they are part of archaeology.

Furthermore, Ndlovu (2011a) believes that to solve these problems, it is not the introduction of stricter legislation but rather the implementation of existing legislation that is lacking. Ndlovu (2011a) added that legislation needs the understanding and support of the general public to ensure its effectiveness and collaboration in implementation. I explore in the thesis how awareness and education of the public in this case study can be used to improve heritage management. Below, I discuss how some of the recent critical reviews of matters affecting heritage with developmental threats.

The change of socio-economic factors in Africa and specifically sub-Saharan Africa has promoted development that poses a significant threat to the survival of heritage sites. Are heritage professionals and governments faced with a dilemma of choosing between heritage and

development? In government spending or budgets, what is the value of heritage in addressing people's socio-economic needs? For most African countries, there has been an economic decline which has given rise to an increase in debt for most African countries (Shepard, 2002). In 1994, Leys (1994) had noted that per capita incomes were falling at the rate of 2% a year since 1980. The study had predicted a continuity of this trend in future. In recent decades there has been a rise in unemployment and famine, specifically in southern Africa, which saw an increase in rural to urban migration (Mubiwa & Annegarn, 2013). Some of these factors influenced the need for development to create employment. Conflicts have also contributed to the significant instability on the continent, with many investors not having the confidence to fund most African countries. In this environment, archaeology has been least prioritized, with many funding cuts to research, academia, museums and government department.

Consequently, the rise of socio-economic demands enabled an increasing threat to heritage sites and saw most African governments prioritising development over heritage preservation. Ndlovu (2009) gives an example of the threat tourism poses on rock art at Kamberg Nature Reserve, South Africa. Despite the destructive threat of tourism, the Amafa aKwaZulu-Natali provincial heritage board still grants tourists access to the paintings, yet on the other hand custodial communities are not given the freedom to perform rituals at the site. The withdrawal of the Ngwenya Middle Stone Age ochre mines by Swaziland from the UNESCO World Heritage Sites nomination list in favour of reviving industrial iron ore extraction (Ndlovu, 2017), reflect a backsliding approach to heritage conservation. Kleinitz (2013) highlights the threat to cultural landscapes in Sudan due to dam construction which proceeded despite the warnings. But why did post-colonial Africa face such problems considering the empowerment of black communities after independence? Why is heritage faced with vast developmental threats despite concerns and recommendations brought forward? This thesis gives a study based on a South African account of the current heritage management challenges.

The commercialisation of heritage is a common phenomenon in all African countries. Three areas dominate in the commercialisation of heritage that poses a risk to heritage: (i) tourism (ii) industrialisation (iii) contract archaeology. There tends to be high risk to heritage in balancing increased employment and revenue income from tourism on one hand and the preservation of heritage on the other. In this process, heritage became a commodity of glitz which is an ideology of colonialism (Hall, 1995). Mining development also provides an opportunity for community members to acquire employment (Ndlovu, 2009), but at what cost? Contract archaeology has been and still is one of the biggest employers and the highest paying in the archaeological field to date (Ndlovu, 2014).

Despite the potential revenue that communities could get, there has been a rise in dispute between heritage stakeholders and development companies. Ndlovu (2009) reveals the dispute between mining and Mapungubwe World Heritage Site over the risk of mining development despite the prospects of mining to benefit local communities. Ndlovu (2011b) states that at Kamberg Rock Art Centre, local community members were recruited to be part of the rock art

centre, although they later resigned due to unpaid salaries. I argue in this thesis that for heritage centres to succeed there is a great need for collaboration with local communities. This argument is based on the fact that the artist of heritage is the people, and heritage management is for the people. Without public input and consultation, heritage management becomes irrelevant. It thus makes sense to work with the local communities and have a mutual understanding (Ndlovu, 2009).

Another critical challenge in heritage management that emanates from the colonial legacy is the confusion between Government departments and heritage agencies in administering heritage matters. The case of Mapungubwe World Heritage Sites exhumes the inconsistencies, corruption and vulnerability of heritage sites to the mining developmental threat (see Ndlovu, 2017). I acknowledge that his research gives an example of the political, social and economic dynamics that heritage management faces in South Africa. Another challenge is the colonial legacy in heritage institutions in South Africa. In explaining the transition of the National Monuments Council (a colonial organisation) to SAHRA, Ndlovu and Smith (2019) reveals the weakness of dismantling the colonial legacy in organizational policy and legislation.

First to note is the grading of heritage sites and how that affects the allocation of resources to preserve sites. As will be mentioned in detail in chapter two, many African heritage sites are not protected as a priority by SAHRA (Ndlovu, 2011a; 2014). Of interest is the vulnerability Mapungubwe Cultural Landscape was faced with from the mining and industrial development. In this case study, there was a dilemma to either protect the heritage site or potential employment (Ndlovu, 2009). Secondly, there is the lack of coherence in legislative bodies who grant permits before development (see Ndlovu, 2009). Thirdly, there is the influence of corporations to use their economic and political influence to go ahead with development without consultation with the local communities. I argue that the lack of awareness and access to information of both corporate business and communities feeds to the historical narrative of mistrust and conflict between heritage stakeholders. These conflicts extend to how Cultural Resources Management (CRM) in South Africa is conducted, as Ndlovu (2014) revealed. The revenue-oriented approach indeed is a colossal threat to the survival of heritage sites.

Furthermore, I criticise the three-tiered approach to preservation in the NHRA legislation. It stipulates that heritage sites of national significance should be managed at the national level by the South Africa Heritage Resources Agency (SAHRA) which has the necessary financial resources. Heritage sites of regional and local significance are managed at provincial and municipal level, respectively (Deacon, 1997, 2000; Ndlovu, 2011a; Scheermeyer, 2005). In my view, the value system does not allow South Africa Heritage Resources Agency (SAHRA) to guarantee the effective heritage management at provincial and municipal levels because of the lack of resources, as I will highlight in chapter two. The lack of finances to run all the Provincial Heritage Resouces Agencies (PHRA) results in the lack of qualified local personnel and poor implementation of legislation. This thesis will reveal the effects of such legislation in managing SWS in my study area.

Despite all these known challenges faced in South African archaeology, vast efforts have been made in the research of the SWS. The last Five-hundred Year Initiative's (FYI) efforts in East and southern Africa to understand pre-colonial societies in this period is an important case in point. This on-going, influential interdisciplinary project has revealed a better understanding of farming, history, geography, ethnography and linguistics of the last 500 years in a large part of the continent (Mulaudzi *et al*. 2010; Maggs, 2010; Wright, 2010; Delius et al. 2012; Logan *et al*. 2019). The project reveals the colonial effects of why it has been challenging to gather knowledge of the last 500 years. Logan *et al.* (2019) looked at how the archaeology of the last 500 years in case studies in East and southern Africa has played a role in reframing the approaches on food security in Africa. These interdisciplinary approaches looked to explore the possibilities and limitations of employing archaeological insights to understand better food security in the past and present society (Stump, 2013; Logan *et al*. 2019). The many field studies of the project revealed patterns indicative of communal access and spatially structured activity consistent with an organised "community-of-practice." Evidence exists of obsidian quarrying and exchange, sharing of seed, community farming and other agricultural activities (see Goldstein & Munyiri, 2017; Goldstein, 2019; Logan *et al.* 2019). All these studies reflect the ability of communities to mobilise labour although basic agricultural activities seemed to differ between East and southern Africa (Maggs, 2010)

The vital strides of the FYI project are also revealed by the extensive work done at Bokoni, South Africa. At this site, the interdisciplinary study of history and archaeology reveal pre-historic use of space in creating arable land, cattle paths, and stone terraces which were used to control soil erosion and retain moisture (Maggs, 2010). According to Delius *et al.* (2012), historical publications had ignored the work of Prinsloo's research work on the Koni language. His accounts reflect an anthropological approach of growing up with the Koni and their elders. Results of the FYI project strive then to show the Bokoni history in three phases, debate identity and ceramics, agriculture and labour mobilisation, trade and political structure (see Delius *et al*. 2012). The enormous efforts of understanding the SWS of the last 500 years in this case study should be acknowledged. These efforts inspired me to use interdisciplinary methods, such as information technologies, in understanding the last 500 years.

The use of information technologies such as Quantum Geographic Information Systems (QGIS), Google Earth (GE), 3D modelling, social media, among others has complemented the effectiveness of historical aerial photographs and maps to enhance many disciplines, including heritage management and land claims (Burrough, 1986; Chase *et al*. 2011; Sadr & Rodier, 2012; Neubauer, 2013; Agapiou *et al*. 2014, 2015; Sadr, 2017; Naidu, 2018; Sokolic, 2017). These technologies have complemented and superseded the role of aerial photography in site discovery and management (Madry, 2007; MacQuilkan & Sadr, 2010). Geographic Information Systems (GIS) and spatial statistics provide new ways in answering archaeological questions such as landscape/settlement patterns and providing spatial data (Conolly & Lake, 2006; Sadr & Rodier, 2012), settlement patterns (Banhegyi, 2014) and destruction of pre-colonial SWS (Sadr, 2017;

Naidu, 2018).

In South Africa, the use of these technologies has assisted in revealing the developmental damage to SWS (Sadr, 2017; Naidu, 2018). Naidu (2018) reveals the destruction of pre-colonial SWS in the 270 km² Klipriver and Meyersdale area of Johannesburg South, covering a very small area by looking at the air photos and satellite imagery of 1961, 2005 and 2015. Sadr (2017) estimated how much of the pre-colonial stone structures were lost to development by an analysis of past settlement patterns, terrain and topology in this area. In this study I predict the future rate of destruction by development in this area. My study is exploratory and produces an estimate of the impact of urban sprawl on archaeological sites in the southern Gauteng Province.

It will be amiss for this study not to appreciate that development has, to some extent, led to the discovery of heritage sites worldwide (Eboreime, 2009; Mturi, 2005). Contract archaeology has contributed to a vast increase in archaeological knowledge (Kinahan, 2013). Globally, contract archaeology has been effectively used to rescue archaeological sites and artefacts (McGimsey, 1972; Green & Doershuk, 1998; Carter, 2002). Some of the notable examples in the United Kingdom (UK) are the Rose Theatre, which is London's famous theatre for staging William Shakespeare's masterpieces during the Tudor era (1485 - 1603), which was saved from destruction (Dawson, 1993). In Tanzania, between 1977 and 1985, there was the identification and documentation of archaeological sites through Heritage Impact Assessments (HIAs) at a rate that was never going to be achieved under normal research (Kamamba, 2005). The construction of the Akosombo Dam on the Volta River in Ghana has led to the discovery of many Middle Stone Age sites (MacEarchern, 2001), while in South Africa the Taung skull was discovered in the underground mining shafts in what is now the North West Province.

Uncontrolled development has contributed to the undocumented destruction of heritage. In South Africa, there is increasing threat from urban development (Sadr, 2017; Naidu, 2018), wind farms (Halkett 2010a, 2010b), and dams (van Schalkwyk 2006). For other African countries such as Sudan, Kleinitz (2013) reveals a developmental threat to archaeological sites and "cultural survival" caused by the construction of planned dams on the Nile. The Sudan account outlines the community outrage towards the developers that led to the expulsion of salvage teams from their territory as a strategy of resistance (Kleinitz, 2013).

However, like any types of heritage in any case study, pre-colonial SWS are an essential source of historical information, religious and national symbols (Pwiti, 1994; Ndoro, 2001; 2005; Pikirayi, 2015; Sadr, 2017). With this background knowledge, in this study, I investigated how spatial information technologies can enhance the effectiveness and understanding of heritage management in South Africa. An audit of developmental damage in the southern Gauteng Province helps to measure the effectiveness of current heritage management techniques. The thesis reveals public awareness and opinions about pre-colonial SWS in this area. Awareness strategies reveal how SWS in the case study can be conserved and improve community engagement in heritage management.

1.2 Study Area

To understand the various factors that stand-out in my thesis, I briefly look at the study area from pre-colonial, colonial and post-colonial periods. Southern Gauteng is located in Gauteng Province in South Africa. The case study covers 9000 km² in an area between Johannesburg and the River Vaal. Thousands of SWS are scattered in this region, which extends from the the edge of the North West to that of Mpumalanga Province. In both colonial and post-colonial times, this region has been the epicentre of industrial development (Sadr, 2017).

In the pre-colonial era, this study area was occupied by the Batswana people, who established large capitals in the 18th and early 19th centuries. These capitals contained hundreds of stone walled compounds and have been referred to as cities and towns. Btaswana capitals just west of my study area were visited by the Lichtenstein Expedition of 1805 (Lichtenstein, 1815), the Burchell Expedition of 1810-1812 (Burchell, 1824), the Campbell Expeditions of 1813 and 1820 (Campbell, 1815, 1822), by John Philip (Philip, 1828), and by Robert Moffat (Moffatt, 1843). Using historical travel accounts in conjunction with oral histories, aerial photographs and ground surveys, the SWS of several such capitals have been located and studied (e.g. Mason, 1962: 371-438, 1986: 351-514; Pistorius, 1992, 1994, 1996; Boeyens, 2000, 2003; Hall et al. 2006; Hall, 2009; Boeyens & Plug, 2011; Morton, 2013, 2018b). In these Batswana capitals, there were wards (*kgoro*, pl. *dikgoro*, also *motse*, pl. *metse*) administered by royally appointed headmen (*kgosana*, pl. *dikgosana*) (Schapera, 1935; Gulbrandsen, 1993: 554-556, 2012: 38). Each ward was composed of several dwellings, a cattle-pen (*lesaka*, pl. *masaka*) and a men's meeting place or court (*kgotla*) for political, judicial and administrative meetings (Sadr, 2019). The centre of the capital was the royal *kgotla*, where national ceremonies, political and judicial meetings were held (Gulbrandsen, 1993: 554). The Batswana capital was where the political status and power was centred. These capitals often were relocated due to the changing land-use, settlement ecology, wars and political factors (Campbell, 1822: 126-127; Burchell, 1824: 512; Lane, 2004).

According to Bruetz (1956), my study area was occupied by the Bakwena Ba Mare a Phogole, a lineage that can be traced back to the 14th century (Phatlane, 2019). Breutz's map (1956: fig. 1) shows much of the landscape between Johannesburg and the River Vaal as Phogole-land. Bakwena Ba Mare a Phogole also occupied an area extending to the western side of the Crocodile River in the present Krugersdorp, the Mooi River near the present Boons and stretching southwards until the River Vaal (Phatlane, 2019: 10). The northern border of this area is marked by a line that connects Boons, Krugersdorp and Boksburg according to Phatlane (2019: 11). Vorster (1981) marks the eastern border of Phogole land as an area from Boksburg to the River Vaal in the south (Fig. 1).

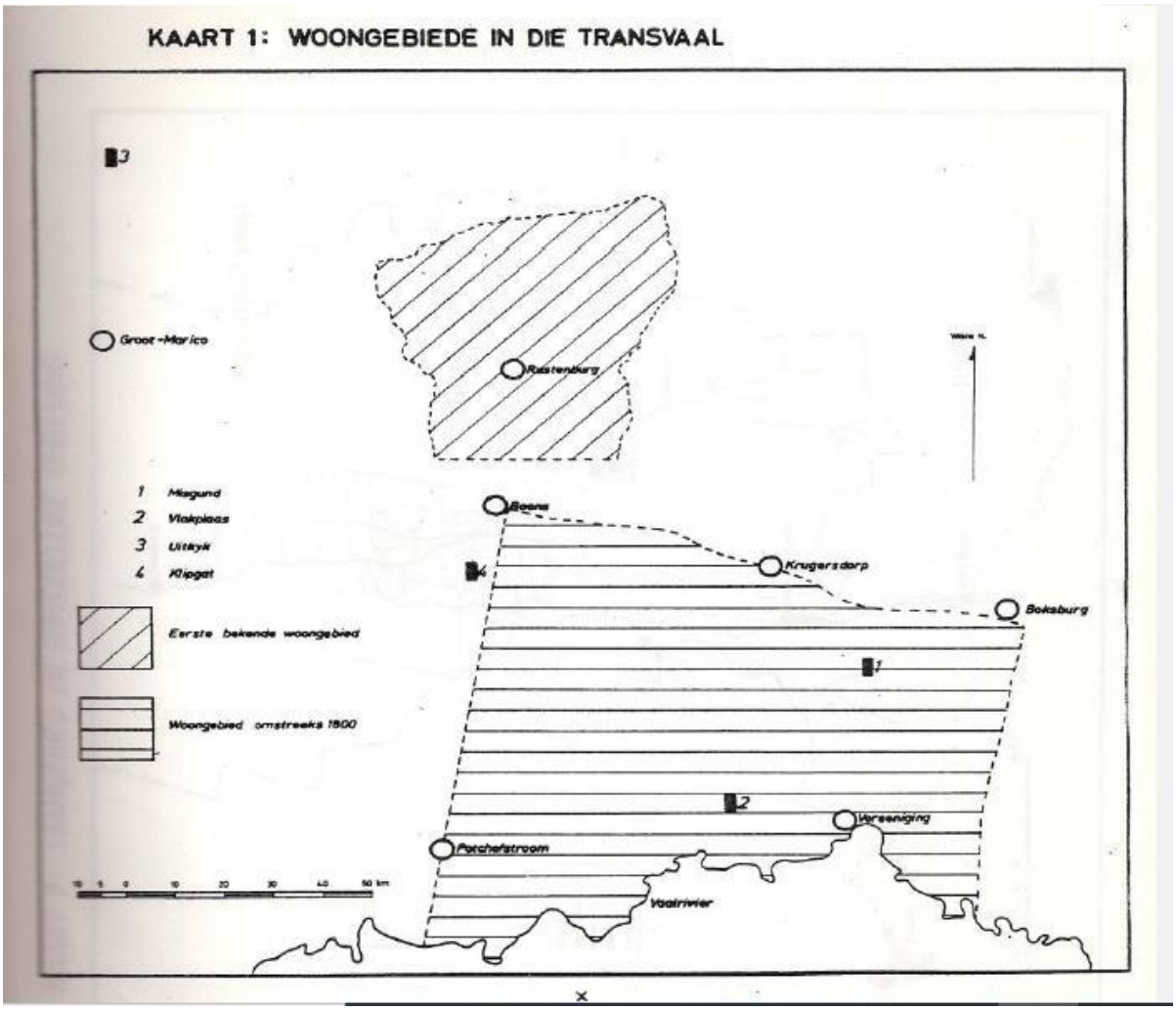

Figure 1. *Areas occupied by Bakwena Ba Mare a Phogole* (from *Vorster 1981).*

The population size of Kweneng, one of the main pre-colonial capitals in this area, which is located 35 km south of central Johannesburg, is estimated to have been between 6000-12000 residents (Sadr, 2019). Oral histories indicate that the Bakwena branch of the Batswana were the first farmers in what is today known as Gauteng Province. The Bakwena was an offshoot from the Masilo lineage in the 15th century. In the 18th century, the Bangwaketse and the Bangwato broke away from the Bakwena, and it is believed that all these are offshoots from a single parent 'tribe' (van Warmelo, 1935). The Bakwena ancestors of the Bakwena Ba Mare a Phogole arrived in what is now South Africa between in 13th or the 14th century (Bruetz, 1956). According to Phatlane (2019), the Bakwena split from the Bahuruthse in 1450-1550, giving rise to several branches such as Bakwena Ba Mogopa and Bakwena Ba Mare a Phogole.

In supporting this notion, Bruetz (1956) states that the sub-branch of the Bakwena that inhabited the pre-colonial landscape between the River Vaal and today's Johannesburg is known as the Phogole. This descendant community, the Bakwena Ba Mare a Phogole, still exists today although they had been scattered and relocated during the late colonial times (Sadr, 2019).

In 1836, European trekkers named the 'Suikerbosrand' hills 'Suikerbosrand' after the sugar cane that they saw growing there as mentioned in Moodie (1888: 518). Sadr (2019) states that they must have seen the SWS settlements in the western foothills because the first European settler-farmer there, Jan Marais, camped in one of the ruined stone-walled compounds before he built his permanent homestead. However, they did not mention or document the existence of the SWS (Sadr, 2019).

The Ndebele in the mid to late 1920 invaded the region and subjugated the local people in the *Difeqane* war although the Batswana capitals such as Kweneng may have remained inhabited for a while longer (Sadr, 2019). Material culture at this SWS includes ash-heaps, large enclosures, cattle drives, stone towers and lynchets (Sadr, 2019).

In the colonial and post-colonial period, there has been a population increase in this study area. The colonial period saw the discovery of gold mines in the territory of the *Zuid Afrikaanse Republiek* (ZAR), propelling the development and migration of many migrants within and beyond South Africa (Mubiwa & Annegarn, 2013). The population increase in this area needed urban planning to cater for the rising demand for human services such as housing, transport, work, electricity and water. Because of these various factors, southern Transvaal industrial development increased in urban development and new settlement patterns from the 1880s onwards (see Mubiwa & Annegarn, 2013). With the rising demand for goods, services and employment and a rising population, Johannesburg expanded southwards with residential areas and industrial hubs (Cripps, 2012; Harrison & Zack, 2012).

The development of west-east transport routes in the 1880s were established to link the Witwatersrand goldfields. Examples of these roads are the Main Reef Road and the M2 highway. These factors facilitated growth trajectories that promoted spatial mobility and energy efficiencies in the region. Mubiwa and Annegarn (2013) state that with the increase of motor vehicles and mobility, Johannesburg grew from after the second world war into the 21st century with more varied land uses. The development saw the establishment of industrial towns such as Alberton and Kempton Park, and further development of three towns of the Vaal Triangle (Vanderbijlpark, Sasolburg and Vereeniging) (DPE, 1974).

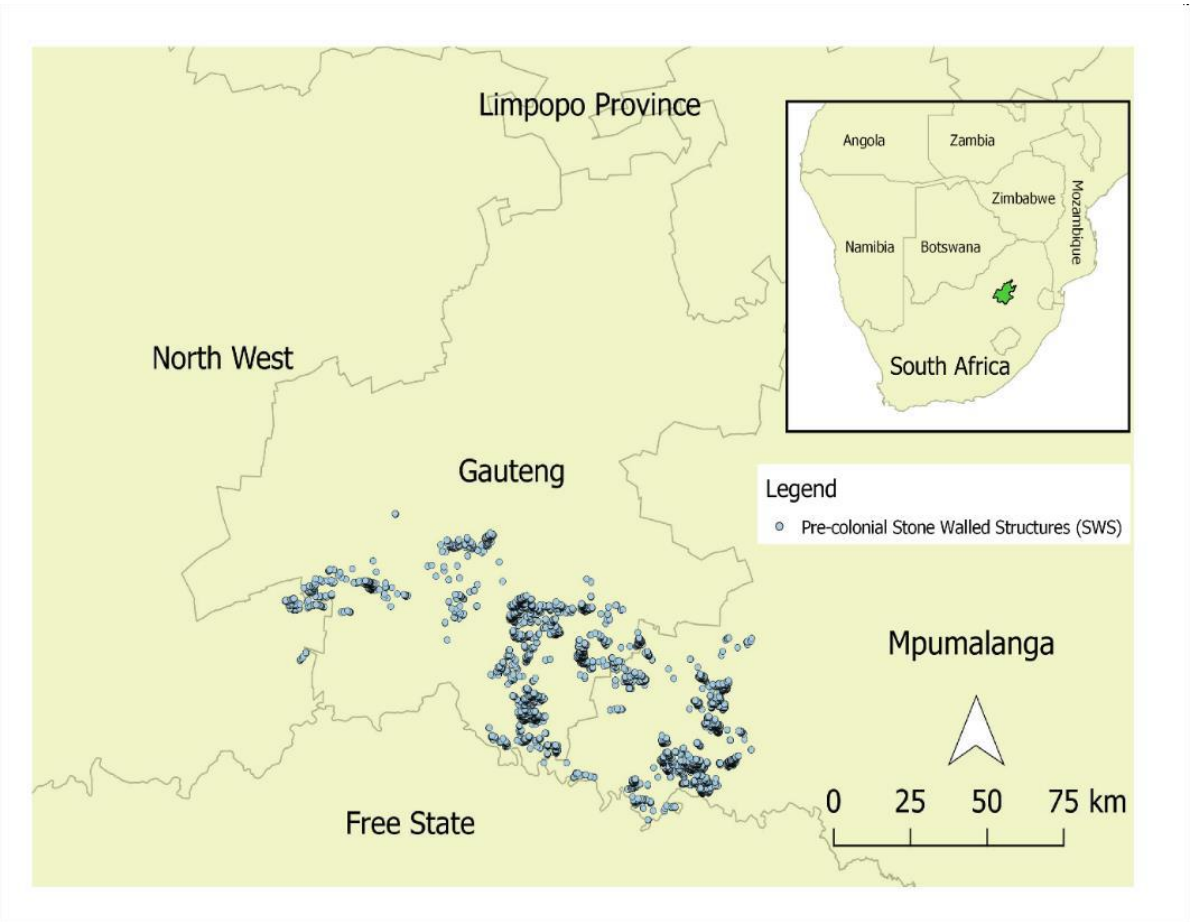

Figure 2. *Study area map southern Gauteng Province and pre-colonial stone walled structures (SWS).*

In the 1960s, spatial planning was vigorously designed to further separate black residential communities from affluent whites suburbs, in pursuit of social and economic race-based segregation (Mubiwa & Annegarn, 2013). Aerial photographs that I used in this thesis were taken in 1961 following urban planning needs to allocate and demarcate land use of southern Gauteng. Sexwale (2009) further noted that post-1994 saw the rural to urban migration that exerted pressure to the housing of Gauteng to this day. For the southern suburbs of the Witwatersrand, the vegetation and reprocessing of mine dumps coincided with the proliferation of informal settlements along the former mining belt, as existing residents and economic migrants from rural areas opted to stay within proximity to employment (Mubiwa & Annegarn, 2013). However, the rapid growth of the Gauteng region has caused an estimated population of 13.5 million, and (Mubiwa &Annergan, 2013) predicts that there will be an increase to about 27million by 2055.

1.3 Research Questions

1. How many pre-colonial Stone Walled Structures (SWS) have been destroyed by the development of Johannesburg? And of these, how many were recorded adequately before destruction?

2. To what extent is the public in the southern Gauteng Province aware of the existence and destruction of SWS? What are their opinions and sentiments concerning SWS?

3. What strategies can be adopted to improve awareness about SWS and their destruction?

1.4 Objectives

1. To measure the damage done to the pre-colonial SWS south of Johannesburg to date and evaluate how much of the destruction was mitigated by proper recording of the sites.

2. To investigate the level of local public and stakeholder awareness, opinions and sentiments about the destruction of pre-colonial SWS in this area.

3. To propose public awareness and education strategies on heritage management using Information Technology.

1.5 Methodology

This thesis used both Qualitative and Quantitative techniques to collect data. I used a different research method for each objective.

1. Objective 1 (Chapter 3) was achieved by comparing the distribution of pre-colonial SWS on historical air photos with the extent of development today.

   I analysed Archaeological Impact Assessment (AIA) reports to assess their effectiveness in mitigating the damage to these heritage resources.

   I used Quantum Geographic Information System (QGIS) to consolidate historical aerial photographs, Google Earth images, development footprints and Archival Maps for the pre-colonial homesteads and SWS.

2. Objective 2 (Chapter 4) used semi-structured interviews with different heritage stakeholders in southern Gauteng Province. This included the general public, civil servants, heritage professionals, and developers. This enabled these stakeholders to express their opinions on the heritage management of SWS. This method used audio recordings and collecting field notes.

3. Objective 3 (Chapter 5) was aimed at reviewing the best practices that could be used in the case study to create awareness and education about SWS. The literature on successful awareness and education strategies was reviewed.

1.6 Theoretical Framework

Lynn Meskell's studies inspired this thesis. In her ethnoarchaeological approach, she notes that there is a disjunction between the archaeologists' view of heritage and the public's view. In this light, she alludes that, without a clear understanding of this disjuncture, heritage management proposals are ineffective (Meskell, 2005a). This thinking is echoed by Ndoro (2001), who outlines the differences in the use of heritage at Great Zimbabwe between scientists and communities. There is a difference between serious ethnographic engagement and casual encounters that most archaeologists experience in the field with heritage stakeholders (Meskell, 2005a: 82). Over the years, southern African heritage management has alienated communities (Meskell, 2005a; 2005b; 2007; 2010; Ndoro 2001; Fontein, 2006). The disjunction between archaeological professionals and communities emanates from the alienation of communities from cultural objects which emanates from colonial archaeology (Shepard, 2002). However, Meskell (2005b) argues that materiality of objects cannot merely focus on the characteristics of objects, but must engage in the dialectic of people and things.

My research recognises the concept of context-based application in heritage management, which takes consideration of the type of site, type of community and interdisciplinarity to understand and improve heritage management (Meskell, 2005a: 83). This concept extends to design post-colonial field strategies that embrace new politics of decolonised methodologies (Smith, 1999; Meskell, 2007). However, my research went further by using information technology to explore, outline and discuss the disjuncture between archaeologists and communities to heritage management. This thinking guided my research in evaluating heritage awareness and suggesting best practice strategies expedient in mitigating the developmental threats to SWS in the southern Gauteng Province.

I base my thinking on the ethical role of the archaeology profession whose primary responsibility is to the living communities and participants on national and international organisations and developments (Meskell, 2009: 1). In support of her theory, Meskell (2005a) gives the example of how land displacements and detachment of communities from heritage at Kruger National Park had affected the custodianship of sites like Thulamela and Mapungubwe. For communities such as Ntimane and Mkhabela at Kruger National Park, failure by the Kruger national park to recognise the sensitivity of the landscape and sovereign rights custodial communities has created a disjunction that has resulted in land claims and conflict (Meskell, 2005a; 2007).

Accordingly, it is essential to understand that archaeologists as scientists, trained and skilled to manage heritage, often view communities as passive agents (Ndlovu, 2011b). Given this colonial background, communities view archaeologists as people who have no license to "tell" people their pasts or adjudicate upon the "correct" ways of protecting or using heritage (Meskell, 2009: 3). This notion has resonated from many scholars who argue that communities have been protecting heritage for centuries before the archaeology profession was introduced (Ndlovu, 2011b; Ndoro & Wijesuriya, 2015). Therefore, in this case study, I assess the impact of development on SWS, uncover the opinions of communities and suggest awareness strategy with this theoretical approach guiding my thinking.

1.7 Research Problem

Development has been a constant problem in heritage management worldwide. Often, various factors such as legislation, tools, strategies and nature of development do not sync with each other to allow for effective heritage management. My research investigated if heritage management is coping with the nature and rate of development, taking into account the colonial and post-colonial legacies of heritage management in South Africa in general and southern Gauteng in particular. Therefore, given the vast amount of efforts put in place to manage heritage, why are we still worried about the developmental threat to heritage sites such as pre-colonial SWS?

1.8 Research Justification

There has been a huge gap in knowledge about the last 500 years of the pre-colonial history of Sub-Saharan Africa (Sadr & Roider, 2012; Sadr, 2017; Naidu, 2018). Scholars have been constrained in the reconstruction of the pre-colonial history of this region due to the lack of published data (Mahachi & Kamuhangire, 2009). This research is focused on answering the question of why so many pre-colonial SWS have been destroyed in the southern Gauteng Province of South Africa without adequate record keeping. Besides the studies done by Sadr (2017) to measure the rate of development and destruction, and Naidu (2018) who tested Sadr (2017)'s predictions on a 270 km² area, my thesis tests the Sadr's (2017) predictions on a larger scale and with additional data. It specifies the number of SWS destroyed by a particular development and looks into the effectiveness of heritage management in the case study. The study further assesses the awareness and opinions of communities in relation to SWS and suggests strategies to ensure heritage awareness for preservation.

It is against this background that this study is considered important as it presents unique colonial and post-colonial factors that affect heritage sites such as SWS and stakeholders. Major factors that enabled my study were the availability of historical aerial photographs of southern Gauteng, freely available open-source spatial software, custodial communities affiliated with SWS and colonial influences that affected heritage legislation and policy in this part of South Africa. Therefore, through open-source spatial information technologies, this study assessed effectiveness of heritage management, effects of past and present heritage management and suggested strategies that could improve heritage conservation in the area.

1.9 Definition of Terms

Communities or Custodial Communities is defined by White (1982) as an informally organised social entity which is characterised by a sense of identity. In this thesis, custodial refers to people that have similar cultural, religious and ethnic backgrounds such as the Bakwena Ba Mare a Phogole. The custodial community describes a group of people who were once living in the same area and sharing the same fundamental values, organisation and interests (Rifkin *et al*. 1988). In this case, this includes descendants of the Bakwena Ma mare a Phogole. These words will be used interchangeably in this thesis.

Public Archaeology is often referred to as community archaeology (Marshall, 2002; Moshenska & Dhanjal, 2011; Thomas, 2014). It involves the provision of participations opportunities for members of the community or public (Monshenska, 2017).

Public relates to people in a particular area, who share a common interest, activity or a geographical location. In this thesis, I use "public" as a general term that refers to people who are residents, custodial communities and all stakeholders that are directly or indirectly associated Stone Walled Structures in the southern Gauteng Province. It will also refer to the general South African public as stakeholders to all heritage in the country.

Stone Walled Structures (SWS) are stone-walled architecture which are believed to be built to separate cattle from people and household from household. They are classified by Huffman (2007) as the Zimbabwe pattern and Central Cattle pattern. This study will only look at SWS that are found in the southern Gauteng Province and follow the Central Cattle Pattern.

1.10 Thesis Structure

The submission of this thesis is in accordance with the format for the Faculty of Science, the University of the Witwatersrand for the submission of a PhD by publication in the School of Geography, Archaeology and Environmental Studies. This thesis comprises of three papers which formulate the chapters as follows: Paper 1 (Objective 1) which is Chapter 3, Paper 2 (Objective 2) Chapter 4 and Paper 3 (Objective 3) which is presented as Chapter 5. Paper 1 has been published in issue 74 (209), page 3–15, 2019 South African Archaeological Bulletin, and Paper 2 is under review with the Journal of Cultural Heritage Management and Sustainable Development, and Paper 3 has been published as chapter 10, page 200–222, 2020 in a book with IGI Global, titled Developing Effective Communication Skills in Archaeology edited by Enrico Proietti (Ministry for Cultural Heritage, Activities and Tourism, Italy).

Introduction (Chapter 1) and the Literature Review (Chapter 2) of this thesis provide views that link the issues that are examined. Chapter 6 concludes and provides a brief discussion presenting key issues that emanate for the research results and links with general academic conversations.

Chapter 1: Introduction
This chapter maps out the basis of the study by providing an introduction, research justification, objectives, research questions, theoretical framework and methodology.

Chapter 2: Background
This chapter contains the literature review of the study. It gives historical and current discussions of the use of information technologies and heritage management. The chapter outlines the historical background of the case study. Other related discussed topics and historical backgrounds are the destruction of heritage, the advent of Cultural Resources Management (CRM) in the world and South Africa, information management, use of Information Technology Communications (ICTs), aerial photography, legislation, pollical influence, land ownership, community and identity, traditional institutions, stakeholder relationships, awareness and education in relation to heritage management.

Chapter 3: Efficacy of CRM and ICTs
This chapter is a published paper with the South African Archaeological Bulletin, Issue 74 (209), 2019, pp 3–15. It begins by outlining the developmental threat to SWS in the southern Gauteng Province. Developments mentioned are mining, infrastructure, water and transport network development. The study then outlines the severity of the developmental damage from the 1960s to recent dates. The study explores the use of QGIS and other ICT tools as instruments that can

enhance heritage management. Results of this chapter reveal that for the conservation of SWS to be effective, there is great need to assess if the public is aware of the damage to SWS.

Chapter 4: Public awareness and community opinions

The chapter, which is currently under review with the Journal of Cultural Heritage and Sustainable Development, examines the public's awareness levels and public opinion on SWS. The study results indicate that the majority of the interviewees were not aware of the existence and destruction of SWS. However, custodial communities expressed their knowledge of the existence of SWS. They also highlighted that they were aware of the developmental damage of SWS. Also, the public was interested to learn more about how they can help conserve SWS. Communities expressed their frustration over their exclusion from CRM consultation processes.

Chapter 5: Awareness and Education

Chapter 5 illustrates the best practices to improve awareness and education of heritage. It outlines new technological advancements in heritage management. In recent years, the majority of human communication is via the internet through platforms such as Google, Twitter and Facebook, to mention but a few. Other examples of awareness strategies suggested were heritage education through schools, media, social media, Google and 3D modelling of the exhibition, to mention a few. This chapter has been published as a book chapter 10 in Enrico Proietti (ed), *Developing Effective Communication Skills in Archaeology*, IGI Global, Ministry for Cultural Heritage, Activities and Tourism, Italy, 2020, pp.200–222.

Chapter 6: Discussion and Conclusion

This chapter summarises the results of the study. It consolidates the results and discusses the effects of development on heritage, community awareness and education, and ICT strategies that can be employed to achieve better heritage management. Lastly, the chapter explores some major concepts that can be explored in future research.

CHAPTER 2: BACKGROUND

2.1 Historical Background of Land Use and Rise of Johannesburg

To set the background, I first look at the rise of Johannesburg in South Africa. South Africa has experienced phenomenal development resulting in a massive urban change from colonial to post-colonial times, with Johannesburg becoming one of the fastest-growing cities in the African continent (United Nations Habitat, 2014). The rise and growth of Johannesburg was influenced by geology and mining, following the discovery of gold deposits in 1886 (Mubiwa & Annegarn, 2013: 7; The Mining Industry, 1897). Paul Kruger, the President of the Transvaal Republic, signed a proclamation declaring the Randjeslaagte farms on the Witwatersrand as public gold-digging sites on the 8th of September 1886 (Public Relation Office, 1967). This proclamation triggered an influx of people to work and exploit the discovered mineral. The migration saw early Johannesburg experiencing a growing need for accommodation, agricultural land, transport, industrial and social amenities to cater for the growing population (see Cripps, 2012). Massive population growth ensued as the rise of the mining industries needed the migration of mining workers from neighbouring countries (Beinart, 1982; Shillington, 1985; Bundy, 1979; Harrison & Zack, 2012), such as Mozambique, Zimbabwe, Malawi, and South Africans from other regions of the country (Cripps, 2012: 6), and some from around the world (Hobsbawm, 1975; McKeown, 2004), such that by 1967, Johannesburg's population was recorded to be 1.3 million people (Public Relation Office, 1967). This migration and urban population growth facilitated the rise of other industries such as manufacturing and food production (Cripps, 2012), and the increase of revenue and spatial demands, enabling a massive social change (Berger, 2002: 4).

However, as the urban sprawl intensified and Africans began to outnumber Europeans in the cities like Johannesburg, the ruling Nationalist Party introduced apartheid in 1948. 1948 cemented previous discriminative legislation such as the Native Land Act of 1913 that had displaced Africans from their native land. In this light, the introduction of apartheid ignited a racist system that was premised on the concept of separate development between blacks and whites. Under apartheid, urban planning determined the location, use of space and type of development of any city in South Africa (Mubiwa & Annegarn, 2013). Johannesburg was fractured by apartheid legislation into separate racial and social domains which saw two-thirds of the black population living in squatter camps around the city (Berger, 2002; Beavon, 2004). Some blacks were displaced and relocated to controlled areas such as Soweto, a township for blacks. Southern Gauteng (my case study) saw the massive suburban expansion of white residential areas (Harrison & Zack, 2012: 564). As Sokolic (2017) notes, by the 1960s, these developments had led to the destruction of African settlements and displacement of African people from their communal homes. I take note of the year 1960 as a developmental benchmark year that saw a significant shift in land use in Gauteng Province, as mentioned in chapter one.

These developments presented a rising threat to SWS. In this regard, for instance, Mason (1986: 558) in years that followed raised concerns on the destruction of pre-colonial SWS threatened by the "urban villas" which were proposed for construction in the suburban expansion. In recent years, southern Gauteng is regarded as the industrial hub of South Africa, with vast industrial developments and residential developments still being proposed for future development (Sadr, 2017). This urban sprawl is increasingly threatening the SWS in the southern Gauteng Province (Sadr, 2017; Naidu, 2018). However, with the background knowledge of Mubiwa and Annegarn's (2013) predictions that Johannesburg's population will double in 2055 due to various social, economic and political factors, my study was interested if heritage management of SWS will cope with the rate of development. I did this by assessing the effectiveness of previous and current heritage management techniques. Next, I will look at how this rise in development has affected heritage destruction.

2.2 Heritage Destruction

Many scholars have written about how the development of urban areas and infrastructure has exposed built heritage to the risk of destruction (Willcox, 1952; Rudner & Rudner, 1970; Mitchell, 2002; Bouchenaki, 2009: v; Ndoro, 2009; Lane, 2011;). With the rise in rural to urban migration in recent years in Africa, there is growing threat preservation of heritage sites in close proximity to urban centres. In Ethiopia, heritage sites such as Harlaa, Harar, Nora, and Sheikh Hussein are facing the threat of settlement expansion and agricultural activities (Khalif & Insoll, 2019). To add, war and infrastructural developments have posed significant threats to heritage in Lybia, Syria and Yemen, among others (Rayne *et al*. 2017).

However, destruction of archaeological sites has been in an increase mainly because of urbanisation and infrastructure projects (Kankpeyeng & De Corse, 2004; Bordes *et al*. 2008; Folorunso, 2008; Arazi, 2009; Lane, 2011). Environmental challenges such as erosion, flooding, and desertification has contributed its fair share to the destruction of heritage (MacEachern, 2001; Arazi, 2011; Lane, 2015; Marchant & Lane, 2014; Marchant *et al*. 2018). Historically in most African countries, looting has also destroyed heritage sites (Parcak *et al*. 2016; Fradley & Sheldrick, 2017). However, in this case study was keen to add new knowledge on the impact of development to SWS heritage in the southern Gauteng, South Africa, given the vast growth of this case study in both colonial and post-colonial eras.

The rapid growth of population and development has posed a continuous risk to archaeological and historical information. With the rise of rural to urban migration and population growth across Africa, the demand for infrastructural capacity still poses a risk to heritage located in urban areas. Developing countries in Africa are projected to have a higher urban population than rural by 2050, with more than half of global population growth expected in the continent (Cohen, 2006; Montgomery, 2008; United Nations Department of Economic and Social Affairs, 2017; United Nations Population Division, 2017; United Nations World Urbanizations Prospects,

2018). Rapid urban expansion in developing African countries is often unplanned (Tewold & Cabral, 2011; Mundia & Murayama, 2013). An example in Gauteng Province is the rise of informal settlements caused by the failure of city planners and developers to cope with the rising demand for social amenities and fast population growth. Mubiwa and Annegarn (2013) give examples of the growth of informal settlements such as Barcelona, Kombisa, Zenzele and Chris Hani in southern Gauteng Province, South Africa, which in my view, are some of the silent heritage destroyers in South Africa in recent decades. Therefore, without documentation and planned development growth, crucial historical information is destroyed.

In recent years African heritage management has been faced with a dilemma of choosing between development and heritage (UNESCO, 2014; Ndoro & Wijesurya, 2015). The rise in unemployment and declining economies creates a dilemma that gives pressure to the government to prioritise proposed developments over heritage preservation. Collectively, all these human activities and actions significantly impact on heritage resources more than all other agencies (Willcox, 1956; Rudner & Rudner, 1970). In this light, Bauchenaki (2009) expressed his concerns on the disappointment of most heritage institutions in Africa in failing to protect heritage from development. Ndlovu (2011a) highlights some failures of the South African Heritage Resources Agency (SAHRA) to implement heritage legislation. In Knysna and Hout Bay, between 2006 and 2007, for example, conditions had been given by the Built Environment and Landscape Committee (BELCOMM) of the HWC that no excavations were to commence while the Archaeology, Palaeontology, and Meteorites (APM) department of the same organisation were considering the Phase 1 AIA (Ndlovu, 2011a). However, in this unapproved excavation project, a shell midden and human skeleton within the midden were destroyed.

The rising threat to heritage in South Africa was seen at Mapungubwe Cultural Landscape (MCL). As mentioned in chapter one, this case study exposes how state institutions fail to have structures that protect heritage in the interest of communities and heritage professionals. Ndlovu (2009) reveals the unprofessional conduct of government departments in authorising mining development with permits from all relevant stakeholders or any evidence of community consultation as required by NHRA 1999. Although through the collaboration of heritage institutions, communities, UNESCO and ASAPA development was stopped, this case study revealed a classic example of the rising threat of African governments in prioritising development over the preservation of heritage.

In the last decade, scholars like Lane (2011) have argued that it is the responsibility of archaeologists to change some of our practices to mitigate the threats of developments in peri-urban fringes of African towns and cities. The scholar states that the destruction of unregistered and undocumented heritage is a loss of vital information and the inability of archaeologists to uphold our ethical responsibility in serving the public (Lane, 2011). In this regard, Lane (2011) advocates African legislators to foster update of heritage legislation and establish mechanisms to enable implementation. However, this process should ensure that archaeologists should lead strides to change their practice in reducing the developmental threat to heritage sites by

monitoring future development through measuring the scale of loss and damage as this thesis did. But is updating legislation enough? Ndlovu (2011a) argues it is not enough, and there is a need for proactive measures to implement some of the good and useful legislative instruments that are positive. In this thesis, I suggest education and awareness techniques that can be adopted in southern Gauteng as proactive steps to effective heritage management.

Consequently, the growth of globalisation and industrialisation, urban sprawl is inevitable; therefore, archaeologists should lead in transforming saving and documenting heritage (Lane, 2011). Lane further states that it is the responsibility of archaeologists to register sites and record them before destruction (Lane, 2011). Through ethics, archaeologists should protect the heritage that is owned by the public (Meskell & Pels, 2005; Breen & Rhodes, 2010). Lane (2011) states that there will be a growing number of population in urban area and decline in rural population. However, any project which involves significant engineering work, such as the construction of dams, airstrips, highways, and irrigation canals, tends to be considered as a potential threat (see MacEachern, 2001; Ndoro & Pwiti, 2001; Kankpeyeng & DeCorse, 2004; Benett & Barker, 2011). In this light, archaeologists have a social responsibility to be accountable when conducting their work to reduce developmental damage to heritage.

To add, the rise in population growth, rural to urban migration has been on the increase in African countries. In 2010, the Department of Economic and Social Affairs of the United Nations Development Programme (UNDP) noted that, on a global scale, the number of people living in urban areas had surpassed for the first time in human history the number of people living in rural areas (UNDP, 2010: 2). This urban population growth was predicted to have increased by 89% to 6.6 Billion by 2050 (Lane, 2011: 138). In South Africa, Sexwale (2009) noted that the rate of construction of the Reconstruction and Development Programme (RDP) houses in Gauteng (study area) had not matched the demand of the inward rural to urban migration, natural population growth and the massive influx of economic and political refugees from elsewhere in Africa. This demographic dynamic of Gauteng has further placed heritage sites close urban area under increasing pressure on heritage and urban planning institutions. In South Africa and Botswana where pre-development archaeological assessments and mitigation have been mandatory requirements for more significant projects for some time (Abrahams, 1989; Deacon, 1996; van Waarden, 1996; Keitumetse, 2009; Kotze & van Rensburg, 2003). For smaller projects such as informal settlements and unregulated projects, AIAs have not been done, and heritage destruction is not easy to monitor, thus, leaving a vacuum for heritage destruction.

In Lane's (2011) view of African heritage management, there is a growing inability of archaeology and developmental frameworks to cope with the threat to heritage resources due to inconsistent implementation of heritage legislation. Lane stated that based on United Nations Development Programme (UNDP)'s figures, Africa's population is predominantly rural at about 60% of the 2009 total, and the continent's total population is expected to rise by 60% by 2050, with a prediction that urban populations will increase (Lane, 2011). In Ghana, in cities like Accra and Kumasi, there has been a rise in urban growth. For these cities, Lane (2011) states that

because of the lack of availability of AIA reports for developmental projects that were conducted between 1984 and 2000 reflects the destruction of heritage without documentation. For Kenya, despite having a much longer tradition of archaeological research, prior to the introduction of the Environment Management and Co-Ordination Act (EMCA) of 1999 and National Museums and Heritage Act (2006), there were no provisions within heritage legislation for enforcing AIAs or mitigation work (Lane, 2011: 148). In this thesis, I argue that due to the lack of use of spatial information technologies heritage destruction was difficult to monitor. I use these tools to trace heritage damage and how we can communities contribute and monitor SWS. But what are pre-colonial SWS? The next section will explain and describe this type of heritage and why it is worth preserving.

2.3 Pre-colonial Stone Walls Structures in South Africa

Stone Walled Structures (SWS) are common features in the southern Africa region (Sadr, 2012). The period regarded as Iron Age in archaeology refers to a period where society was practising metal production, pastoralism, trade, and farming. Some scholars like Evers (1973, 1975), Hall (1987), Mason (1986), Schoeman (2013) and Summers (1971), refer to this period by farming communities. Currently, the Iron Age/Farming Community period is divided into three phases Early (AD 200 – 900), Middle (AD 900 - 1300) and Late (AD 1300-1840), (Huffman, 2007; Fredriksen & Chirikure, 2015). Archaeological features and artefacts that are evidence of this period include SWS, grindstones, pottery, iron and copper artefacts, bones of sheep and cattle (Mason, 1968; Huffman, 2007). All these artefacts are believed to be produced and build by Bantu-speaking people (Walton, 1951).

Huffman (2007) states that the purpose of the SWS was to control access and movement of people and livestock. He proposes two origins of Iron Age stone-walling which are: the Zimbabwe pattern and the Central Cattle Pattern Walling (CCP). In southern Gauteng Province (the case study), several different architectural styles and types of SWS have been identified (Mason, 1986; Huffman, 2007; Sadr & Rodier, 2012).

The location of SWS is believed to have been influenced by periodic droughts, accumulation of cattle-wealth, population growth and pressure and conflicts in the late 18th and early 19th centuries (Boeyens, 2003; Huffman, 1986; Mitchell & Whitelaw, 2005). Most of the locations for the SWS were in areas that had water, good soils, ample grazing land, and excellent hunting grounds (Morton, 2018b). The Tswana-speaking people are believed to be associated with the SWS in southern Gauteng Province (Bruetz, 1956; Tempelhoff, 2003; Phatlane, 2019). They are said to have migrated from East Africa around AD 1300 (Huffman, 2010; Steyn, 2011), but now predominantly stay in North West, Gauteng and eastern Free State Provinces (Boeyens, 2003) and in Botswana and Lesotho. Archaeologists have classified and analysed the architectural styles of SWS in diverse ways and associated them with various branches of the Sotho Batswana polity (Banhegyi, 2014; Boeyens & Hall, 2009; Hunt & Sadr, 2014; Huffman, 2007; Maggs,

1976a; MacRoberts, 2013; Pistorious, 1997; Sadr, 2017; Taylor 1979). But are SWS structures relevant to the archaeological and historic scholarly information today?

To answer this question, Sadr (2012, 2017, 2019) states that there has been a gap in the historical information of the last 500 years. Thus, there was a need to fill in these gaps to fully understand how these Iron Age societies lived and adapted to their environment. I briefly highlight the extensive work that has been done by the 500 Year Initiative (FYI). Through the various collaborative works on SWS such as Bokoni by archaeologists, anthropologists, and historians have been able to trace the economic and political aspects of these communities and cultures (Delius *et al*. 2012). For Logan *et al*. (2019), the FYI project was able to reframe the approaches to food security through understanding archaeological artefacts, SWS, farming techniques and community-of-practice from the past to assist in informing the present. With these mentioned few, SWS play a significant role for archaeologists, historian, geographers and archaeologists to study and understand the last 500 years.

One of the most vital questions regarding these SWS is whether pre-colonial SWS are relevant and important in the heritage identity of the modern South African population. Some argue that SWS are not relevant, and African communities have a tradition of abandoning sites to start elsewhere (Ndukhuyake Ndlovu, pers comm, 4 August 2017). Some think that SWS are so common that "not everything can be saved" (Thomas Huffman, pers comm, 5 July 2019). However, Manyanga *et al.* (2010) argue that SWS were not abandoned but continue to be used as religious centres. From these views on the value and significance of SWS, what are the opinions of the public and custodial communities of the southern half of Gauteng Province? Are they aware of the threat their heritage faces? I show some of the public opinions and sentiments to find knowledge on community perceptions. Next, I will explore the advent of Cultural Resources Management (CRM).

2.4 The Advent of Cultural Resources Management

The integration of archaeology with property development became well understood in the mid-1980s. This development was not only in Britain but in Europe and North America with the lingering question on the fate of archaeological remains as the profession tried to piece together and understand of the past (Darvill *et al*. 2018; Webley *et al*. 2012). The process of CRM created legal frameworks and professional practice that supported the management of archaeological remains through protection, conservation, investigative surveys and excavations (Wainwright, 1993). Over the years, in the late 20th century and early 21st centuries, archaeological investigation rested on two main foundations, problem-oriented and curiosity-driven research; and development-led and related research (see Darvill *et al*. 2018). For development led research, it was led by land-use change carried within legal frameworks. In Britain, these legal frameworks ranged from provincial level to national level to cater for environmental assessments, spatial planning, listed buildings and conservation areas (Darvill *et*

al. 2018).

To fully understand the advent of CRM, I will give brief backgrounds on accounts of western countries. For the British, I will look pre and post 1990 with 1990 dating the Post Policy Planning Guidance Note 16. From the twin pillars of archaeological research (which are Curiosity-driven and development led), the 1970s in England saw the rescue archaeology as the primary approach to the relationship between development and archaeology. There were many opportunities when new developments threatened familiar heritage sites, which often got attention in the headlines (Darvill *et al*. 2018). One of the examples of these archaeological rescues at Whitehawk Camp, Brighton in 1932-1933 by E.C Curwen (Darvill *et al*. 2018).

According to Darvill *et al*. (2018), it was clear that the idea of reactive intervention and preservation by record only was unrealistic to the amount of work that needed to be done and resources that were needed. The sole purpose of rescue archaeology was the preservation of heritage in-situ (for the heritage that had ephemeral value) and preservation by the record for the heritage that needed to be destroyed (Thomas, 1991). In 1963, the Royal Commission on Historical Monuments of England was established to keep these national records (Darvill *et al*. 2018).

The approach changed to planned management of development which took into account the conservation of heritage. An example of the change in approach in this time was the enactment of the Ancient Monuments and Archaeological Areas Act 1979, which altered how the Scheduled Monuments were dealt with in the face of developmental threat. The act replaced a simple passive notification process with an active consent procedure (Darvill *et al*. 2018). Over the years, many case studies presented opportunities for managing development before heritage is destroyed (see Darvill *et al*. 2018). Of particular note is the site of the Rose Theatre in Southwark, London, which was first revealed in 1988 which was under threat from development. According to Darvill *et al*. (2018), in May 1989, the site had created a widespread public debate on whether the remains should be preserved out of sight under the proposed development, fully or partially excavated, or protected in a way that would allow further investigation and display in future. In response to this public outcry, the Minister of Heritage announced that the British government was to introduce guidance on archaeology in planning, which gave birth to the Policy Planning Guidance Note 16 (PPG) in November 1990 (DoE, 1990; Mc Grill, 1995).

The publication of the Policy Planning Guidance Note 16, popularly known as PPG 16 of 1990, revolutionised the way CRM is done today (DoE, 1990). According to Darvill *et al*. (2018), the 24 paged publication raised the profile of archaeology in urban planning by clarifying the way that archaeological remains should be considered in the decision-making process of urban planning. It also mapped out how the archaeological remains should be protected and managed. Most importantly, the PPG outlined the need for reliable information to inform decision-making, and to emphasise the need to consider the preservation of archaeological remains were possible (Darvill *et al*. 2018; Wainwright, 1993). According to Wainright (1993), PPG placed archaeology firmly on the centre stage of the planning system along with other material

considerations. It enforced the power of local planning authorities to require developers to facilitate and finance the programme of investigation and reporting archaeological remains and landscapes that could not be preserved (Darvill e*t al*. 2018; Wainwright, 1993). Initially, the UK government was responsible for paying Contract Archaeologists (CAs) for CRM, but, due to the overwhelming expenses, the government passed legislation for developers to carry the responsibility (Department of Communities and Local Government, 1990). Therefore, in structuring the PPG 2 strands came together, which were the evolving British archaeology and European perspective (Darvill *et al*. 2018).

In giving the developers the financial responsibility to finance rescue excavations, Thomas (1991) outlined the vaccum that was created in the process. The commercialisation of rescue archaeology created a competitive approach similar to that of France, which undermined the consistent recording and preservation of heritage. Developers emphasised more on the recording of heritage without analysis and synthesis of recorded information (Thomas 1991). Thomas also highlights the lack of publications produced out of the vast number of projects to inform the public on the excavations, which arguably distorts the purpose of rescue archaeology (Thomas, 1991). The publication crisis came at a time where there was no accurate information dissemination to enable archaeological rescue reports to be publicly accessible.

Wainwright (1993) outlined the developments of rescue archaeology to have a multidisciplinary approach which will end the vast conflicts between heritage stakeholders. The inclusion of the local and national consensus would create a platform for all heritage stakeholders to have a say in the planning process of urban planning. They recognised that both archaeological materials and landscapes have the potential to be under threat from development. These developments gave potential to rescue archaeology with a multidisciplinary approach including historians and archaeologists (Wainwright, 1993).

The role of Cultural Resources Management (CRM) is to protect heritage. The development of CRM can be traced in America to the National Historic Preservation Act of 1966 as a response to the developmental threat posed to heritage by the rise of urban developments during and after the two World wars fought between 1914-1919 and 1939-1945. CRM intended to document or preserve potential archaeological remains (Berggren & Hodder, 2003; Elia, 2003; Fitting & Goodyear, 2003; Mc Grill, 1995; King, 2005:12). Notable examples are the research work done by Fowler (1982), Czeplicki (1989) and Deacon (1996).

For European rescue archaeology, Demoule (2012) states that true rescue excavations began in Europe in the nineteenth century and became systematic only after World War II (WWII). In the longer term, rescue archaeology had started from the discovery and excavation by King Nabonidus in the sixth century BC at Larsa, to the discovery in 1506 of the marble Laocoon statue in Rome, Italy (Demoule, 2012: 612). To some extent, all these excavations were related to developmental projects (Daniel, 1975; Bahn, 1996; Schnapp, 1997; Gran-Aymerich *et al.* 1998). However, when WWII ended, Europe was in dire need of new buildings, which in turn boosted rescue archaeology.

According to Demoule (2012), throughout this development, systematic excavations were not organised throughout the post-war economic growth period. In the years that followed the evolution of this rescue archaeology progressed, and rescue archaeology moved to preventative archaeology. With preventative archaeology, archaeologists were now in front of the bulldozers, resulting in integrated planning of the entire development project (Demoule, 2012). Demoule (2012) states that this process intended to ensure that the archaeological projects were not interfering with the development process; thus, the final result was heritage destruction. In France, 'preventive archaeology' was used from 1979 (Lasfargue, 2009) and was gradually adopted throughout the rest of Europe from that point forward (Demoule, 2012). Therefore, the concept was to prevent heritage destruction rather than react after heritage is destroyed.

The influence of French archaeology on other European countries played a pivotal role in the advent of CRM. Demoule (2002) states that for most Western countries, archaeology was under national control. In France, Germany and Britain, archaeological services and national museums were established from the mid-nineteenth century with archaeological excavations only permitted by licence (Demoule, 2002). Archaeological sites were under the protection of the state until the late 19th century were questions on who should bear the costs began to surface. According to Demoule (2002), the debate was that, should the costs be the responsibility of the state, given its duty to protect the heritage? Or should the cost fall to the developer who would be responsible for the destruction of an archaeological site, assuming that the destruction was unavoidable? This debate was followed by a sequence of events that transform CRM to be what it is today. Archaeology in France came from a background where culture and ideologies never carried any weight, giving room for the profession to be spearheaded by other professions such as church priests, teachers, doctors, etc. (Demoule, 2002). This group of professionals later made it difficult for the establishment of archaeology as a profession. Demoule (2002) states that for the French parliament to pass an Act for Protection of Ancient Monuments, local or national archaeological societies blocked the passage of the bill. It was only in 1941 during the German occupation that the first regulation was introduced to ensure authorization of all excavations, although the legislation gave rights to archaeological artefacts to landowners of the excavated sites.

Around the 1970s rescue archaeology in France became a voluntary profession which contributed to its weak scientific level (Audouze & Leroi-Gourhan, 1981; Cleuziou *et aI*. 1991). During this time the government had only 70 staff the whole of France. Demoule (2002) suggested that the lack of human resources in that period contributed to the destruction of a lot of heritage. Examples are the Roman forum of Lutetia (Paris), the Roman city at Bourbonne-les-Bains and the palace of the Visigoth kings at Toulouse to mention just a few. The need for qualified personnel to manage urban archaeological sites was not only identified in France. Wainwright (1993) expressed a similar need for Britain to have expertise. The scholar further states that these examples are just a few snapshots of projects that could be traceable; more could have been destroyed without notice. The act of destruction was met with protests in the press, and public opinion was stirred to foster progressive change (Demoule, 2002), which

revolutionalised how CRM is today. Public opinion to the preservation of heritage sites took centre stage in determining the survival of heritage under the threat of development. However, it is ironic to note that colonial countries acknowledged the need for public opinion in the advent of CRM, yet in most of their African colonies public opinion on CRM was suppressed.

The 1980s saw much pressure being exerted by the Ministry of Culture on developers to contribute to the financing of rescue archaeology (Demoule, 2002). This approach resulted in the developers of roads, bridges, canals and railway to create toll fees to cater for the enormous cost they incurred (Demoule, 2002). However, the financial contributions of developers promoted rescue archaeology into the 1990s, with developer contributions that amounted into about 500 million francs, which was absorbed by the salary cap of the 1500 archaeological staff nationwide. According to Demoule (2002), the core of this staff was employed by the Association for National Archaeological Excavations (AFAN), an agency of the Ministry of Culture in France. Other contributing firms emerged, which also employed archaeological staff through universities and National Centre for Research (CNRS). Rescue work of each year in the 1990s saw 3000 rescue excavations through work of each institution or collaboration, thus, producing extensive scientific knowledge and data (Demoule, 2002). This rapid expansion of rescue archaeology in France proved difficult for the authorities to control, as Demoule (2002) notes that they experienced it rather than organize it. More problems emerged in funding rescue projects, and recruitment of contract archaeologists was too large to be met by university output—a complete opposite of the development of archaeology in South Africa (Ndlovu, 2019). There were also regions in France like the French Riviera or Corsica where private developers did not pay for rescue archaeology, which saw most sites destroyed. These events created jurisdictional deadlocks in many regions, with legalities on payment and control of private properties (Demoule, 2002).

Of much interest in the advent of French rescue archaeology is the dynamics of the politics that followed rescue archaeology. AFAN itself was not a scientific organization with scientific management or policies. Demoule (2002) states that it became anomalous that the public was paying out nearly 500 million francs a year (given that the developers were passing on excavation costs to their customers, the public, through the medium of motorway tolls or high-speed train fares). Research work had no benefit in the form of scientific publications and public access or participation. Through the growth crisis, politicians had also dragged commissioning of reports, which saw only 20 reports commissioned in 20 years (Demoule, 2002). In the 1990s, the Malta convention on the protection of archaeological sites promoted the state to manage heritage in the context of economic and social development. Demoule (2002) states that it was the responsibility of the state to decide conservation due to its integrity or destruction without any scientific investigation. The French parliament established a research institution, the *Institut National de Recherches Archeologiques Preventives* (INRAP), or National Institute for Rescue Archaeology, with authority over all rescue excavation. Demoule (2002) states that it was the responsibility of this institute to work and collaborate with various institutions to rescue archaeological sites under threat. A new style of funding was introduced in by the *Conseil d'Etat,*

the supreme court of French administrative law which scrutinises all bills before they are laid before parliament (Demoule, 2002). This legislation was to give details on the proposed financing of rescue archaeology which was the polluter must pay principle was adopted with a new taxor levy. The intention of this new law was to repair the damage caused by the development (Demoule, 2002). However, after the enactment of the new law in 2001, INRAP came into effective 1st of February 2002.

In response to the growing threat of development on heritage sites, several recommendations and conventions from several international communities were adopted. According to Demoule (2012), the Convention for the Protection of Cultural Property in the Event of Armed Conflict was the first to be adopted by UNESCO in 1954. The convention was following the end of World War II. In 1956 Recommendation on International Principles Applicable to Archaeological Excavations was adopted in New Delhi (UNESCO, 1956), which reminded humanity of its responsibility in protecting archaeological sites to enhance knowledge of past civilizations (Demoule, 2012). However, it is essential to note that this recommendation lacked binding measures for member states; thus it was not a binding treaty and did not much influence the behaviour of the signatory states (Demoule, 2012).

Although much of the international effort did not yield interest in the 1950s, in later years some charters created a platform for heritage preservation. The Venice Charter, or officially the International Charter for the Conservation and Restoration of Monuments and Sites, signed in 1964, led to the creation of the International Council on Monuments and Sites (ICOMOS) in 1965, Warsaw (ICOMOS, 1965). In the same year with the Venice Charter, 1964 saw the framework of UNESCO, creating a campaign to save Egypt's Nubian temples (Demoule, 2012). The construction of the Aswan Dam threatened these temples. Around the same time in 1968, there were UNESCO Recommendations made Concerning the Preservation of Cultural Property Endangered by Public or Private Works which outlined the concerns to heritage destruction and reinforced the need for CRM.

In 1970, the Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property, signed in Paris in 1970 (UNESCO, 1970). This convention was followed by the Convention Concerning the Protection of the World Cultural and Natural Heritage, signed in 1972, Paris (UNESCO, 1972). According to Demoule (2012), the Convention Concerning the Protection of the World Cultural and Natural Heritage gave birth to the World Heritage Center, which developed a list of nearly 1,000 archaeological sites throughout the world. However, Demoule (2012: 613) argued that all of the listed sites were most prestigious and visible examples and nearly 1,000 archaeological sites from all periods are destroyed every day in the world as a result of development projects without preventive excavation. Many Charters, recommendations, declarations, conferences and conventions came after, such as the 1972 United Nations Stockholm Conference on the Human Environment.

In 1987, the Charter for the Conservation of Historic Towns and Urban Areas (hereafter the Washington Charter) was created to improve the preservation of heritage under threat of

development. During the same year, the 1987 UN-sponsored Brundtland Commission was set up to refine the standards of CRM. The 1990 ICOMOS Charter for the Protection and Management of the Archaeological Heritage (hereafter the 1990 ICOMOS Charter) recognised the vulnerability of heritage sites to developmental threats. However, the 1990 ICOMOS suggesting the need for prior assessment of proposed developed areas to be surveyed to avoid the destruction of heritage sites. However, in 1992 UN Conference on Environment also continued to refine the standards of CRM, two years before the revolutionary Policy Planning Guidance Note 16 (PPG) in England.

Consequently, there was a steady growth of rescue excavations in Europe, 1992 also changed rescue archaeology when the European countries of the Valletta Convention or the Malta Convention in Malta adopted the polluter pays principle with a signed commitment by all members (Demoule, 2012). UNESCO, for its part, then continued its policy of agreements with the signing of the Convention on the Protection of the Underwater Cultural Heritage, adopted in Paris in 2001 (UNESCO, 2001), and the Convention for Safeguarding Intangible Cultural Heritage (UNESCO, 2003). Next, I will review CRM in South Africa.

2.5 South Africa and Cultural Resources Management

In South Africa, Heritage Impact Assessment (HIA), also referred to as contract archaeology, was largely influenced by the increased development that started in the 1970s. The KwaZulu-Natal Museum was one of the first institutions to have a contract archaeologist to assist with dam constructions in the then province of Natal. The University of Cape Town in 1987 under David Halkett and Tim Hart, and the University of the Witwatersrand in the 1990s, are the institutions that started to do HIA to fund their research (Ndlovu, 2014). Although the early development of CRM in the Archaeology Unit at the University of Cape Town was driven by a research agenda, Hall (1989) acknowledged the financial rewards that contract archaeology generated as compared to the research arms of their respective archaeology departments. It enabled most departments to source funds from CRM to fund other research projects (Ndlovu, 2014). This opportunity gave rise to the interest in contract archaeology as it also offered employment opportunities for archaeology graduates. Recent research by Kinahan (2013) shows that contract archaeology is still one of the biggest employers of archaeologists besides academia in South Africa (Kinahan, 2013). However, due to this rapid increase in the financial and employment opportunities, Hall (1989) had warned of the need to monitor and control accreditation of contract archaeology and archaeological practice to ensure the quality of work and reports.

In 1989, the declaration of the Environmental Conservation Act No. 73 boosted the Archaeological Heritage Management (AHM) industry in South Africa. This legislation gave the minister the power to request a report that would assess any potential impacts of any proposed development (Deacon, 1993b; Ndlovu, 2014), thus making it mandatory for an AHM report before any form of development could commence. All developers adhered to this legislation

(Ndlovu, 2014). Similarly, the late 1990s saw the proclamation of legislation of the provincial KwaZulu-Natal Heritage Act (No. 10 of 1997) and the National Heritage Resources Act (NHRA, No. 25 of 1999), which made HIAs a mandatory requirement ahead of any form of development. These legislations gave rise to privately owned heritage consultancy firms (Ndlovu, 2014). Notwithstanding the growth in archaeological practice, numerous ethical concerns were raised by Ndlovu (2014) who evaluated the legal frameworks, community consultations, information mismanagement, the valuing of heritage sites and the transformation of contract archaeology in South Africa in general. As heritage management evolved in South Africa, the debate of development versus heritage preservation accelerated.

Ndoro and Wijesurji (2015) state that monuments and sites have been fenced off for the benefit of visitors, and for short term economic benefits and empowernment of locals. However, this approach has alienated some traditional custodial communities as the owners of this heritage. In most colonial countries, heritage management became the responsibility of heritage authorities and excluded local communities (Meskell, 2005a). Because of the economic benefits, heritage became a commodity for tourism.

In Africa and Asia, where there are areas of prosperity surrounded by a sea of poverty, there are limited choices between heritage protection and unemployment (Ndoro & Wijesurji, 2015:134). Economic influence became a major determining factor for heritage conservation through tourism and contract archaeology. Ndlovu (2014) expressed his concern with contract archaeology, attributing its rise to the financial rewards and employment opportunities it has brought. Mapungubwe Cultural Landscape was almost destroyed in favour of mining development (Ndlovu, 2009). The competition to get contracts for heritage impact assessments created a situation wherein some contract archaeologists served the interests of developers, the paying client, rather than the profession (Ndlovu, 2014).

Despite several cases where CRM has been a useful tool to discover, protect and rescue heritage in Africa (MacEachern, 2001; Mturi, 2005; Kamamba, 2005; Eboreime, 2009), many African scholars have expressed concerns about CRM (Mumma, 2009; Mahachi & Kamuhangire, 2009; Ndoro, 2009). Ascribing value to heritage under threat has brought about a debate on physical versus intangible heritage and heritage professionals versus custodial communities (Mumma, 2009; Ndoro, 2009; Ndlovu, 2011b). An example is Mumma (2009), who argues that most intangible values are not recognised in a majority of Heritage Impact Assessments (HIAs). He states that, traditionally, HIAs were designed specifically to conserve and preserve tangible rather than intangible heritage.

Furthermore, Ndlovu (2011a) raises the concerns on the failure of the NHRA 1999 Act to account for CRM processes and quality of the information obtained. Heritage agencies are empowered to request either a Phase 1 Archaeological Impact Assessment (AIA) or a full Heritage Impact Assessment (HIA), if there is a reason to believe that heritage resources may be affected by any proposed development (Ndlovu, 2011a: 42). The relevant authority will then issue a Record of Decision (ROD) which provides the recommendation of the HIA. On paper,

the legislation seems effective, but it has serious shortcomings (see Ndlovu, 2011a; 2014). Ndlovu (2011a) describes these shortcomings by outlining the weaknesses of section 34, 35, 36, 38, and 50 of the 1999 NHRA Act. Section 34 has a weakness that SAHRA Provincial Heritage Sites (PHS) does not consider the protection of buildings that have no colonial pedigree, such as exist in townships. Section 50 of the NHRA Act empowers the heritage inspectors, government authorities and South African Police Services (SAPS), customs and excise officers to enter property without a warrant, yet this arm of the law is never utilised to protect heritage (Ndlovu, 2011a). Ndlovu (2011a) further states section 36 lacks coordination between various government structures administering different pieces of legislation. Ndlovu (2011a) also argues that section 36 ignores African cultural values: here, graves do not gain cultural significance because of the length of time that has passed since the person died. Section 38 of the NHRA is also criticised by Ndlovu (2011a) for lacking enforcement power. Consequently, in view of these serious criticisms, I was curious to see if the ineffectiveness of legislation to protect heritage could be documented in the southern Gauteng Province.

2.6 Information Management and Heritage Management

In the development of CRM, the increase of rescue archaeology has often given archaeologists the need to incorporate information management (Thomas, 1991). The reliability of information management through abstracting, bibliographic services and ensuring public access to information were some of the essential needs as rescue archaeology developed in Britain (Thomas, 1991). Without information management, the essence of rescue archaeology or CRM becomes redundant. As the CRM database grows, and the level of knowledge rises there is a need for carefully structured information which can provide (partly through abstracting and ‘keywords’) an index and guide to the totality of the available data (Thomas, 1991). In light of these early observations, was this concept incorporated in CRM of African countries such as South Africa?

In South Africa, scholars have identified challenges regarding the information management of CRM. Ndlovu (2014) outlines how contract archaeology in South Africa violates professional ethics evidenced by the vast amount of missing information such as the methodology used, or the provision of site maps, images, GPS tracks, and site recording sheets. Lane (2011) states that most heritage resources are destroyed without enough study and information.

Furthermore, insufficient documentation and retrieval systems in heritage management are some of the problems that have contributed to the destruction of heritage through CRM. Accessible records systems for heritage management are either grossly inadequate or non-existent in most African countries (Eboreime, 2009: 2). Lack of information management techniques such as creating inventories for heritage sites and artefacts challenges heritage management in Africa (Eboraime, 2009; McIntosh, 1993).

HIA presented an opportunity for archaeologists to record and register heritage sites. For

example, mitigation work along the Chad-Cameroon pipeline recorded a total of 472 sites (Lavachery *et al*. 2010). AIA projects, such as that conducted for Botswana's Department of Water Affairs along the *c*. 360 km route of the North-South Carrier water pipeline in eastern Botswana allowed for the documentation of 24 heritage sites (Lane, 2011). Through proper and effective use of new technological tools in CRM, there is a need for site recording. This thesis explores some of those technologies and how they could be used in heritage management of SWS in southern Gauteng Province.

In South Africa, efforts have been made to ensure adequate information management of archaeological sites faced with the threat of development (Smut *et al*. 2016). According to Smut *et al*. (2016), one of the fundamental reasons for the creation of the South African Heritage Resources Information System (SAHRIS) was information management through a National Heritage Inventory. Thus, promoting good governance, transparency and public access to information per the NHRA Act of 1999. SAHRIS has four main functions: it serves as an integrated heritage management system, a national sites repository, a national collections repository and a centralized platform for reporting and tracking heritage crime (Smut *et al*. 2016: 139). However, it was for these set obligations that my study was aimed in evaluating the effectiveness of SAHRIS information management of CRM reports of SWS in my study area. Next, I will review the advent of aerial photographs and spatial technologies.

2.7 Aerial Photography and Heritage Management

Aerial photographs are useful for the identification of heritage sites, their classification, documentation, understanding the topology of landscapes, and reconstruction of settlements patterns. Aerial photographic history goes back to the dawn of photography in the 1850s (Katz, 1966; Royal Air Force, 1991; Ceraudo, 2013). The first use of aerial photographs in archaeology goes as far back as the late ninetee19th century (Reeves, 1936) when the German excavator Franz Stolze used it to record his excavations at Persepolis in 1879 (Stolze & Andreas, 1882).

Aerial photography developed from the need for military intelligence through the use of observation posts, taking images from towers, mountain tops, balloons and later aeroplanes and rockets (Crawford, 1923; Reeves, 1936; Royal Air Force, 1991; Katz, 1966; Bann, 2009; Musson, 2013; Tseng, 2014). The British Army pioneered the use of balloons to take aerial photographs in 1880 – 1887 (Reeves, 1936); for instance, in 1859 at the battle of Solferino (see Musson, 2013: 13). Aerial photography had been common in military operations, including the mapping of landscapes. This rapid improvement in image quality and topographic mapping resulted in the formation of a new science called photogrammetry (Crawford, 1923; Reeves, 1936; Katz, 1966). Early scholars on the use of aerial photography criticised the slow progress in the use of the tool by geologists and archaeologists due to the slow development of the technical knowledge needed for its use (Reeves, 1936).

In Britain, the first aerial photographs of an archaeological monument were taken at the great ritual circle of Stonehenge on the Salisbury Plain by a military observation balloon in 1906 (Musson, 2013). A decade after, Boni's pioneering work in excavations at Pompeii was photographed from the air in 1910 from a balloon (Musson, 2013: 19). Although the use was infrequent as the years that followed due to the quality of the images, subsequent use in archaeology became prominent after the World Wars (Reeves, 1936; Musson, 2013). An example is when the Germans took photographs of archaeological sites in Sinai (Reeves, 1936). Photographs taken from aeroplanes started to be used in World War I and but mostly in World War 2, as tools for reconnaissance and intelligence gathering (Crawford; 1923; Reeves, 1936; Katz, 1966: 7; Royal Air Force, 1991; Musson, 2013). These drastic changes had been propelled by the development of aircraft, better cameras and films for intelligence purposes (Musson, 2013).

Consequently, after the war, several pilots and observers had seen the archaeological potential of air photography (Musson, 2013). According to Musson (2013), one of these was O. G. S. Crawford, who in 1920 became the first Archaeology Officer at the Ordnance Survey, the state body responsible for national mapping in Britain. The development of the use of aerial photographs grew widespread interest after the discovery of the missing portion of the Stonehenge Avenue (Crawford, 1928; Reeves, 1936). The 1920s saw the widespread interest to use aerial photos in Egypt, Palestine, Mesopotamia, South America, Central America, and the United States. According to Johnson and Patt (1932), one of the essential surveys was accomplished by the Shippee-Johnson Expedition in Peru using aerial photos. In 1930, nearly 700 photographs were taken of an area in the Gila River Valley for use in the study of prehistory (Reeves, 1936). The use of aerial photography in mapping or as a mapping aid is also mentioned by Revees (1936). In many of the accounts stated by Crawford (1928), aerial photographs gave a topographic understanding of the relationship of heritage sites, thus, assisting archaeologists in understanding past societies and their relationship with their environment.

Crawford's (1923) work unearthed the ancient systems of agriculture in Britain. An example is the north of Quarley, Hampshire, Britain, were ground survey alone could not bring out the relationship between the camp and the ditches. Thus, the use of air photographs contextualised these heritage sites. The use of aerial photographs facilitated clear air photographs which gave a bird's eye view of ancient agricultural fields in Britain, thus, enabling a topological understanding of lynchets, e.g. Saxon lynchets, Middle Hill, Wilts (Crawford, 1923: 356). For Crawford (1923) airview or aerial view guided all fieldwork, for example, the discoveries on a photograph of a previously unknown extension to the Newark Works in Ohio, United States. This area had been marked for the development of an airport. Therefore, aerial photographs promoted the identification of heritage before development.

The use of aerial photographs to identify Iron Age sites has a long and distinguished history in southern African archaeology, for example, Mason (1968), Seddon (1968), Maggs (1976b) and Denbow (1979). According to Davis (2016), in southern Africa Gertrude Caton-Thompson first

used aerial photographs at Great Zimbabwe on 18 May 1928 to investigate the structure of the site. In South Africa, Revil Mason (1968) identified SWS using aerial photographs (see Seddon 1968). Mason's study area covered 3300 square kilometres which comprised of aerial photographs that were taken by South African Air Force as part of the general coverage of the Transvaal region. Seddon (1968: 191) adds that this area had about 998 sites that were visible through the aerial photographs and most of these sites were visible south of Johannesburg (my case study), and from Pretoria to Rustenburg.

The decades following World War II saw a resurgence in archaeological research, which to some extent was due to the application of new technologies and technological improvements achieved during the war, particularly in the fields of aviation, optics and image analysis (Katz, 1966; Royal Air Force, 1991; Banhegyi, 2014). The new use of aerial photography resulted in the discovery of new sites and enhancement of heritage management through mapping and aerial survey. However, the development of aerial photography in Europe saw many archaeological projects being done using the technique in collaboration with other methods (see Musson, 2013: 12-54).

The use of aerial photographs for site detection and also modelling settlement choices relating to Iron Age communities had already been pioneered by Mason (1968) in South Africa. The technique made it easy for archaeologists to identify and analyse heritage sites covering large areas. In his article entitled "Transvaal and Natal Iron Age settlement revealed by aerial photography and excavation", Mason (1968) states that J. D. Seddon located the Hurutse Iron Age built sites on air photos. R. J. Mason later excavated these iron age sites in July 1966 and 1967. Air photos were able to reveal behavioural evidence in terms of material artefacts and their spatial disposition on sites, associated food waste and topographic location of living sites (Mason, 1968). Through settlement analysis of aerial photographs, excavation projects and identification of SWS were initiated. For example, Mason (1968) states that in 1964, he was able to count SWS covering 1211 km² of the Transvaal. In turn, Seddon was also able to analyse the distribution of these SWS based on Mason's criteria. According to Mason (1968), Iron Age settlement on air photos covering 47 733 km² of the southern Transvaal -Northern Natal were analysed in terms of five classes defined on the basis of the plan-form of settlements. Indeed, the basis of Iron Age settlement classifications emerged from the study of variation in these plan-forms on the photographs.

In Botswana, Denbow (1979), as will also be stated in the information technology section below, used aerial photography 100 km south of Bosutswe near the modern town of Serowe, covering a 10,000 km² region. With the aid of black-and-white aerial photographs, Denbow noted the relationship between Iron Age hilltop settlements and the dominance of a singular vegetative species: *Cenchrus ciliarus*, or buffalo grass (Klehm *et al*. 2019). For Denbow (1979) *Cenchrus ciliarus* is an indicator of archaeological middens and byres. A technique we see later used in the identification of archaeological sites in Shashi-Limpopo Confluence area (Thabeng *et al*. 2019a). On black-and-white aerial photographs, buffalo grass appears white, in stark contrast to hilltops

without sites, therefore, leading to the identification of Early Iron Age sites such as the Taukome (500‑800 CE) and Middle Iron Age Toutswe (800‑1200 CE) (Klehm *et al*. 2019). Therefore, the use of aerial photographs has enabled a better understanding of prehistoric settlement patterns and human-environmental relationships (e.g. Maggs, 1976a; Mason, 1968; Denbow, 1979).

In recent years, historical aerial photographs have been an instrument used in collaboration with other tools such as QGIS and Arc GIS to trace the rate of damage due to development and provide evidence for land claims in some parts of South Africa (Sadr, 2017: 160; Sokolic, 2017; Naidu 2018). Its use has enabled multi-disciplinary research that enabled my study to be possible. The use of historical aerial photographs is not only in South Africa but other case studies across Africa and beyond, which paved the way for chapter three of my thesis.

As mentioned in the next section, in Ethiopia, remote sensing technology was used to trace the impact of the development of heritage sites such as Harlaa, Harar, Nora, and Sheikh Hussein over the years (Khalaf & Insoll, 2019). For this project, applications such as Google Earth, Landsat 8, Sentinel-2 and Landsat 5 TM are used to trace past damage, database and monitor future developmental threats to heritage sites. Google Earth and other applications provided historical aerial images that allowed archaeologists to assess the damage caused by development on these heritage sites. In recent years, examples of satellite remote sensing and GIS have been used in African archaeology (Katsamudanga, 2009; Sadr & Rodier, 2012; Gaber et al. 2013; Harrower & D'Andrea, 2014; Hunt & Sadr, 2014; O'Regan, Wilkinson & Marston, 2016; Reid, 2016; Sadr 2016).

Another example of the use of historical aerial photographs and GIS in war and development risk areas is the Middle East, and East Africa is the EAMENA project also mentioned in the next section (Bewley *et al*. 2016). Here, I specifically look at the use of high-resolution imagery such as IKONOS and QuickBird in collaboration with historic aerial photographs which assisted and still assist in the tracing heritage damage and heritage conservation of the EAMENA project (Beck *et al*. 2007; De Laet, Paulissen & Waelkens, 2007; Lasaponara & Masini 2007; Garrison *et al*. 2008; Siart *et al.* 2008; Rayne *et al*. 2017).

The EAMENA project was able to document and monitor sites in a large area using cost-effective open source geospatial and database technologies and software, for example at World Heritage sites such as Cyrene and Homs Cairn (Rayne *et al.* 2017). The use of these resources, alongside drone photography, photogrammetry and satellite imagery analysis, is now a standard method to assess damage and monitor heritage sites in the Middle East and North Africa (MENA). According to Rayne *et al*. (2017), in the Middle Eastern landscapes in particular, the declassification in the 1990s of Cold War satellite photography collected in the 1960s–1970s revolutionised this sub-field. With these tools, archaeologists were able to collect and analyse data at unprecedented scales (Rayne *et al*. 2017) through the aid of Google Earth and other applications. The EAMENA project used satellite imagery (dating from the 1960s to 2017), in conjunction with published data to create a detailed set of database records for a single site and, to reveal the impact of modern urban expansion across the region (Rayne *et al*. 2017: 2).

Furthermore, in other regions this project could monitor heritage destruction by war and conflict in about 20 countries with an online database that spans an area of roughly 10,000,000 km2 (Bewley *et al*. 2016). The success of such projects inspired the use of some of the spatial tools to trace developmental damage to SWS.

2.8 Use of Spatial Information Technologies

The use of spatial information technologies from a global perspective can be traced back to the early studies of aerial photography (Thabeng *et al*. 2019a), which was discussed in the above section. Early use of satellite images in archaeology has been for prospection and prediction, visually identified soil marks, vegetation marks, surface features and other proxies for buried and semi-buried archaeological features based on tonal and textural differences in the images (Crawford, 1923; Evans & Jones, 1977; Fowler, 2002; Gojda & Hejcman, 2012). The development of the use of spatial technologies has also been used in Africa to identify, classify and analyses archaeological remains (Mason, 1968; Seddon, 1968; Denbow, 1979; Lightfoot & Miller, 1996).

Recent developments in the use of satellite technology and imagery can be seen in Ethiopia were open-source imagery has been used to monitor and protect heritage sites. Khalaf and Insoll (2019: 401) studies how satellite technology, in particular open source imagery (Google Earth, multispectral satellite imagery from Landsat and Sentinel-2), was used to monitor and protect heritage sites such as Harlaa, Harar, Nora, and Sheikh Hussein. In these case studies, satellite imagery was useful in tracing the damage caused by development on heritage sites. Khalif and Insoll (2019: 416) states that results of the remote sensing data analysis indicate the impacts of settlement expansion upon the archaeological landscape (Harlaa and Harar), the need for conservation measures (Harar), increase in agricultural activity (Sheikh Hussein; Nora), and current site stability, as well as potential future infrastructure impacts (Nora) and environmental change (Harlaa and Harar). These technologies play a pivotal role to manage and predict the future impact of development to foster conservation. Although the use of these technologies has been useful to trace the impact of development, recent scholars have criticised that these technologies fail to identify heritage sites that are not previously known (Khalif & Insoll, 2019; Klehm *et al*. 2019).

Consequently, early low-resolution platforms such as Landsat and SPOT hampered the ability to map landscape complexity; and to distinguish subtle spectral differences of archaeological sites and the surrounding areas (Lasaponara & Masini, 2006; De Laet *et al*. 2007; Masini & Lasaponara, 2007). Despite these early challenges, the growth of the use of spatial information technologies and the advent of new generation satellite with Very High Resolution (VHR) images such as WorldView-2, QuickBird and IKONOS improved the potential use of VHR in archaeology (Thabeng *et al*. 2019a). Another example from Schmid *et al*. (2008) who used IKONOS imaging and Advanced Spaceborne Thermal Emission and Reflectance Radiometer

(ASTER) for image processing in their Aksum project in northern Ethiopia to determine the spatial distribution of soil surface properties. Classification results at Aksum from different remotely sensed data are combined with the spatial distribution of archaeological settlements for the different phases of the development of the Aksumite state (Schmid *et al*. 2008). The use of these applications has transformed the use of image applications to enhance better understanding of archaeological landscapes as done by my thesis.

The use of digital imagery and geographic information systems for image classification has revolutionised researchers' ability to understand better the biophysical world and the way in which social mechanisms cause environmental change (Gregory, 1994). For archaeology, this has enabled archaeologists to understand landscape change over time and how various historical populations were adapting to the environment and use of space. For Klehm *et al*. (2019), archaeologists have been able to understand the complexity of the interrelated societal and environmental variables involved. The BosLand project in Botswana did research on sites such as Bosutswe and Mmadipudi Hill, which revealed the potential of multispectral imagery to aid the cataloguing of archaeological sites on landscapes (Klehm *et al*. 2019). The use of multispectral imagery assisted in identifying additional environmental correlations connected to human settlement patterns. According to Klehm *et al*. (2019), ArcGIS 10.6 and ENVI 5.4 software were used to identify spectrally unique surface features (e.g. soils and vegetation that are associated with abandoned sites) that discriminate sites from non-sites areas. These technologies also allowed time-efficiency to access inaccessible areas and too much labour to do ground surveys.

Over the years spatial information technology through computer-based systems have been useful to collect, store, analyse and represent information in digital formats (Burrough, 1986; Klehm *et al*. 2019; McCoy & Ladefoged, 2009; Neubauer, 2013:161). The improvement of computer software and algorithms for processing and classifying satellite images have significantly improved (Lu & Weng, 2007; Rodriguez-Galiano *et al*. 2012). An exceptional example of the development of spatial tools in archaeology is the Endangered Archaeology of the Middle East and North Africa (EAMENA) Project (Rayne *et al*. 2017). The project was the Middle East and North Africa (MENA) region, which resulted in the construction of a database, using the open-source Arches software and the creation of over 150,000 records, detailing specific causes of heritage damage and offered training programs for academics (Rayne *et al*. 2017). These improvements have enabled the development of new software and different applications such as land cover/use classifications of urban environments (Zhu & Blumberg, 2002), vegetation (Lawrence et al. 2006; Huang *et al*. 2008; Raczko & Zagajewski, 2017), discrimination of heterogeneous landscapes (Adam *et al*. 2014; Rodriguez-Galiano *et al*. 2012) and biophysical studies, including the estimation of biomass (Mutanga *et al*. 2012), all cited in Thabeng *et al*. (2019a). The development of advanced classification algorithms improved the reliability and accuracy of classifications performed on images, even with limited training data sets (Thabeng *et al*. 2019a).

An example of tools and applications that were developed due to software and technology development is the Geographic Information System (GIS). The ability of this tool to provide better visualisation, store large data sets and analyse data has provided archaeology and heritage management with an opportunity to improve their interpretation and presentation of data. (Khoumeri & Santucci, 2006; Magnoni, 2010:190; Wheatly & Gillings, 2002; Kauviutzis, 2009; Klehm et al. 2019;). Popular in archaeology are ArcGIS mentioned above and QGIS, which have significantly transformed archaeology, which I use in chapter three of my study.

Biagetti *et al*. (2017) used GIS and remote sensing to demonstrate the potential for creating Spatio-temporal datasets at a relatively low cost and high speed, as compared to field data collection in central Sahara. Heritage sites between Algeria and Lybia, which were case studies in this research used high-resolution imagery, such as the WorldView data by identifying, interpreting, and analysing the late Holocene record of the central Sahara. GIS and remote sensing have earth observation abilities which allow the mapping and monitoring of heritage (Biagetti *et al*. 2017). Biagetti *et al*. (2017) also note that the analysis of this study confirms the relevance of vegetation and drainage for understanding spatial variations in archaeological evidence. The development of spatial information technologies in central Sahara presented opportunities to explore and interpret cultural heritage in regional environmental contexts (Biagetti *et al*. 2017).

The use of GIS applications in archaeology and heritage management has grown over the years. Its collaboration with the development of ground, aerial and space technologies has successfully assisted management of heritage sites and has offered discoveries in the archaeological field (Agapiou *et al.*, 2014; 2015; Casana *et al.* 2014; Chase *et al.* 2011; Deroin *et al.* 2011; Giardino, 2011). GIS enhanced archaeological work, including the recording of excavation data and cultural resources management (Taylor, 1979; Costa 2010: 435) and to identify settlement patterns (Nkhosi-Lesoana, 2008; Byrne, 2012). For other case studies such as southern Moroccan Sahara, Awsard, Morocco, GIS was used with collaboration with remote sensing to develop a predictive model in locating areas of high potential in southern Morocco using GIS-based predictive models (Nsanziyera *et al*. 2018**)**. This process involved identifying the areas of high archaeological value. Techniques used in here identified archaeological places in the context of their environments to reconstruct past human behaviours. Archaeological remains such as tumuli of different types were identified in different locations of the case study. Spatial tools such as ArcGIS in collaboration with SRTM DEM 1 images, ASTER GDEM V2 images and Landsat ETM+ Multi-Spectral Images were used. Therefore, the study was able to identify the southern zones of the case study as the high potential area for hosting archaeological sites (Nsanziyera *et al*. 2018**)**. Therefore, the use of spatial technologies also assisted in documenting Asward's heritage against the risk of looting of archaeological artefacts in the area.

For South Africa, the historical background of spatial information technologies in South Africa can be traced back to the 1980s with Martin Hall (1981)'s research which engaged in a spatial analysis of pre-colonial SWS between the White and Black Umfolozi rivers in Kwazulu-Natal,

Eastern Cape. Through this research Hall (1981) was able to enact the first study in South Africa to analyse settlement patterns using Multi-Dimensional Mapping (MOM) and mainframe computing in a bid to enhance the interpretation of SWS distribution of heritage sites and landscape features.

Over the years, other studies have been done by Sadr and Rodier (2012) who used GIS to reconstruct changing settlement patterns in the southern Gauteng Province. In this study, they analysed past settlement patterns, terrain, and topology in this area. Later, Sadr (2017)estimated how many of the pre-colonial stone structures have been lost to development. South Africa has also seen the use of QGIS in resolving Land claims disputes by integrating the use of historical air photographs to identify pre-colonial heritage sites (Sokolic, 2017). Sokolic (2017) has used this method to provide evidence for Land Claim Court linking archived official documents, oral evidence, photographs and physical evidence such as graves, old fields, homesteads and other archaeological remains (Sokolic, 2017). Although the use of GIS and other technologies have been increasingly used in research, application of these technologies to manage and trace developmental damage in South Africa has been limited to a few, particularly the use of such technologies such as GIS by SAHRA to enhance the quality of CRM reports and monitor development (Ndlovu, 2014).

Other exciting studies was done by Thabeng *et al*. (2019b) who used remote sensing in identifying spectral differences among soil types such as middens, vitrified dung, and nonvitrified dung at Mapungubwe cultural landscape, Limpopo, South Africa. This study enabled the documentation through mapping of archaeological features and characteristics of farming community settlements. Another example is the high-resolution remote sensing and advanced classification techniques used for the prospection of archaeological sites in the Shashi-Limpopo Confluence Area (SLCA) (Thabeng *et al*. 2019a). This project allowed the use of VHR WorldView-2 satellite imagery (area of 1388km²), RF and SVM advanced classification algorithms in prospecting for archaeological sites in the area. These tools like other case studies presented an opportunity to reduce the challenge due to the complexity of the landscape, the presence of dangerous wild animals (including lions and elephants), and ownership accessibility (Thabeng *et al*. 2019a). Therefore, this example presents the development and advantage of using spatial information technologies in archaeology.

Smut *et al*. (2016) illustrate how SAHRA has embraced the use of spatial information technology in the management of cultural resources under the risk of development in South Africa. SAHRIS is an online, integrated heritage management system, designed using free open source software (FOSS), using coordinates of sites created on SAHRIS and mapped using the system's built-in GIS functionality (see Smuts *et al*. 2016). SAHRIS includes tools for survey layers that track paths and areas covered during CRM surveys. According to Smut *et al*. (2016), these tracks are enclosed in polygons and can be used to establish site densities and for predictive modelling of un-surveyed areas. However, when SAHRIS was launched in 2013, it became the world's first fossil sensitivity map. This fossil sensitivity map assists developers, heritage

officers and practitioners in screening paleontologically sensitive areas at the earliest stage of the development cycle (Smut *et al*. 2016: 140).

Despite the vast achievements that this database system has presented to CRM in South Africa, the reality of its effectiveness in ensuring the quality of information uploaded to the database was criticised by Ndlovu (2014). He argued that it was the responsibility of the SAHRA to ensure best quality information to give to the public through this database. In this view, I argue on SAHRIS effectiveness to ensure access to information to the general public on CRM as required by NHRA 1999, and its effective use in all Provincial Heritage Resources Authorities (PHRAs) such as southern Gauteng.

2.9 Colonial Influence on Heritage Management

Colonially informed approaches affected all spheres of heritage management in Africa, Australasia or North America. Lack of participation of local populations in heritage management has been hugely criticised (Harrison & Hughes, 2010; Smith, 2000; 2001). Scholars have criticised this approach to heritage management in North America, Australia and Africa in colonisation and post-colonisation (Smith, 2004; Byrne, 1996). Harrison and Hughes (2010) state that local people were discriminated both practically from the everyday management of their heritage. This proceeded conceptually by conspiring in the concept of prehistory, which posits a break in the lives of indigenous people before and after contact (Harrison & Hughes, 2010). Chirikure *et al.* (2010) criticise heritage management for being out of touch with local communities.

Pre-colonial heritage conservation techniques were influenced by colonial elites, who took an interest in archaeological heritage management (Pwiti & Ndoro, 1999). This influence marginalised local population from any ownership of heritage. For southern Africa, Munjeri (2004) describes participatory heritage management as non-existent. In this light, legal instruments were also used to ensure the successful domination of colonialist as shall be discussed in the next section.

Furthermore, post-colonial heritage management saw no significant change to the heritage management values despite the various concerns (Ndoro, 2004; Abungu, 2006; Pwiti 1996; Pikirayi, 2001; 2011; 2013; 2015). These values determined the education and management of heritage institutions. Chirikure *et al*. (2010) give examples of how the colonial system had a negative impact on the custodianship of heritage sites such as the Khami heritage site in Zimbabwe and Mapungubwe heritage sites in South Africa. These challenges led to conflict between communities and authorities in all former colonies over the ownership of heritage and administrative management to this day (Meskell, 2005a; Pwiti & Ndoro, 1999; Ndoro & Pwiti 2001; Phillipson, 1975, Pierre, 2000; Pikirayi, 2016; 2015; 2013; 2011; Pikirayi *et al*. 2012; Schmidt & Pikirayi, 2016; Smith, 2012; 2000; 2001). Both these sites and many more were

affected by the land policies and legislation introduced in colonial times. For southern Africa, Ndoro and Pwiti (2001) state that heritage sites such as Khami, Great Zimbabwe, Domboshava and Silozwane are still restricted sites for traditional heritage management. All this was done through legislation as we will discuss below.

In other African countries such as Eritrea, post-colonial heritage management has affected what is valued as significant heritage worth protection by the state. In a country were the government conflicts with heritage stakeholders such as communities, academics and students, the discovery of world-class heritage is seen as a threat to the state's policy regarding development for areas such as *tesa* land in Sembel, Asmara. Here Eritrean government has taken full control of the land post-independence. The political influence in managing heritage has led to the cultural and historical values associated with world-class heritage sites to be diminished by state agents representing sites as 'just a lot of potsherds' (Schmidt, 2010). Schmidt (2010) further states that the use of such tropes by policymakers eased the way to erase local histories from the landscape. During that time, the attitudes towards archaeological researchers and heritage experts were best captured in one official's description of them as 'pointy-head intellectuals' (Schmidt, 2010: 310).

Consequently, town and city planning legislation for most African countries is still embedded in principles developed in the colonial era and on models derived from the metropolitan centre (e.g. Mabogunje, 1990; Myers, 2003; Njoh, 2004). For South Africa, urban planning of Gauteng (study area), land use was based on the apartheid principles (see Mubiwa & Annegarn, 2013). These principles were never to serve for the preservation of African heritage; thus, failure to decolonize these policies tends to place heritage at risk of destruction. Colonial urban planning fostered development rather than African heritage sites. In Senegal, the legacies of colonial planning served to impede heritage protection in urban settings, despite the existence of data from detailed surveys of urban heritage resources and their spatial distribution (Bocoum, 2008). But how is colonialism still influencing colonial and post-colonial heritage legislation? The following sections try to answer some of the questions.

2.10 Legislation and Heritage Management

Many scholars have discussed the negative influence of European ideologies on African heritage legislation in colonial and post-colonial Africa. Examples in southern Africa are Zimbabwe which failed to change its heritage legislation after its independence in 1980 (Ndoro, 2009; Mahachi & Kamuhangire, 2009). Failure of heritage legislation in Africa has been blamed to the lack of implementation due to shortage of resources, community participation and staff (Clarke *et al*. 1976; Odak, 1991; Strecker & Taboada, 1999: 37). Despite effective legislation existing in the paper, many sites have been destroyed without this legislation being successful in protecting heritage sites (Ndlovu, 2011a). Despite the solution to put more stricter laws, Ndlovu (2011a) argues that legislation and its structure that provides narrow definitions. For Kenya and South Africa, the ineffectiveness of reflecting the similar challenges that have been highlighted above

(Clarke *et al*. 1976; Eboreime, 2009; Karega-Munene, 2009; Odak, 1991; Rudner, 1989).

In South Africa, Ndlovu (2011a: 43) states that heritage legislation ignored its mandate to resolve African societal problems of today and the past. However, besides heritage legislation, general legislation often fails to mitigate social problems (Rose, 1968; Schwartz, 1978; Ndlovu, 2011a). But where does this problem emanate from? Does it mean that before colonisation, there was no heritage legislation? Ndlovu (2011a) critically states that heritage laws existed before colonisation, but it was just not labelled as "legislation". Traditional heritage management could keep heritage sites such as SWS for centuries. With the advent of the scramble for Africa, legislation became a necessary tool to validate land displacement and heritage ownership (Ndlovu, 2011a). From these activities, we saw the rise of the long conflict between African social structures and colonial systems that favour heritage materialism (Ndlovu, 2014; Ndoro, 2009). Scholars have concluded that there is a disregard of African Customary Laws that protected the intangible and spiritual aspects of heritage that are valued by African communities (Mahachi & Kamuhangire, 2009; Manetsi, 2005).

Consequently, the replacement of African Customary laws by colonial heritage legislation was a colonialist strategy. Ndlovu (2011a) explains that for the colonisers to have legislation that promoted the heritage of the people they were colonising would not have been strategically appropriate for colonisation and assimilation of culture. How the Portuguese, Spanish, French, and British influenced and disturbed the African structure was strategic to influencing the demise of African legal systems of customary law that protected heritage (Negri, 2009). For example, Ndlovu (2011a) states that the British's strategy was to penetrate and influence the traditional customary system to influence the political system of African society. In influencing the political system, oral traditions and traditional systems were misrepresented to create conflict and devalue indigenous knowledge systems. As mentioned in the introduction of chapter one, propaganda interpretations of Bunyoro, Uganda oral history and heritage played a pivotal role in dissolving indigenous ownership of heritage (Schmidt, 2014). Also, traditional laws and knowledge systems were not recognised, and to this day countries like Kenya have heritage legislation that outline the superiority influence of the Acts of Parliament of the United Kingdom, as explained in the next paragraph. However, post-independence most African countries have repealed and replaced legislation (Kenya, South Africa, Togo, Zambia, and Niger), while others continued with the colonial heritage laws (Zimbabwe) (Mahachi & Kamuhangire, 2009).

The changed legislation post-independence did not change the principles of European heritage management. In Kenya, the British colonial system still influences legislation. For example, Section 3 of the Judicature Act, Chapter 8 states that "the jurisdiction of the courts calls to be exercised in accordance to the written laws, including Acts of Parliament of the United Kingdom" (Mumma, 2009:110). Mumma (2009) further explains how the laws are hierarchical with the constitution (largely influenced by the coloniser) being at the helm. For South Africa, most legislation, including the NHRA of 1999, stipulates that the Minister has powers to make or alter heritage subsidiary law without giving custodial communities any rights or powers to

manage heritage. Mumma (2009) argues that this approach leaves traditional laws and intangible heritage at risk of being suppressed.

Furthermore, the Technical Intergovernmental Committee (TIC) of South Africa was mandated through the Ministry of Arts, Culture and Heritage and Members of the Executive Committee (MINMEC) to initiate a review of the 1996 White Paper on Arts, and legislation promulgated and implemented since 1994 (Hall, 2005). According to Ndlovu (2011a), the White Paper gave birth to the NHRA while it was silent on several crucial issues such as intangible heritage, exhumations, reburials, and human remains as well as repatriation. This historical background has resulted in some scholars calling for the upgrading of heritage legislation in African countries (Ndoro, 2009; Ndlovu, 2011a).

Across Africa, concerns with ineffective heritage legislation is illustrated through its failure to protect heritage sites (both movable and immovable), with lack of implementation, funding, staff, community support, among others (Rudner, 1989; Clarke *et al*. 1976; Odak, 1991; Strecker & Taboada, 1999; Karega-Munene, 2009; Eboreime, 2009; Ndlovu, 2011a). Ndlovu (2011a: 32) states that in countries such as Kenya and South Africa, heritage legislation exists on paper meaning that it lacks implementation. Many archaeological sites have been destroyed and vandalised with legislation not being useful in protecting heritage (see Strecker & Taboada, 1999). Cultural heritage legislation has proved not to be an effective tool in heritage protection (Ndlovu, 2011a: 32).

Consequently, for legislation to protect heritage from development, Ndoro (2009) outlines the need to replace colonial heritage legislation with new post-colonial legislation to withstand the growing threat of development. Eboraime (2009) adds to this notion by suggesting the introduction of Environmental Action Plans (EAP). For heritage legislation to be effective, it must evolve and address the heritage conservation and preservation needs that local communities raise (Odak, 1983; Karega-Munene, 2009). Mupira (2009) further suggests that, for heritage legislation to be effective, it needs enforcement through accountability for the violations that lead to heritage destruction. But why has heritage legislation failed? To answer this question, I look at the history of the grading system that needs decolonisation.

The grading of heritage sites has been a common phenomenon in Africa and international spheres. The ranking of heritage sites emanated from European countries such as Belgium. The objective of grading heritage sites was initially for economic reasons (Pickard, 2001), such as establishing priorities in the allocation of resources, penalties, and priority in protection, property rights and public access (Ndoro & Kimambo, 2009). Ndoro and Wijesuryi, (2015) reveal examples of the refusal of ICOMOS to include Njelele (a sacred site) as part of the nomination of the Matobo Cultural Landscape in Zimbabwe. Makuvaza (2008) cited in Ndoro and Wijesuryi (2015), states that the failure to recognise both sites of the same landscape meant that the rock art found within the Matobo was of far greater value to the world than the rituals and religious values of Njelele, which was considered by some experts as a pagan site.

Consequently, Ndlovu (2011a) reveals the colonial bias of Section 38 of the NHRA of 1999 (South Africa) towards colonial heritage. He states that the provincial grade of heritage was favoured more on funding due to the dominance of colonial heritage in this grade. This reveals that the grading of heritage sites tends to favour monumentality rather than intangible aspects (Ndoro & Kimambo, 2009). However, other scholars highlight the influence of colonial ideologies to promote colonisation and white supremacy on ranking of heritage sites in various African countries (Kotze & van Rensburg, 2003; Scheermeyer, 2005; Ndoro & Kimambo, 2009; Ndlovu, 2011a; Ndoro & Wijesurya, 2015).

In addition, some scholars suggest that heritage administration is depended on legislation for effectiveness (Mupira, 2009). Concerns have been raised across Africa on the failure of heritage administrations to reign in those that vandalise of heritage, impose penalties for heritage destruction and spell out roles and responsibilities of government institutions (Abrahams, 1989; Deacon, 1991; Mahachi & Kamuhangire, 2009; Mupira 2009; Ndlovu 2011; Rocustos, 2001). Ndlovu (2011a) adds that heritage inspectors face a challenge to monitor development on private property because of the contradictions between section 50 of NHRA that empowers heritage inspectors. Entering into private property without a search warrant is breaching the constitutional right to personal privacy. These contradictions allow developers to vandalise heritage in destroying evidence that may implicate then. Therefore, in view of these shortcomings, it was essential to understand the concept heritage legislation in discussing the efficacy of heritage management in the southern Gauteng Province.

Furthermore, community participation was one of the post-colonial legislative goals of South African legislation. The National Monuments Council (NMC) in 1994 set out parameters to include community participation in the legal frameworks of the new South Africa. The inclusion of community participation was initiated by the NHRA of 1999 in South Africa as a fair chance to recognise and engage custodial communities and the public. Section 25 of the NHRA of 1999 states that South African Heritage Resource Authorities (SAHRA) shall assist communities and persons to have access to their heritage. Section 42 1 (a) also outlines that SAHRA should negotiate with the community to execute heritage management in conservation, presentation and other activities that may need their involvement (Mahachi & Kamuhangire, 2009). Ndoro (2009) stresses the importance of community participation in legislative structures. He emphasises the need for community consultation in defining heritage and its parameters. These parameters emanate from the authorship of heritage sites.

Public access to information and conservation plans is the reason why SAHRIS established as a National Inventory that caters for the preservation of heritage. Through NHRA's mandate, SAHRA has the responsibility for the identification and management of the national estate of the country; and the coordination of the management of heritage resources at the provincial and local level (Smut *et al.* 2016). However, Section 39 of the NHRA stipulates that a record of all conservation-worthy heritage resources is to be maintained in the form of a database, which is to

be publicly accessible and populated in the format prescribed by SAHRA (Smut *et al*. 2016). To add, other legislations require the public to have access to information held by SAHRA. For example, the Promotion of Access to Information Act (PAIA), No. 2 of 2000 and Section 31 of the National Environmental Management Act (NEMA), No. 107 of 1998 are some of the legislations that require public access to information (see Smut *et al*. 2016: 139). SAHRIS was created for the sole objective to have an open-source software that serves as a SAHRA's database and publicly accessible to the general public. Therefore, was public access to legislation effective in the case of southern Gauteng Province? My thesis will answer that question.

Memela (2008) noted that SAHRA's mandate to fight against the crime of heritage destruction and looting was enshrined in the NHRA Act 1999. Instead of a reactive approach for heritage preservation, recommendations were made to involve South African Police Service (SAPS) investigations through the use of proactive digital systems such as SAHRIS (Benson, 2013; Ndlovu, 2011a). According to Smut *et al*. (2016), SAHRIS would fulfil the role of capturing critical details about instances of heritage crimes from the opening of the case, investigation of the case to convicting the perpetrator. Benson (2013)'s argument based its proactive approach to heritage management in South Africa on the prevalence of heritage crime in Gauteng, South Africa, which is the is the case study of my thesis. In proposing initiatives that will address the gaps, she recommended the establishment of a South African database of stolen heritage objects. Therefore, in this study, I was curious to find out if Ndlovu (2011a) and Benson (2013)'s suggestions to engage SAPS and information technologies to enforce legislation had been effective as hoped heritage authorities to manage SWS in southern Gauteng.

For Smut *et al*. (2016), SAHRIS had been effective in serving as a documentation database. According to Smut *et al*. (2016), SAHRIS had been welcomed in the heritage industry in South Africa despite the delays in creating the system. In this light, over 3,250 users had registered accounts on SAHRIS by end December 2015. The daily visit count had been 500 a day, with a page view of between 40,000 and 60,000 per month. Free workshops have been held around the country to promote the system and train the primary users of SAHRIS since October 2012. Despite these positive indicators, Smut *et al*. (2016) argue that the 3 tier system had slowed down the adoption of SAHRIS by the PHRAs. These scholars further argue that although the reasons for this are varied and complex, the under-capacitation of provincial offices had hindered the progress for all nine provinces to adopt SAHRIS. From the scholars' view, only Cape Town province had to some extend adhered to the use of SAHRIS in managing heritage.

Smut *et al*. (2016) echoed the quality and accuracy of data on SAHRIS as one of the significant challenges that SAHRA was working on to develop tools to input and moderate data entry into the system. In this light, these scholars suggested that effectiveness of SAHRA could be addressed by a collaborative effort to engage commercial operators to help support the development of the application, training and support (Smut *et al*. 2016). Therefore, in this thesis, I assess if the intended role of SAHRIS is effectiveness in assisting legislation in managing SWS in southern Gauteng.

2.11 Political Influence on Heritage Management in South Africa

Politics and heritage management in colonial countries across the world have an interwoven relationship that has played a significant role in both colonial and post-colonial periods. In South Africa, colonial and post-colonial eras, politics played a significant role in the marginalisation of communities from their heritage (Ndlovu & Smith, 2019). Boswell and O'Kane (2011) state that heritage management and tourism in South Africa post-1994 is still hugely influenced by the legacy of apartheid. Politics of the apartheid government influenced heritage management at Kruger National Park heritage sites which resulted in the marginalisation and land displacements of custodial communities around SWS such as Thulamela in colonial South Africa (Meskell, 2005a).

Furthermore, colonial heritage management systems in Africa were influenced by European ideologies that viewed the continent as dark and backward (Maluleke, 2010; Mazrui, 1986). However, the justification for introducing European heritage management techniques was based on white supremacy. Ndoro and Wijesuryi (2015: 137) stress that colonialists believed that "natives" did not understand their heritage and that it would be either contaminated or destroyed if left to them. This created a disjuncture which Meskell (2005a) viewed as one of the most challenging issues in managing heritage in post-colonial countries. In colonial times, heritage had to serve as justification for colonisation and after independence, heritage was used to unite people (Ndoro & Pwiti, 1999). Therefore, these political factors had an impact on how heritage is managed.

To further understand the development of political influence in heritage management in South Africa, Ndlovu (2011a) gives an in-depth insight into the history of heritage of legislation from pre-colonial South Africa until the NHRA of 1999. Of note in Ndlovu (2011a) is that this historical background outlined several political changes that influenced ideologies that administered heritage policy and legislation. Therefore, the relationship between heritage management and politics determines the survival of heritage.

Deacon (2020) expresses concerns on the further of heritage to balance profit-making and employment with preservation. With the rising unemployment rate in South Africa, governments are forced at times to succumb to the need to create jobs at the expense of heritage. Ndlovu (2009) gave an example of the permits that were approved at the Mapungubwe World Heritage Site to develop on the landscape. Such examples highlight the economic priorities of the government to gain public support. Next, I will look at land ownership and heritage management.

2.12 Land Ownership

Land displacements in Africa, specifically in southern Africa, were characterised by mineral discoveries, missionary movement and agricultural activities (Bergh, 2005). It is believed that

white settlers in southern Africa seized more than 40.2 million hectares of land up to 1860, and another 107.3 million hectares were seized during the next hundred years (Bergh, 2005). Occupation of land was based on its ability to provide the society with food, shelter, grazing land and security. Colonisation came with the displacements of communities out of their homes and heritage to make way for new land uses such as mining, roads, farming, among others. In South Africa, land displacements were accompanied with legislation to enforce and legalise land and heritage seizure, for example, the Native Land Act of 1913 and Group Areas Act of 1950. In Zimbabwe, it was the Land Apportionment Act of 1930, the Land Husbandry Act of 1951 and Land Tenure Act of 1969. Therefore, in the process, land seized included heritage such as SWS with their graves.

The racially inspired legislation such as the South African Native Land Act of 1913 ensured that it would be difficult for Africans to own vast potions of land (de Beer, 2006). The Natives Land Act marked South Africa's critical moment as it divided the country into two irredeemably unequal zones: a fertile, productive heartland comprising 87 per cent of the land reserved for whites, and a marginal, unproductive periphery, made up of the 13 per cent of land reserved for blacks (Walker, 2014: 655). Maylam (1986: 71) further states that colonial conquest, followed by discriminative legislation, destroyed the African political systems and severely curtailed African access to their land. The introduction of new legislation and government policy on land had devastating effects on the social and spiritual wellbeing of most South African societies (de Beer, 2006). There are differences in perceptions about land between Africans and colonialist. For the African, land is symbolic and spiritual, which is evident in the emotional attachment to the land, while for colonialists land is individualistic and economic value (de Beer, 2006). The disjunction in perceptions and value of land was and still is a significant point of conflict between communities and post-colonial governments in post-colonial Africa. Bond-Graham and Yen Liu (2012) also note that between 1840 and 1880, whites introduced plants and animals and changed the landscape with ruthless energy, conquering or displacing indigenous people. The alteration of indigenous landscapes is said to have disturbed the fabric of sacred landscapes and destruction of intangible heritage (Sinamai, 2017; Ndoro, 2005).

In recent years the debate on land reform and heritage has become a pertinent topic in southern Africa. In February 2018, the Parliament of the Republic of South Africa moved a motion to establish a commission to revisit the 1994 Constitution's provision regarding land ownership and restitution (Morton, 2018b: 4). The objective was to acquire knowledge of the impact of Section 25(7) of the South African constitution which provides for restitution of property acquired after 19 June 1913 as a result of past racially discriminatory laws or practices (Morton, 2018a: 4). If successful, this amendment will reverse the time frame of the cut off land claims before 1913, without any form of compensation.

Other examples are given by Chirikure *et al.* (2010) which highlight several land claims and counterclaims by Vhangona, Leshiba, Machete, and Vha Lemba at Mapungubwe and surrounding areas in Limpopo South Africa. The Bakwena Ba Mare a Phogole in the southern

Gauteng Province also filed a land claim in 1995, which is still pending to date (Phatlane, 2019). These land claims often use archaeological artefacts and heritage sites as evidence that their ancestors were residents of that land (Phatlane, 2019; Sokolic, 2017). Therefore, this proves that heritage management is essential and of high utilitarian value.

Another problem highlighted by scholars is that South African legislation allows that heritage ownership can be for individuals, especially those that own the land in which heritage sites are located (Ndoro & Kamamba, 2009), thus, restricting custodial communities to access their land. In some cases, access to heritage is still being determined by affordability, disregarding the right to access of custodial community and the public (Ndlovu, 2009; Ndlovu, 2011). Another example is in East Africa, Tanzania, where legislation gives priority to ownership of heritage to individuals who own the property where the heritage is located (Ndoro & Kamamba, 2009).

Furthermore, resistance and conflict between heritage authorities and local communities over access to heritage sites and land ownership started in the colonial era. Meskell (2005a) highlights a historical conflict at Kruger National Park (South Africa) between the local communities that were displaced to stay outside of the fenced National Park. In Zimbabwe, the conflict between the National Museums and Monuments of Zimbabwe (NMMZ) and the local community in Domboshava has resulted in rock paintings being destroyed (Mahachi & Kamuhangire, 2009). In most cases, the descendants of the indigenous communities have no legal claim to heritage sites and have no equal status regarding the protection of this heritage with any other interested party (Deacon & Deacon, 1999; Prins, 2000). However, in recent years, archaeologists have tried to use archaeological sites as evidence of land claims with the aid of digital technologies (see Sokolic, 2017). Next, I will review the institutional dependency of heritage management.

2.13 Institutional Dependency of Heritage Management

In many countries, such as Zimbabwe and South Africa, cultural heritage places have been managed by institutions founded on the natural sciences (Ndoro & Wijesurya, 2015; Pikirayi, 2000). Ndoro and Wijesurya (2015) claim that colonial heritage management was historically founded on merging heritage and nature conservation. In South Africa, the concept of Heritage Impact Assessment (HIA) was implemented through the Environmental Conservation Act (No. 73 of 1989) (Ndlovu, 2014), which to this day takes HIA as part of the Environmental Impact Assessment. However, this approach promoted physical values of heritage neglecting community values of heritage (Ndoro, 2005, 2009; Ndlovu, 2014; Ndoro & Wijesurya, 2015). Institutions were administered to serve only a few colonial elites, with no role for the colonised communities (Ndoro & Wijesurya, 2015: 138). The dependency on such heritage management principles created problems in post-colonial heritage legislation and policy.

Furthermore, Mahachi and Kamuhangire (2009) outline problems such as allocation of funds and

centralised government distribution of resources. These scholars highlight that the dependency of heritage institutions to funders determines heritage management priority. An example is in Uganda where the Commission of Museums and Monuments does not even have a bank account, thus, relying on the government to administer their funds (Mahachi & Kamuhangire, 2009). Inevitably, the interests of the government will be a priority.

Consequently, globalisation introduced a standardisation system of managing heritage. Examples are United Nations Educational, Scientific and Cultural Organisation (UNESCO), International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) and International Council on Monuments and Sites (ICOMOS), which all have the mandate to fund heritage conservation and management. Despite the efforts by these institutions to promote engagement of communities in heritage management, the idea of universalism in defining what heritage is and how it is managed has been a source of vast problems in heritage management the world over. Waterton (2010) reveals that globalisation of heritage through UNESCO and organisations such as ICCROM, ICOMOS, and International Union for Conservation of Nature (IUCN), regard heritage as a technical, standardised, and non-flexible system with very little room for the local entities to create contextual contributions to heritage projects.

2.14 Identity, Sacred Landscapes and Community

The use of heritage sites for community identity is a common aspect of African societies. According to Tilley (2006), common social identity questions answered by cultural heritage are; what binds us together, and what makes us different from others? What is our past, and where is our future? How do we make a place for ourselves in the world? What are our traditions, and how do we react to the new? How do we represent ourselves, and what is important to us? In colonial and post-colonial periods, these issues have transcended to nationalism, which, is reflected by heritage sites and artefacts being adopted as national symbols, for example, the Great Zimbabwe World Heritage site which was used to name Zimbabwe (Ndoro, 1994). This approach is particularly salient in the realm of heritage, where individual and community attachments to place are often sacrificed in the abstract framing of world heritage, transacted solely by and among nation-states (Meskell, 2009: 4). Therefore, cultural heritage has become a symbol of unity, tradition, and culture, which aims in identifying societies.

For custodial communities, land serves as a form of community identity (Phatlane, 2019). Archaeology has been used as a tool that provides evidence for land claims (Meskell, 2005a; Sokolic, 2017). An example is the land claim by the Bakwena Ba Mare a Phogole who are custodial communities of Klipriver, southern Gauteng Province (Phatlane, 2019). Meskell (2009) observes that archaeology has been increasingly employed in land claims and other forms of restitution for indigenous groups. Ndoro and Wijesurya (2015) note that communities around Timbuktu mosques identify themselves with the mosques. Therefore, the relationship between community identity and heritage can be established through archaeological work on land claims.

Also, sacred landscapes and religious shrines convey a significant component of African heritage and societies. Basso (1996) describes the landscape as being a set of relationships between places in which meaning is grounded in existential consciousness, event, history, and association: wisdom "sits in places". Traditional heritage management systems in Africa were embedded in the preservation of cultural traditions and traditional leaders (Ndlovu, 2011a). Examples in Africa are seen at Great Zimbabwe where local communities around the SWS were using the site as rainmaking shrines, royal and chiefly burial sites, perennial springs, trench systems, among others (Mahachi & Kamuhangure, 2009; Ndoro, 2005; Sinamai, 2017). In Uganda, there are the Kasubi Tombs, Sign pits, Mubende Tree and Biggo bya Mungeni (Mahachi & Kamuhangira, 2009). However, some scholars argue that heritage management in all these examples has not respected the traditions and religion of communities associated with these heritage sites (Sinamai, 2017; Ndoro, 2005). Also, the failure to recognise these custodial communities has resulted in restricted access to heritage sites (Ndlovu, 2011a). Development is believed to be a significant factor that has destroyed the identity of custodial communities by destroying heritage. Many communities, to some extent, question the very existence of the archaeology profession and its role to the preservation of the material culture they created.

To further understand African concepts of heritage Pikirayi (2013) argues that "nature" does not merely consist of the physical world or the landscape of plants, animals, rivers, hills, mountains and the geophysical and other forces that regulate these. Instead, "nature" is the domain of ancestors and the source of sustenance, legitimacy and protection (Pikirayi, 2013: 285). Nature manifests in various forms, such as death and disease. It also manifests through catastrophes such as floods, droughts, wildfires, wind gusts, lightning and thunder, attacks by pests, landslides, tremors and earthquakes, and phenomena such as the solar eclipse, which may be interpreted as a bad omen (Pikirayi, 2013). Therefore, heritage in its approach should, to some extent acknowledge the existence of such community perceptions. The interwoven African beliefs and material culture is a common phenomenon in most African traditions.

Traditional communities often connect all aspects of landscapes to sacredness. Some scholars believe that the narrative that SWS were "abandoned" is unfounded because there was a change in the use of SWS from residence to sacred shrines (Pwiti & Ndoro, 1999; Pikirayi, 2013; Ndoro, 2005). Most belief systems of local communities are based on the idea that landscapes are sacred with their environment, and thus, they should preserve all encompassed environments. These activities were done through myths, norms and taboos, using traditional knowledge systems to ensure the religious and cultural continuity (Ndoro, 2001; Mahachi & Kamuhangire, 2009; Mupira, 2009). Some of the taboos are based on gender, age and use of land (Phatlane, 2019; Ndlovu, 2009).

Mahachi and Kamuhangire (2009) cite examples of traditional heritage management systems such as the taboos that governed Great Zimbabwe, Kasubi Hills and Matobo Hills by ensuring that strangers were not allowed to enter or alter the site without prior permission from the elders or spirit mediums. Summers (1971) highlights that conservation taboos stipulated that visitors

were not allowed to speak ill at the site while entrance to heritage sites was through designated pathways called “mujejeje”. At the Kasubi Tombs in Uganda, the taboos were to never enter inside the house with shoes, to wear long dresses to sit down while in the house (Mahachi & Kamuhangire, 2009). However, some scholars have argued that early explorers misinterpreted unoccupied heritage sites as abandoned sites. An example is Carl Maunch, a German explorer who came to Great Zimbabwe and saw overgrown bushes and misunderstood this as abandoned heritage (Mahachi & Kamuhangire, 2009). At Great Zimbabwe, there was a resident keeper on-site to ensure several sacred rules were observed which may be regarded as an unintended consequence in helping protect the site. Although some of the taboos were religious and not directly linked to the intension of heritage conservation, they indirectly protected heritage sites in Africa for centuries.

There has often been conflict between the communities and heritage institutions on the preservation methods of heritage in contrast with the community use of heritage. For heritage professionals, the protection of the physical attributes is essential, while for communities, the sacredness is essential (Ndlovu, 2009). Ndlovu (2009) argues that there is a continuing rift that has led to Domboshava in Zimbabwe being vandalised. Therefore, the debatable topic of materialism against spirituality complicates the dynamics to engage professionals and communities for collaborative heritage management.

Across the World, colonial and post-colonial heritage management systems neglected traditional management systems, yet some of them can be useful in heritage conservation in post-colonial Africa and parts of Asia (Joffroy, 2005; Wijesuriya, 2003). Western Zambia is a good example where community leaders such as Barotse chiefs, or *indunas*, have jurisdiction over site management (Musonda, 2005). The kings of Myanmar (Asia) have led the projects of restoration and renovation of Shwedagon Pagoda and allowed members of the local communities to take part and express their faith at the pagoda (Tunprawat, 2009).

Besides conservation through traditional norms, scholars like Bouchenaki (2009: v) notes that one of the salient characteristics of some African societies is their relationship with nature. This approach has shown itself in how some African societies have shaped nature and used their traditions and indigenous knowledge systems to adapt to environments. The relationship is revealed through cultural landscapes and sacred places such as rivers, mountains, and forests, to mention but a few (Bouchenaki, 2009: v). In this light, human activities particularly development, has destabilised this ecosystem relationship. For heritage sites like Great Zimbabwe, Sinamai (2017) highlights the degraded intangible heritage caused by various development elements to the site. In South Africa the Department of Arts and Culture (DAC), in an internal discussion document on the legislation review, notes that living or intangible heritage is still at the periphery of the South African national consciousness (Ndlovu, 2011a; DAC, n.d).

2.15 Stakeholder Relationships in Heritage Management

Participation and collaboration of heritage stakeholders are key components of effective heritage management. Historically, the relationship between archaeological professionals and communities started with a western-influenced top-down approach that viewed communities as mere subjects than equal stakeholders to heritage management (Schmidt & Pikirayi, 2016). Examples of this are evident in studies done in northern Kenya, such as Schmidt and Pikirayi (2016). Community participation and engagement was neglected in favour of most western standards of materiality. However, a lot of have been done to decolonise and engage communities in heritage management and presentation of heritage (Fontein, 2006; Schmidt & Pikirayi, 2016). These efforts are intended to bringing indigenous knowledge to the forefront of heritage interpretations. Eboreime (2009) highlights some of the problems of heritage management in Africa emanating from lack of either participation or engagement of local communities, non-involvement of the private sector and lack of participation by developers. Over the years, many organisations have been willing to collaborate, and currently many are engaged in heritage conservation projects in Africa such as Rockefeller FoundationAids, Nordic World Heritage Foundation, Aga Khan Trust for Culture and Ford Foundation (Eboreime, 2009).

Communities are essential stakeholders in successful heritage collaboration. Community archaeology is a partnership between the stakeholders and the researcher where history goes beyond the academy, tourism, community, and educational projects to enhance traditional academic procedures (Marshall, 2002; Moser *et al.* 2002; Morris, 2003). Pikirayi and Schmidt (2016) state that collaborative heritage projects that engage all heritage stakeholders meet fewer obstacles. Schmidt & Arthur (2018) give vast examples in Tanzania of collaborative efforts among the community members of the Haya people, archaeologists and anthropologists in rescuing, preserving and revitalising the community's history. Residents in of the Balama clan were able to document heritage which they valued, such as, archaeological findings with deep antiquity and reproductive meaning of a ritualised and memorialised iron working (Schmidt & Arthur, 2018). The collaboration of these various stakeholders enabled the use of different methodologies that could gather heritage lost in previous years (see Schmidt & Arthur, 2018). This collaboration emphasised on the need to engage more women in providing accounts of oral history. Previously, many studies had focused on male participants who gave scratchy accounts of reproductive archaeological sites and history. However, collaborative efforts for these stakeholders enabled a successful project that documented previously unknown knowledge.

Engagement of local communities assists archaeology in identifying heritage sites that are of value to indigenous community heritage. Schmidt and Pikirayi, (2016) give an example of a University of Pretoria exhibition, which was to showcase bone and ivory artefacts from the Mapungubwe World Heritage Site in South Africa. These artefacts might have no meaning as archaeological artefacts, but they had heritage meaning to a particular community group associated with the heritage site (Pikirayi & Schmidt, 2016). In such a case, there is a need for exceptions to consider community values when preserving and presenting artefacts.

Familiarity and building trust among heritage stakeholders play a significant role in the success of collaborative heritage management. Schmidt (2016) study of Katuruka villagers in the north-western of Tanzania revealed long-term familiarity, engagement and participation in the archaeological inquiry into ancient iron-working at an archaeological site came to be translated into an everyday discourse about community heritage and identity (Pikirayi & Schmidt, 2016). Also, this familiarity builds collaborative relations which are needed for effective heritage management. Schmidt and Pikirayi (2016) stated that there is usually a deep fear among archaeological professionals in most African countries that engaging local communities carry with it language skills and anthropological training, which most archaeologists lack. Thus, community engagement creates a platform to solve such challenges. In North America, the heritage site of Ozette is an example where community archaeology has been successful (Marshall, 2002). This success resulted in some excavations that were done between 1970 and 1981, which made use of the local communities. Failure to collaborate and engage various stakeholders has resulted in conflicts at some heritage sites as I shall discuss below.

Historically, conflict in heritage management has emanated from disputes between stakeholders. Sinamai (2017) gives an example of conflict that has left heritage vulnerable at the Great Zimbabwe World Heritage Site, where the Nemanwa and Mugabe people have accused the National Museums and Monuments of Zimbabwe (NMMZ) of desecrating the site (Sinamai, 2017). Mahachi and Kamuhangire (2009) give another example of conflict at Domboshava rock art site in Zimbabwe where the community was refused access to a rock art site for rituals and the community retaliated by vandalising rock art by painting it. In South Africa, Meskell (2005a) mentions conflicts of ownership that arose between the Malatji, Venda and Tsonga communities and Kruger National Park over the management of SWS, and nature in the park. Conflict is often followed by land claims by all communities that claim to be owners of that area. One of the projects that were suggested for community collaboration was the reconstruction of huts for presentation to tourists which was not done (Meskell, 2005a), due to lack of coordination between these stakeholders.

2.16 Awareness of Heritage Management

Awareness is defined by Taun (2001) as having knowledge or cognisance of one's surrounding environment. It can be influenced and formed cognitively by an individual's experiences and social, environmental conditions (Murphy & Zajonc, 1993; Poria *et al*. 2006). Awareness and education have historically been used to promote the conservation of heritage management. The primary use and aims of heritage conservation are to enhance the historic environment and its continuity, thereby connecting individuals with places and culture and contributing to a desirable place to live (Maguire, 1982; Ashworth & Graham, 2005). Some scholars like Irving (1984: 140) state that communication occurs whenever meaning is attributed to an object or event. Thus, people take the meaning that they already have and attach them to objects or events. Heritage awareness and education should establish distinctive objectives to appeal to people.

Effective and accurate forms of awareness and education are vital for the continuity of heritage, be it physical or intangible. However, due to the increase in the threat of destructive elements that face heritage sites such as SWS, it was in the interest of this research to understand the level of awareness of the public of southern Gauteng Province. Another aim was to source the opinions of the public to use that data in future to look for solutions. With an increase in knowledge about public empowerment, participatory development, and grassroots planning in all aspects of socio-economic life, it is well understood that local interests and benefits cannot be ignored while planning and managing heritage sites (Feilden, 1982; Marc *et al*. 1994; Aas *et al*. 2005).

The need for heritage management awareness is necessary for the heritage that is prone to the threats that confront heritage. The historical background of heritage management illustrates the frustration of local communities in the management of heritage. Scholars like Mahachi and Kamuhengeri (2009) posit that the dismantling of the traditional and customary ways to protect and to create awareness of heritage frustrated local communities such that even today, most communities are not interested in the heritage management and awareness programmes.

According to Matero *et al*. (1998), heritage awareness preserves heritage for future generations, historical knowledge and promotes identity. As such, archaeological sites have become the subject of revived attention. This is achieved through public contributions to heritage knowledge and receiving heritage knowledge through education and tourism. Historically, public contributions to heritage management in African countries such as Zimbabwe and South Africa has been to notify authorities of the discovery of relics, monuments, and sites (Mupira, 2009: 82). Therefore, the importance of heritage awareness lies in this role. It would be difficult to identify, draw meaning and significance of heritage if the public and custodial communities are unaware of heritage (Mupira, 2009).

For scholars such as Eboreime (2009), emphasis is drawn on the need for the awareness of all stakeholders to discern the problems that heritage management is facing, enabling the private sector and stakeholders to contribute to conservation and protection of heritage sites under threat of destruction. The effects of a lack of heritage awareness are witnessed in the Maloti-Drakensberg Rock Art heritage sites (see Duval *et al.* 2018). According to Duval *et al.* (2018), the lack of interest in, and lack of visitors to sites affected the tourism and sustainable development in that area, thus, posing a threat of destruction of rock art through vandalism. As a solution, Duval *et al.* (2018) state that in heritage conservation, the social values extracted from communities' opinions need to be considered (Duval, 2018) as this can be a conservation technique.

In South Africa, heritage awareness and management have been hugely affected by the political discourse of pre-1994 (Ndlovu & Smith, 2019). Trigger (1990: 316) notes that South African archaeology from the 1960s through to the 1990s was the most colonial of all African archaeology, which hugely influenced archaeological information dissemination tools. To add to the debate, Ndlovu (2011a) highlights that heritage education and awareness is needed to curb

the lack of information of heritage to ensure heritage conservation. He emphasises that it is not only the education of the masses that is essential in South Africa but the education of heritage managers on African values and management approaches that need to be reflected in the post-colonial legislation (Ndlovu, 2011a). Therefore, scholarly approaches to heritage awareness in heritage management needed to be tested in this case study if the public was aware.

Recent studies such as Deacon (2020) have revealed that one of the significant challenges that the preservation of heritage faces in South Africa is the lack of public awareness of (i) the existence and information of heritage (ii) the value of heritage, and (iii) legislation how they can use it to protect their heritage. In this light, Deacon (2020) states that without public awareness advocating community consultation, collaborations and partnerships, heritage is faced with a developmental threat from industrial and mining expansion. The scholar also notes that there has been a growing number of cases of vandalism to surface sits and rock art sites. Therefore, heritage destruction is the consequence of a lack of awareness.

Furthermore, in South Africa public awareness of archaeological sites is generally low, traditional ties have often been lost or have been overtaken by the need to profit from other more lucrative resources such as diamonds, and many individuals and companies are simply unaware of the procedures to be followed, and their importance when conducting developmental projects are likely to impact on a protected heritage place (Deacon, 2020). The political value of archaeological sites usually determines the survival of heritage. Deacon (2020: 10) states that the post-colonial era is characterised by the discourse of nation-building and the construction of a national identity premised on democratic principles, which in other words, development versus national identity. In this debate, the public has often been ignored in both colonial and post-colonial heritage management (Ndlovu, 2014). The public in South Africa has a legal right to contribute to heritage management. But, what type of awareness strategies can be used to improve awareness in South Africa? I answer this question in chapter 5 of this study.

2.17 Development of Archaeological Education in South Africa

Archaeological education in South Africa can be traced down from the history of education in South Africa. The education system in South Africa was founded on the segregation and apartheid principles that developed into legislation to separate black, white, coloured and Indians to differentiate the quality of education and social superiority on the job market (Christie & Sached, 1985; Molteno, 1984; Esterhuysen, 2000; Rose & Tunmar, 1975;). Thus, archaeological and historical education ensured the superiority of white nationalism and evolution (Esterhuysen, 2000). In context, this approach was reflected in schools, archaeological education, and museums (Dean & Sieborger, 1995). While black people were presented as primitive (see Smith, 1983; Mazel & Stewart, 1987; Hall, 1988), African heritage education was deemed not important (Esterhuysen, 2000).

The above is reiterated by Gawe and Meli (1990), cited in Esterhuysen (2000), who states that archaeological education was deemed an unnecessary subject in the school curriculum. However, the end of apartheid in 1994 heralded significant change and radical approach by the African National Congress (ANC) which adopted an inclusive approach to heritage education and awareness (see ANC, 1994; Chisolm, 1997). Over the years that followed other scholars observed that archaeology education began to be used as a powerful tool to create heritage awareness, interpretation and participation of pupils to redress a discriminatory past (Stone & Mackenzie, 1990; Devine, 1989; Smardz, 1989; Stone, 1991). The question, however, is, was it enough? Esterhuysen and Lane (2013) note that these proposals for radical transformation were not always implemented. In 1996, the University of the Witwatersrand archaeology department with the assistance of Profesor Esterhuysen launched a research project to investigate the potential for, and impact of, teaching evolution and archaeology in the classroom (Esterhuysen & Lane, 2013). Despite the positive outcome of these studies on its potential to improve curriculum and educate learners, archaeology was disappointingly reduced to one statement in the Grade 1–10 Human and Social Sciences curriculum: precolonial—from earliest hominids (see Esterhuysen & Lane, 2013). This thesis thus seeks to explore and evaluate the effectiveness of current heritage awareness initiatives in the southern Gauteng Province.

Many scholars have recognized the role archaeology has played in education (Esterhuysen & Smith, 1998; Hinz, 1990; Mazel & Stewart, 1987; Nzewunwa, 1990; Pwiti, 1994; Smith, 1983; Wandibba, 1990). Debates from these scholars recognize the urgent need for transformation of the influence of politics in heritage. In recent years Esterhuysen has extensively outlined the need for transformation in the curriculum of education in archaeology (Esterhuysen, 2000). Of late, she debates on the need to transform the language that archaeology. Next, I review the provisions of heritage presentations which extends Professor Esterhuysen's current research.

2.18 Provisions for Heritage Presentation in South Africa

In South Africa, section 44 of the NHRA of 1999 sets out provisions for heritage resources authorities and local authorities to coordinate and promote awareness through the presentation of heritage. According to Hall (2009), this section provides heritage agencies with the provisions to provide information and preservation of heritage for the public enjoyment, public education, research and tourism, erection of plaque and interpretive facilities, training, provision of guides, mounting of exhibitions and construction of memorials.

Hall (2009) has examined the challenges that the provisions of heritage awareness in legislation face. Although Section 21 (1) (a) of the NHRA outlines the obligations of heritage authorities to disseminate information, advice and assistance in the enhancement of public awareness (Hall, 2009), South Africa has faced several challenges in ensuring effectiveness in public awareness strategies. Hall (2009) notes that in South Africa, most of the awareness strategies fail because they do not use the local languages. Language and professional terminologies can create a barrier

for local communities not to be interested in the management of heritage. English and Afrikaans are the most used professional languages in the country, thus, creating a barrier to those that do not understand them. Therefore, Hall (2009) highlights that information boards and education techniques should factor in the local languages of Africa to attract the participation of the public.

2.19 Language and Definitions of terms

Heritage management has been dominated by professional terms and languages heavily influenced by colonialism (Scheermeyer, 2005). In South Africa, concerns have been raised on why heritage should not just include components identified in terms of the Western world (Scheermeyer, 2005). It is believed that the continuation and direct influence of colonial structures of heritage management affect how African communities relate to heritage management (Ndoro, 2001, 2005, 2009; Pwiti & Ndoro, 1999; Ndlovu, 2011a). Scheermeyer (2005) gives examples of definitions that are commonly ignored and not sufficiently descriptive, such as intangible heritage. An example is the meaning of "intangible heritage" in the NHRA (1999) legislation which fails to encompass all aspects of indigenous spiritual values.

Initially, the Heritage Council Act of 1999 No. 199961, Vol. 406:2 defined intangible heritage as (a) cultural tradition; (b) oral history; (c) performance; (d) ritual; (e) popular memory; (f) skills and techniques; (g) indigenous knowledge systems; and (h) the holistic approach to nature, society and social relationships (Scheermeyer, 2005: 121). However, definitions evolve and need constant updating of legislation. Scheermeyer (2005) further describes how society evolves and the dynamics of defining intangible heritage to allow communities the opportunity to develop and change such definitions.

2.20 Conclusion

In this review, I highlighted the historical background of the essential components of my study. Although other reviews are encompassed in each chapter (chapter three, four and five), it was necessary to illustrate how the case study, tools used and cultural resources management fit in previous and current literature. This review covered land use in Johannesburg, heritage destruction, pre-colonial SWS, the advent of CRM, aerial photography and information technology, legislation, political influence to heritage management and land ownership. To add, I also reviewed institutional dependency of heritage management, identity and sacred landscapes, stakeholder relationships, awareness, development of archaeological education, provisions for heritage presentation and language and definitions. In this light, all these discussed concepts reflect a knowledge gap that my thesis fills. Importantly, I extend the concepts to understand heritage management in southern Gauteng Province, South Africa.

Chapter 3: The Efficacy of Cultural Resources Management in Southern Gauteng Province, South Africa

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Research Article

THE EFFICACY OF CULTURAL RESOURCES MANAGEMENT IN SOUTHERN GAUTENG PROVINCE, SOUTH AFRICA

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ABSTRACT

In this paper, I measure the damage that urban and industrial development has done to precolonial stone-walled structures (SWS) in southern Gauteng Province. I do so by comparing SWS distribution on aerial photographs from 1961 with recent satellite images viewed on Google Earth. In this review, I further investigate how many SWS in southern Gauteng had been recorded by cultural resource managers before they were destroyed. This study tests Sadr's (2017) estimates that for every additional 10 km² of urban sprawl, another five SWS might be destroyed. The study shows that while many SWS have been destroyed over the years, most of these were not adequately recorded prior to their obliteration. To improve matters, the Gauteng Provincial Heritage Resources Agency must play a critical role in preserving the disappearing heritage of the province, including SWS.

Key words: heritage management, southern Gauteng Province, stone-walled structures, precolonial period, geographic information systems.

INTRODUCTION

Precolonial stone-walled structures (SWS) are common in the southern half of Gauteng Province, South Africa (Fig. 1). They all date to within the last 500 years, and can reveal much about the social, political and economic organisation of local societies during the Late Iron Age (Huffman 2007). The Tswana-speaking Bakwena Ba Mare Phogole polity is historically affiliated with this landscape (Breutz 1956), and is today engaged in a court case to claim their land back. Preserving SWS is important for this very reason: these structures are witnesses of the past.

The growth of the Johannesburg metro has greatly contributed to the destruction of SWS in this region (Sadr 2017). The arrival of European settlers in the second half of the 19th century introduced new land uses such as intensive farming, urbanism, and mining which to this day pose a serious threat to the survival of SWS. By 1967, the population of Johannesburg had grown to over 1.3 million people, and the city covered nearly 246 km². The current population is estimated to be 4.4 million people, spread over an area of 1600 km² (StatsSA 2016).

Faced with such significant urban expansion, old aerial photographs are useful in tracking the destruction of heritage sites. The use of aerial photography in heritage management goes back as far as the beginning of photography (Ceraudo 2013). According to Davis (2016), Gertrude Caton-Thompson was one of the first users of this tool in southern African archaeology at Great Zimbabwe in 1928, to investigate the structure of the site. During the 1960s, Revil Mason (1968) also made use of aerial photographs of the old Transvaal Province to identify SWS. Since then, the practice of photographing the landscape has become common and now has a long and distinguished history on the subcontinent (Seddon 1968; Maggs 1976; play an important role in the practice of cultural resources management (CRM). In South Africa, CRM can be traced back to the 1970s with Garth Sampson's (1972) rescue work on the Verwoerd Dam project. Soon afterwards, salvage archaeology began to be carried out by Revil Mason from the University of Witwatersrand, and CRM units were later established at the KwaZulu-Natal Museum and the University of Cape Town (Ndlovu 2014). This growth of CRM in South Africa at the time was reflected in the various research projects of Janette Deacon (1993), Hilary Deacon (1988), and Martin Hall (1989), all cited in Ndlovu (2014: 204–205). These rescue activities laid the foundations in terms of how CRM is currently approached in South Africa.

In colonial times, conservation and heritage management were based on the agenda of the colonial power. In Africa, this saw the British concentrating on archaeology, while the French concentrated on the architectural heritage (Ndoro & Wijesuriya 2015). This approach determined what to define as heritage worth protecting. Ndoro and Wijesuriya (2015) state that legislation and the way sites are conserved and managed still closely resemble the patterns and principles established during the colonial era, which focuses primarily on monumental heritage. Using the example of rock art management, Ndlovu (2009) illustrates how South African conservation policy was determined by people of European/Western origin, disregarding indigenous perspectives in heritage site values and management.

In South Africa, the history of heritage legislation is more than a century long. The Bushmen Relics Act of 1911 was the first legislation that was intended to reduce the looting of the native heritage (De Maret 1990), which became the only legislation pre-1994 that focused on protecting indigenous heritage. The Natural and Historical Monuments, Relics, and Antiques Act (NHMRA) No. 4 of 1934 followed. This Act was created to protect a diversity of heritage sites and to enable the declaration of national monuments, giving birth to the problem of prioritisation in the protection of heritage, relics or antiques, until Act No. 9 of 1937 came as an amendment to rectify this problem (Ndlovu 2011). The National Monuments Act (NMA) No. 28 of 1969 replaced the 1937 Act to protect heritage from destruction or exportation, and to facilitate heritage site declaration. The National Heritage Resources Act (NHRA) No. 25 of 1999, which is the current legislation, came after the end of apartheid, and its main objective is to preserve a much broader range of heritage for future generations, with more considerations legislated to acknowledge the cultural rights of indigenous people (Ndlovu 2011: 32). It was initiated with recommendations from a workshop of the National Monuments Council (NMC) on future directions for heritage conservation, on 20 August 1994 at the University of Pretoria. Ndlovu (2011) indicates that in contrast to the pre-1994 centralised approach,

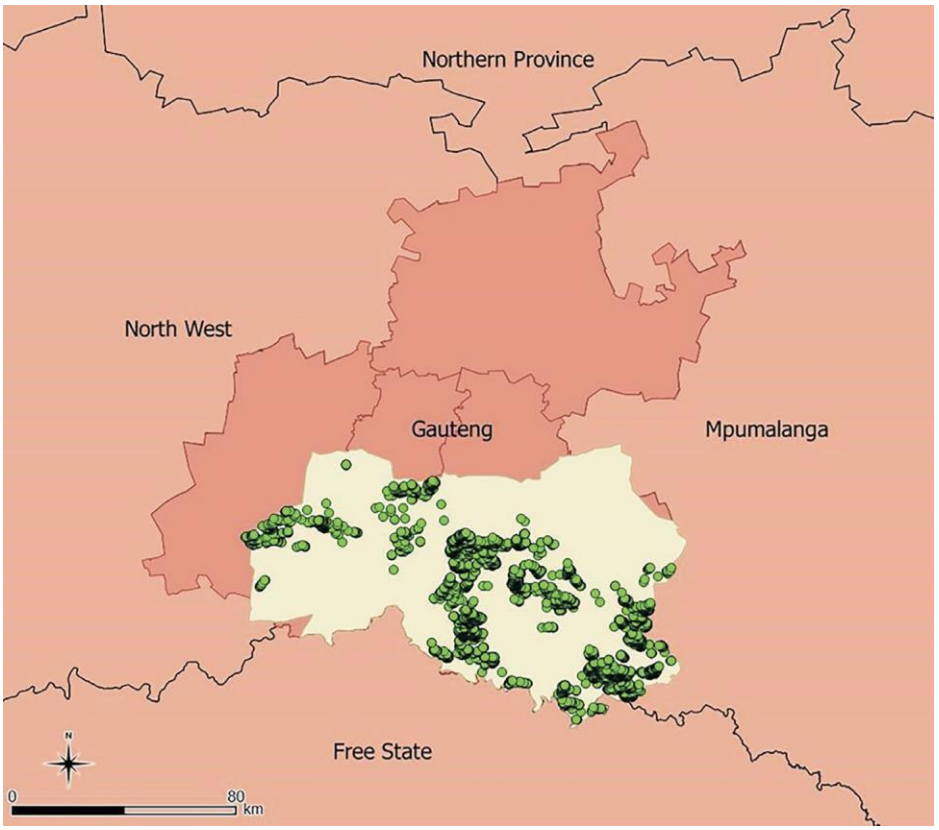


FIG. 1. *Map showing the southern Gauteng stone-walled structure (SGSWS) study area against the provincial map of South Africa.*

influenced by the three-tier approach (national, provincial and local). Together, the decentralisation and influence of the three-tier approach provide broader definitions of heritage and how it should be preserved.

South Africa currently has a three-tier system for managing heritage: national, provincial and local. The South African Heritage Resources Agency (SAHRA) is responsible for the Grade I (National) sites; Provincial Heritage Resource Agencies (PHRAs) are responsible for the Grade II (Provincial); and municipal authorities are responsible for Grade III (Local) sites. The implementation of this three-tier approach has been difficult due to several challenges (see Ndlovu 2016). This, in effect, has resulted in many of the Grade II and Grade III sites facing serious threat because of a lack of capacity, resources, and poor inventory systems at the provincial and municipal levels (McIntosh 1993; Ndlovu 2011). In this paper, I investigate whether legislation has been successful in protecting heritage resources such as SWS in the southern half of Gauteng Province.

This paper extends the work reported in two previous publications, by Karim Sadr (2017) and Saireeni Naidoo (2018). Sadr (2017) estimated the rate and extent of SWS destruction through modelling. His study results estimated that 850–1350 Iron Age SWS and 300–350 colonial heritage sites had been destroyed between Johannesburg and the Vaal River. The study further estimates that for every 10 km^2 of urban sprawl, five SWS will be destroyed, and one SWS will be destroyed for every 200 hectares development land (Sadr 2017: 77). Sadr's (2017) conclusions needed to be tested against 'hard facts'. Such testing was attempted in a small focus area by Naidoo (2018) in a study that focused on the destruction of SWS in an area of 270 km^2 (the Klipriver and Meyersdal area, south of Johannesburg). This second study considered chronological snapshots of the 1961, 2005 and 2015 periods, concluding that a higher rate of SWS destruction occurs – of one SWS destroyed for every 64 hectares of developed land. Noting the two studies, I test the modelling by Sadr (2017) on a larger and more comprehensive study using historical photographs (1961), and comparing them with recent development footprints, to measure what was actually lost and by which development (infrastructure, mining, water bodies, road and power line networks). This paper goes further still, critically engaging in discussing whether heritage legislation is effective in protecting the SWS. As had been suggested by Sadr (2017: 78), this was done by tracing what was recorded before damage (Wits archives and SAHRIS), the quality of the documents produced, and the public accessibility of this information. I conclude the study by providing recommendations to improve access to information and enhancements to heritage management in the area.

MATERIALS AND METHODS

My study focused on the southern half of Gauteng Province, with a specific interest in the areas developed since 1961 (Fig. 2). The SWS that are the focus of this paper date to between the 15th century and the end of the 19th century (Huffman 2007). Through time, many ruins have disappeared because of infrastructural development. To measure this destruction, I obtained the National Geo-spatial Information (NGI) aerial photographs taken in 1961 and plotted the distribution of visible SWS in my study area. The aerial photographs used were available in a digital Tagged Image File Format (TIFF) and had to be geo-referenced. I was able to use Quantum Geographic Information System (QGIS) to geo-reference each of the files using ground control points (GCPs) placed at landmarks visible on the photographs, as well as on 1:50 000 maps of the area and Google Earth satellite imagery.

To check if SWS are still intact, partially destroyed, or completely destroyed, I compared the aerial photographs survey results with current Google Earth satellite imagery. I then used

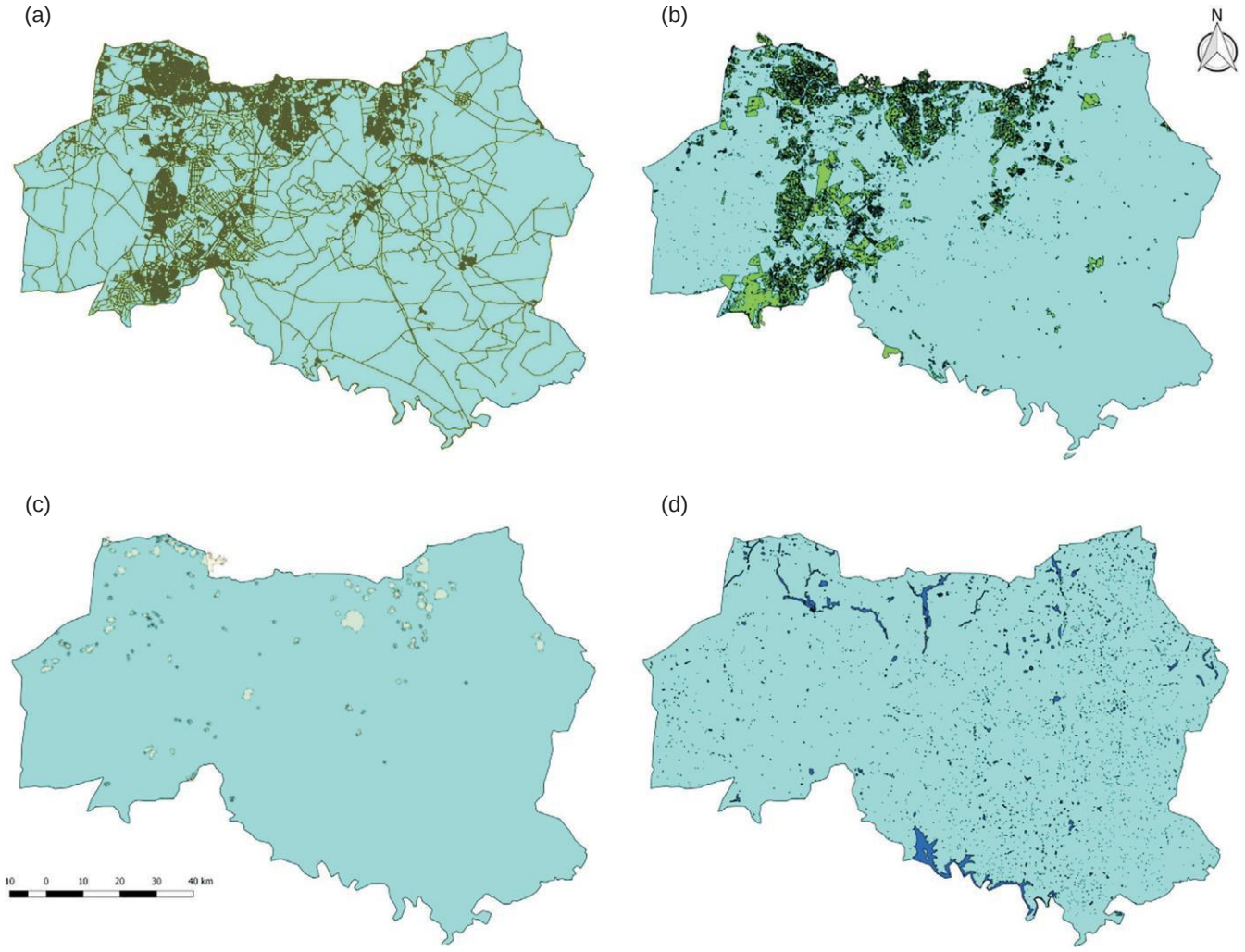


FIG. 2. *Development footprints:* (**a**) *transport and power line network development;* (**b**) *building and housing development;* (**c**) *mining development;* (**d**) *water body development.*

shapefiles obtained from the Gauteng City-Region Observatory (GEOTERRAIMAGE – Land Use Change 2013) to measure the extent of urban and mining development since 1961. These shapefiles are based on Landsat satellite imagery from 2013. Power line and road networks were obtained as shapefiles for 2016 from OSM (OpenStreetMap contributors 2015), and water body footprints of 2006 were obtained from 1:50 000 digital map shapefiles of the NGI (see Fig. 2). I overlaid all of these as separate layers in QGIS (QGIS Development Team 2018). The difference in the years of the footprints was due to the availability of shapefiles from different organisations.

To test the estimates of Sadr (2017: 77), I measured the developed areas in square kilometres (km^2) from 1961 through to recent years, depending on data availability. I also compared aerial photographs of recent development footprints with those of 1961 to discern the changes. This, as represented below, enabled me to calculate the number of SWS expected to be destroyed for the developed areas within the period under study.

$$\text{SWSexp.d} = \frac{\text{DA}(\text{km}^2) \times 5}{10\ \text{km}^2}$$

where SWSexp.d = number of SWS expected to be destroyed, and DA = developed area.

The constants 10 and 5 represent every 10 km^2 of urban sprawl, and five SWS expected to be destroyed therein, respectively (Sadr 2017).

To find out how many of the destroyed SWS had been recorded and/or excavated prior to their destruction, I looked at all available CRM reports concerning my study area. This involved searching through the University of the Witwatersrand Archaeology Department archives, as well as the reports available on the South Africa Heritage Resources Information System (SAHRIS) database. I also examined relevant published material. It should be noted that further CRM reports may exist in private archives, but my study was concerned with publicly available documents. The possibility that CRM reports may exist outside the accessioned repositories mentioned is itself a problem that requires attention, as will be discussed later.

RESULTS

In the low-resolution aerial photographs from 1961, many SWS are occluded by vegetation, and robbed walling is mostly invisible. Therefore, the numbers that I report below should be seen as an underestimation of the actual state of affairs. Destruction of SWS in the area is shown in Figs 3a, b, c and d. Figs 4a (i), 4a (ii), 4a (iii), 4b (i), 4b (ii), 4b (iii), 4b (iv), 4c (i), 4c (ii), 4c (iii) and 4c (iv) shows examples of SWS destruction using Google Earth and other image formats. Stone-walled structures that SAHRIS was able to locate are highlighted in Fig. 5.

There are a number of factors that have been responsible for the destruction of SWS in the southern part of Gauteng. These range from transport and power networks, residential developments, mining, and water reservoirs. Transport and power networks completely destroyed 94 SWS and damaged

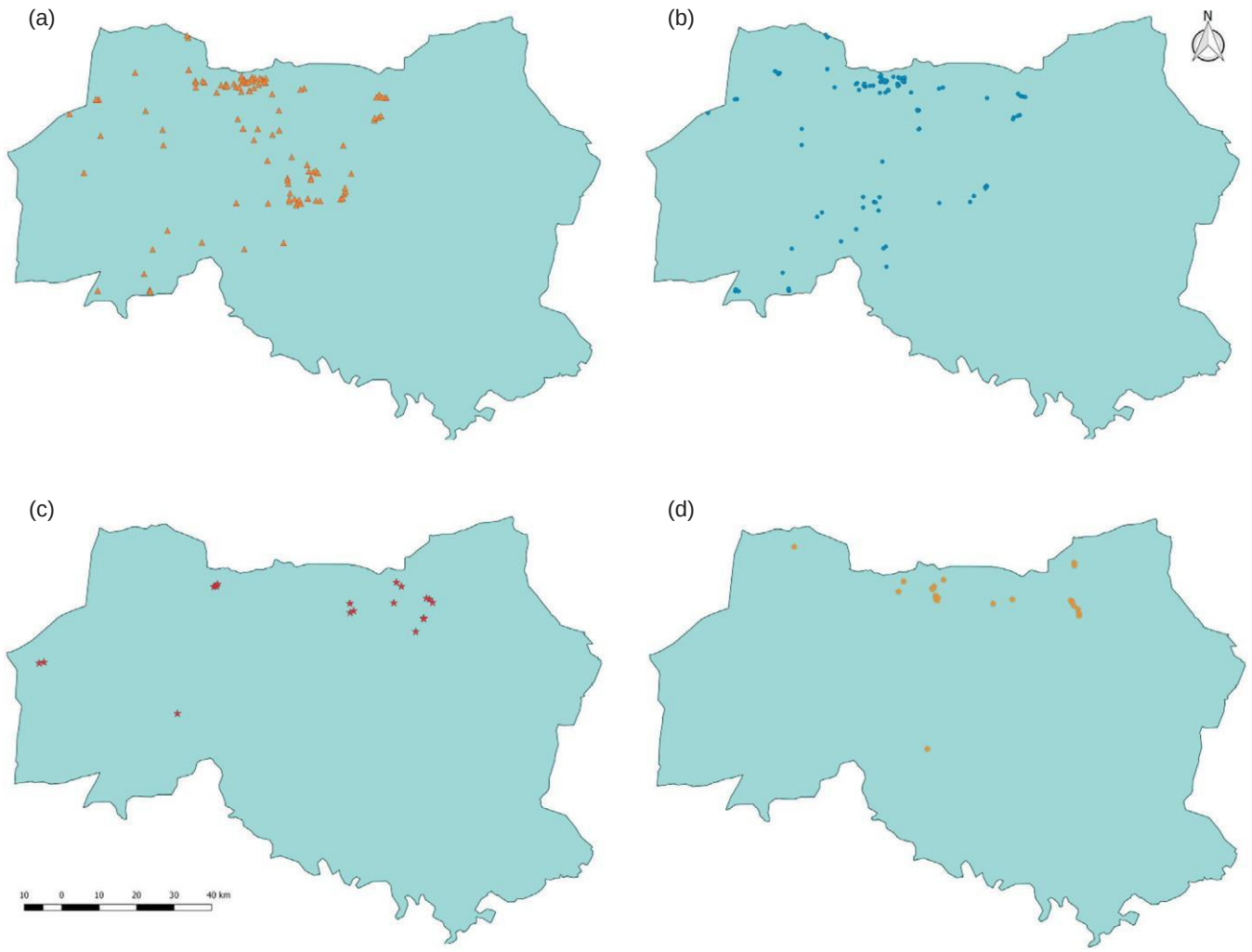


FIG. 3. *Destroyed stone-walled structures from:* (**a**) *transport and power line network development;* (**b**) *infrastructure and housing development;* (**c**) *mining development;* (**d**) *water body development.*

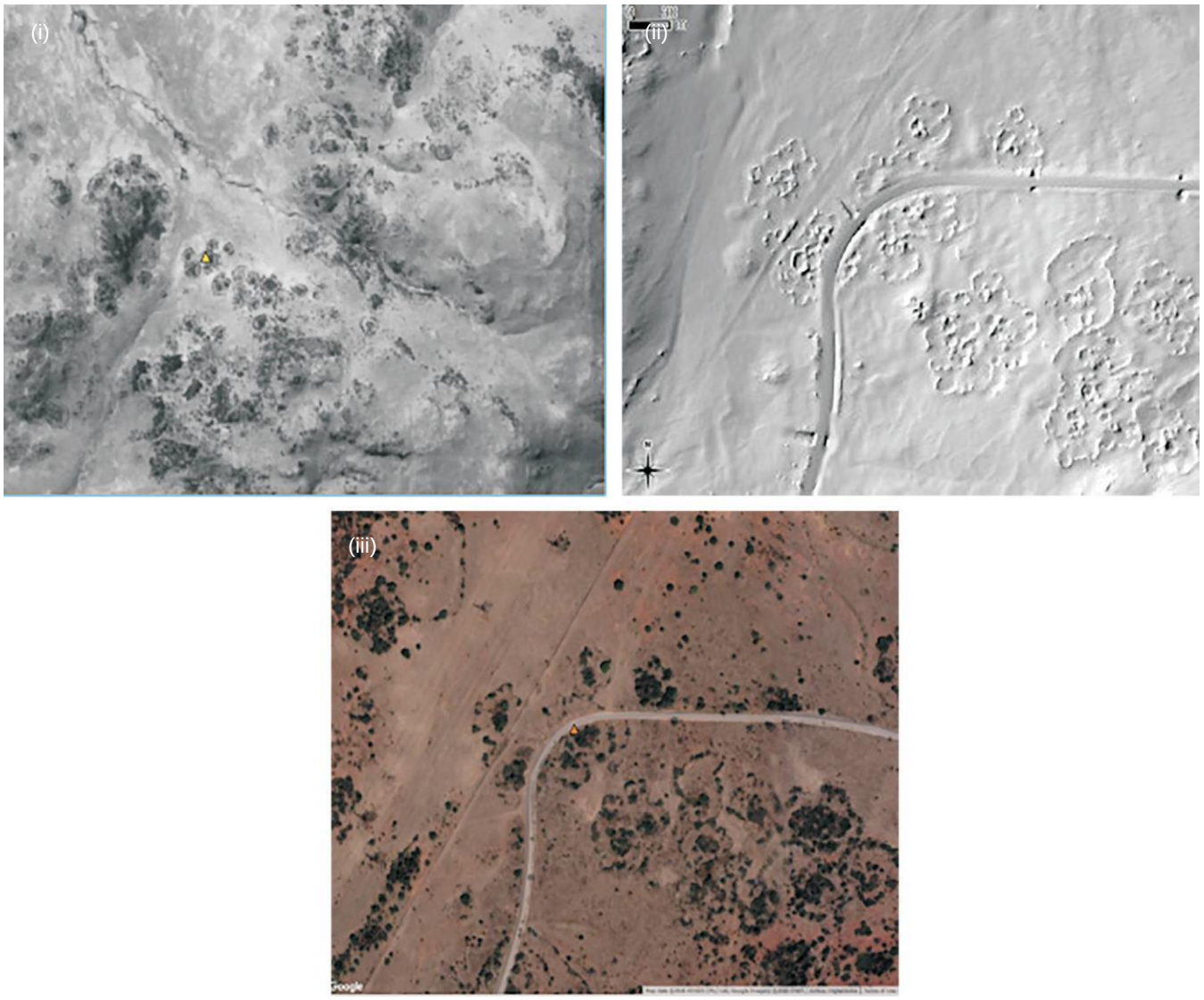
another 18 SWS between 1961 and 2016 (Fig. 3a). Roads within the Suikerbosrand Nature Reserve caused a great deal of damage to the many SWS in that area, which is ironical since one would expect nature reserves to protect heritage from damage by development. As far as preservation was concerned, in pre-democracy South Africa, precolonial cultural heritage did not enjoy the same level of protection as did the natural heritage (Ndoro 2009). During the same period (1961–2016), another 92 SWS were completely destroyed, and three SWS were damaged by residential housing projects and industrial buildings (Fig. 3b). Mining development completely destroyed 18 SWS and damaged one SWS between 1961 and 2013 (Fig. 3c). The most recently known mining development footprint was in 2013. It is not only mining itself that has been a threat to SWS, but also the mine tailings and dumps which bury SWS. The fourth category of threat to SWS in southern Gauteng is water bodies. The need for more water for use to meet residential needs, farming, and the mining industry has increased the need for water reservoirs in the study area. Examples of such water bodies are the Largo Colliery and Marieville reservoirs. A total of 22 SWS were destroyed by water body development between 1961 and 2006 (Fig. 3d). A total of 248 SWS were destroyed by all types of development in thestudy area. Table 1 summarises the total amount of destruction and damage to SWS since 1961.

Very little of this extensive destruction was preceded by proper recording and excavation of the SWS. The areas where CRM projects were carried out are indicated in Fig. 5. In the Wits archives and South African Heritage Resources Information System (SAHRIS), there are 10 CRM reports and two excavation reports from this study area. Excavation reports outline excavation output quantities with specific data on trenches,

TABLE 1. *Stone-walled structures (SWS) damaged or destroyed by each development category since 1961.*

Type of development*	Number of SWS completely destroyed	Number of SWS damaged
Power line and road network development, active until 2016	94	18
Building and housing development, active until 2013	92	3
Mining development, active until 2013	18	1
Water body development, active until 2006	22	0
Total	226	22

*Listed in order of their means of destruction, from most destructive.



FIGS 4a–c. *Image examples of the developments that have occurred on SWS.* **FIG. 4a**. *Images of Site 13/112 Suikerbosrand, damaged by road development.* (**i**) *1961 aerial photograph.* (**ii**) *Lidar image done by Sadr in 2016.* (**iii**) *Google Earth image 2017.* *(Fig. 4 continued on p. 8.)*

while CRM reports serve to contain information on archaeological impact surveys before any development. Although an excavation report can be part of a CRM report, my research revealed cases where excavation reports existed with no CRM reports attachments. Findings are summarised in Table 2.

Out of a total of 248 SWS that were affected by different types of development in the study area, only a dozen CRM and excavation reports could specify the locations where the SWS had previously been located. Eighteen SWS had accessible records of CRM intervention. Of the 18 SWS mentioned in the 10 CRM reports and two excavation reports in the study area, six were mapped and excavated, while 12 SWS were mapped only. Three other locations with destroyed SWS have associated CRM reports, but these failed to load on SAHRIS and requests sent to SAHRA have yielded no response todate.

In testing Sadr's (2017) estimates, my study results revealed that an area of 510 km^2 has been developed since 1961. Using Sadr's hypothesis, 255 SWS would have been destroyed since 1961. My study recorded a total of 248, seven SWS fewer than Sadr's (2017) predictions per square kilometre. Of the 4722 SWS that were identified in the study area, it is estimated that between 850 and 1350 SWS have been destroyed by development. However, untraceable damage due to lack of availability of quality historical aerial photographs prior to the 1960s also presents a challenge to determining precise data. Other factors like visibility and quality of historical aerial photographs limit the full potential of such a study.

DISCUSSION

It is evident from the results reported above that the extent of damage to heritage resources in southern Gauteng Province has been severe. Sadr (2017) estimated that for every 10 km^2 of development in this area, five SWS are destroyed. This study attests the close estimations of Sadr (2017). However, the more square metres of development, the more damage to SWS. Heritage sites are indeed under threat from development damage, which in most cases, leaves little or no trace of its impact.

It is also clear from my study that the current heritage legislation (NHRA 1999) does not provide adequate protection. Part of the problem is the lack of capacity to enforce the legislation (*cf.* Smuts & Wiltshire 2016). Another part is the lack ofadequate information management. Documentation and information management is of vital importance in CRM. SAHRIS is a commendable start to improving information management, but it has some way to go before it becomes a comprehensive and user-friendly system. Petrescu (2007) describes how the purpose of creating a web-based database is to have an

FIG. 4b. *Images of site 36/95 (Wits archives site 41B) Meyersdal Eco Estate partially destroyed by housing development.* (**i**) *1961 aerial photograph.* (**ii**) *Google Earth image 2007.* (**iii**) *Google Earth image 2009.* (**iv**) *Google Earth image 2017.* *(Fig. 4 continued on p. 9.)*

integrated inventory of heritage sites that would assist the management of heritage resources. A decade later, the SAHRIS system is still full of gaps, and it proved difficult to use it effectively in my study. Indeed, the Wits Archaeology archive suffers from such poor cataloguing, inadequate indexing, misfiled documentation, and missing documents that it is unable to adequately inform us about the heritage destroyed. Heritage institutions should also takeresponsibility for managing CRM information, and in so doing, not abrogate their role so that the initiative remains with academic institutions such as the Wits Archaeology archives.

Many of these shortcomings are not the fault of SAHRIS or the Wits archives *per se*. Ndlovu (2014: 211) noted that CRM reports in South Africa were far from comprehensive, and lacked such basic details as the methodology used, adequate site maps, images, GPS tracking, and site recording sheets, to support the information provided in the reports. Although some CRM reports were written before the advent of GPS technology, failure to include a detailed map to show theaccurate location of SWS destroyed or under threat is inexcusable. Ndlovu (2014: 211) further indicates that the lack of maps in CRM reports simply means that any recommendations made cannot be directly linked to a negative impact or threat as a result of proposed development activity. The quality of documentation reflects normalised negligence. Ndlovu (2014) describes some of the recommendations in CRM reports as 'sitting on the fence', meaning that no clear recommendations are made by the CRM practitioners. Contract archaeologists, he argues, might shy away from giving negative recommendations in order to ensure further contracts in the future. Based on the new guidelines for CRM reports issued recently by SAHRA, it is hoped that CRM reports will be improved and offer a better source of information going forward.

There is no clear trace of the location of final reports from

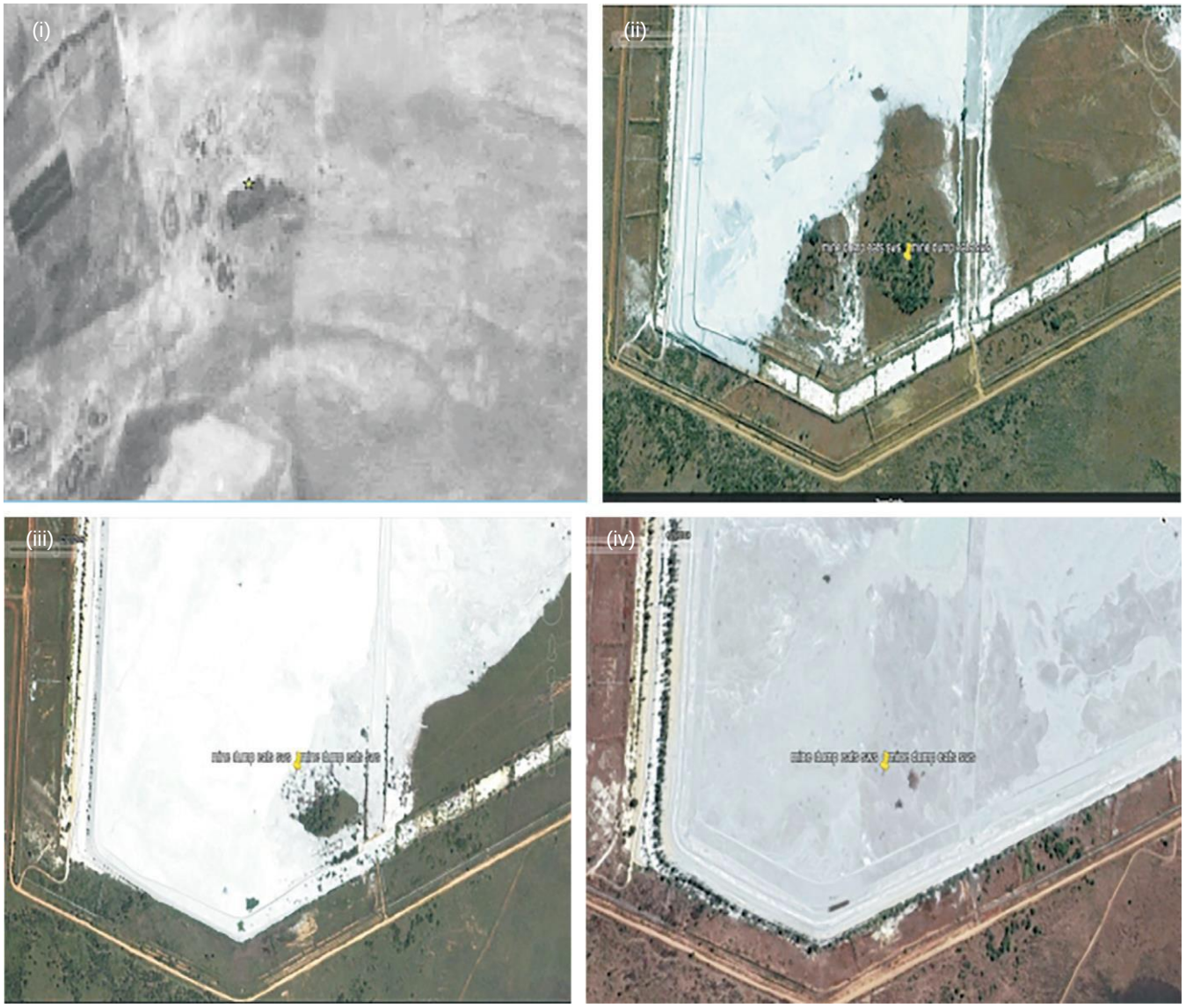


FIG. 4c. *Images of site 19/19 Fochville South Deep Gold Mine fields destroyed by mining dumps.* (**i**) *1961 aerial photograph.* (**ii**) *Google Earth image 2004. (iii) Google Earth image 2009.* (**iv**) *Google Earth image 2017.*

the SAHRIS database, and there was, in my search, no trace of complete documents in the Wits Archaeology archives even though a majority of the academics facilitated CRM reports in the study area. One would still wonder who was finally responsible for record-keeping of CRM reports. Of the available documentation, it was difficult to make sense of the documents. There are many phase one and phase two CRM reports from the first decade of the 2000s and now, a decade or so later, one may ask why there are no final reports on SWS that were destroyed in these developments. On the SAHRIS website, one can find permits from SAHRA to destroy sites (by development), but no final CRM report or map could be located to show where the sites were and what they looked like. Neither SAHRIS nor the Wits archive refers to excavation documentation and the location of the artefacts excavated, if any. In the Wits archives, I came across photographs, excavation notes and survey notes which could not be associated with a location map or other information to indicate which SWS was under study. Only a few of the CRM reports that I found had well-documented and complete information. Notwithstanding these exceptions, generally there seems to be a lack of control in the quality of the information supplied to SAHRA by the CRM contractors, and in the quality of indexing and cataloguing of that information in SAHRIS and the Wits Archaeology archives. These are serious problems of information management that need to be addressed.

Beyond information management, lack of adherence to legislation is clearly evident in the heritage management sector, at least as far as the southern half of Gauteng Province is concerned. According to Section 38(3)(e) of the NHRA (1999), a responsible heritage resources authority must specify the information provided in the report, which must include "the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources." None of the CRM reports consulted in this study provide evidence of any consultation with the interested public. Thus, decision-making on whether the SWS should be destroyed never considers the views of the people who ascribe value to the heritage site under threat. It is often argued that the people concerned cannot be found for consultation. But in the southern part of Gauteng Province, there are court cases that have been running since 1994 which clearly indicate the communities who lay claim to the heritage being destroyed. Ndlovu (2012) observes that the absence and silence of archaeologists in writing press releases that inform the public of the threats that endanger archaeology

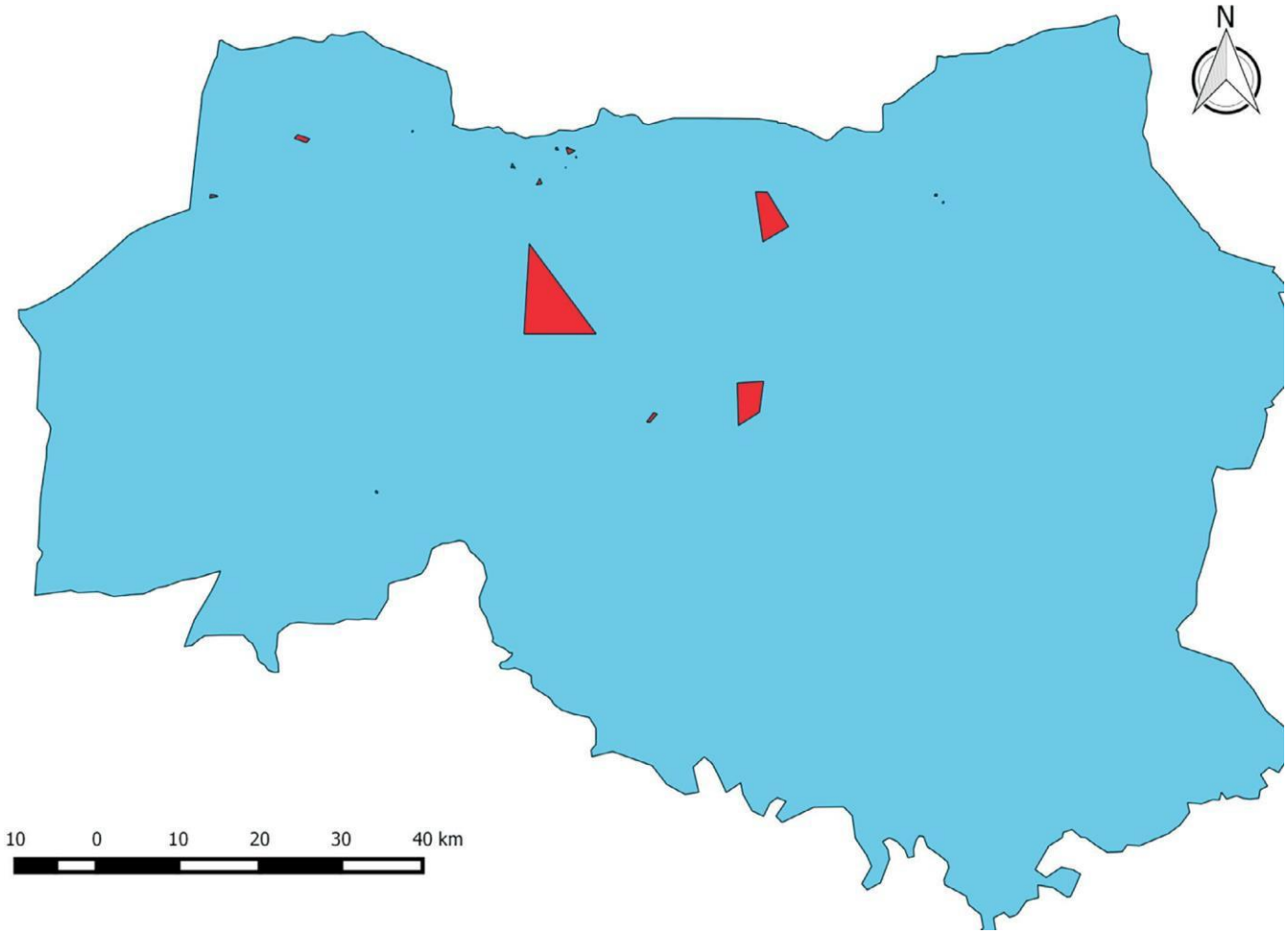


FIG. 5. *Boundaries of CRM work as indicated by reports in the Wits archives and SAHRIS online database.*

in South Africa is of great concern. Two of the newspaper articles I found in the Wits archive inform the general public of the plans for Johannesburg's expansion in the 1960s and 1970s. Only one of the articles addressed the threat that development was posing, but the focus was on the environmental, and not on the archaeological heritage threat.

A good example of how CRM community consultation could be practised is illustrated in the province of Ontario, Canada, where official standards and guidelines include methodologies and procedures that engage the aboriginal communities (Dent 2012). Failure to engage with and get the approval of these communities, and to show evidence of this communication, will result in the termination of the contract archaeologist's licence to practise in Ontario. SAHRA'sfailure to monitor CRM work and allowing developers to get away with destroying heritage without severe consequences is of great concern. Lack of monitoring by heritage inspectors promotes development at the expense of heritage. On paper, archaeologists are regarded as the heroes of heritage who defend and protect heritage against developers but in reality, the interests of the paying client appear to be given greater weight over those of preservation of the archaeology (Ndlovu 2014). For the South African context, I provide a set of commendations and recommendations for the work done by SAHRA and SAHRIS (Table 3).

It is noteworthy that some of the efforts recommended by the NMC (1994) advise the engagement of community participation in heritage management. This initiative is fostered in Section 38(3)(e) of the NHRA (1999) which stipulates the need for CRM to show evidence of community participation. Yet despite this, communities are still being excluded. Custodial communities of the SWS in this case study, such as the Bakwena Ba Mare a Phogole, are disgruntled with the lack of conservation of SWS. In their case, SWS serve as legal proof of their previous settlement in the region, thus supporting their land claim in the area. SWS destruction also means the loss of their identity, religion and culture (Mudzamatira, in press). This custodial community reveals that all aspects, such as the physical and intangible heritage, are connected, and this includes the community's livelihood (Mudzamatira, in press). Loss of their land through colonisation dismantled all aspects of their livelihood. These aspects include agricultural land and tourism opportunities the loss of which, to this day, deprives the community of its possible economic benefits, and effectively 'cripples' them.

In addition, the Bakwena Ba Mare a Phogole blame development for desecrating their land. In Mudzamatira (in press), Jacob Ngakane, the Bakwena community spokesperson, stated that destruction of SWS required rituals to seek permission from the ancestors. The community highlights the effects of this ignorance in the pervasive famines and community problems they face as a community (Mudzamatira, in press). Although the community understands that they cannot repair the damaged SWS, they still hope to manage their land sustainably when they finally reclaim it. The community has formulated a Bakwena Sustainable Development Plan for the Klipriver area which outlines various ways in which they plan to manage their land when their land claim is finalised (Mudzamatira, in press). This plan was drafted by the Bakwena Youth Programme, which includes a forum of civil engineers,

TABLE 2. *Relevant CRM documentation in Wits archives and SAHRIS database.*

#	Project	References	Recommendations and comments	Documentation of site, excavation proceedings, and stone wall sketching
1	Klipriviersberg excavation: 1969	Site 13 or 18/69, Mason (1986)	The excavation was completed and artefacts were put in the Wits collection.	Sketch maps, geographic maps, photographs.
	Wits Archaeology field school: 2001	Meyersdal field school, Schoeman (2001) Wits archives	Excavation done and artefacts were put in the Wits collection.	–
	Meyersdal Nature Estate, Klipriviersberg: 2002	SAHRIS-Map ID 00553 Wits-2628AC	Recommendations: Sites 1, 2, 4A & B, 8, 11 and 12 are not to be destroyed. Sites 3A & B, 5, 6, 7A & B, 9, 10A & B must be cleared. **Phase 1 Report**: Seven sites destroyed	–
2	Rand Water Board Headquarters development: 1985	Wits-2628AC Site 56/81, Mason (1986)	Excavations report. One site destroyed.	Field notes, sketch maps, photographs.
3	Meyersdal Koppies/Alberton: 1997	Wits-2628AC Site 51, Huffman and Lathy (1997)	Recommendations: Excavation and reconstruction. **Phase 2 Report**: One site destroyed.	Maps, photographs of reconstruction, field notes.
4	Disa Environmental Project, Klipriviersberg Parts One and Two: 1986	SAHRIS-Map ID 00556, Mason (1986: 559)	Recommendations: Part One: "It is not necessary to save the settlement in the development area". Sites that have been extensively robbed can be sacrificed. Sites should be mapped; middens and daga structures should be excavated. Part Two: Walls must be mapped; middens and daga structures need to be excavated. **Phase 1 Report**: Site not identified.	–
5	Report Wits University Archaeology field school: 2003	Wits-2628AC Site 41B, Sadr (2003, 2005)	Recommendations: Excavation	Sketch maps, field notes, excavation.
	Minor excavation for Wits Archaeology first year field school: 2005		One site destroyed	–
6	Mall of the South/Aspen Hills project: 2004	Wits-2628AC Sites 1, 2, 3, 4, 5 & 6, Huffman (2006/7)	Recommendations: Sites 1 and 2 could be destroyed. Site 3 and a portion of site 5 should be protected because mitigation is unnecessary. The remainder of site 5, site 4 and site 6 needed excavation. **Phase 1 Report**: Five sites destroyed.	Sketch maps, photographs of excavations. No photographs of SWS.
7	Harmony Gold/ Simmer and Jack shaft 4: 2005	SAHRIS-Map ID 00664, Fourie and Van der Walt (2005)	Recommendations: No mitigation required **Phase 1 Report**: Two sites destroyed.	Photographs
8	Water and sewage pipeline corridors: 2007	SAHRIS-Map ID 00856, Pistorius (2007)	Recommendations: Pipeline not affecting the SWS. Subjected to a Phase 2. The SWS must be mapped and if archaeological deposits occur, test excavations of these deposits must be undertaken. **Phase 1 Report**	Photographs of SWS.
9	Mountain view heritage assessment: 2008	Wits-2627BD Site 2 and Site 6, Huffman (2008)	Recommendations: Site 2 needs to be mapped and the ash midden needs to be excavated. Site 6 needed to be mapped before destruction. **Phase 1 Report**: Three sites destroyed.	Sketch maps, photographs of stone walls.
10	Farms 8 and 25 Boschoek: 2010	SAHRIS-Map ID 383, Pelser and Van der Walt (2010)	Recommendations: mitigation measures are required. **Final Phase CRM Report**	–
11	7L4 Slimes Dam: 2015	SAHRIS-Case ID 8343, Higgitt and Nel (2015a)	No site identified. **Final CRM Report**	–
12	7L5 and 7L6 Slimes Dam on Vlakfontein 281 IR, Nigel: 2015	SAHRIS-Map ID 8345 Higgitt and Nel (2015b)	No site identified **Phase 2 Report**	–

TABLE 2 (continued).

#	Project	References	Recommendations and comments	Documentation of site, excavation proceedings, and stone wall sketching
13	–	Wits-2628CA Sites 1 & 2, Welbourne (1979) Chatterton *et al.* (1979) (incomplete CRM paperwork)	Two sites destroyed	Excavation photographs, aerial photographs, hand-drawn maps and computerised stone-walling sketches, field notes for site 1.
14	–	SAHRIS – not identifiable Wits-2628AC Site 49	–	–
15	–	SAHRIS-Map ID 00483, 00485 (could not load)	–	–
16	–	SAHRIS-Map ID 00479 (could not load)	–	–

TABLE 3. *Summary of the commendations and recommendations made to SAHRA and SAHRIS.*

Commendations	Recommendations
SAHRIS provides free and easy information access on CRM (accessible at http://www.sahra.org.za/sahris/)	1. Updating of information and related documents on SAHRIS database, e.g. uploading final drafts of CRM reports and related documentation (e.g. permits). 2. Upgrading efficiency of display, speed and navigation of SAHRIS, e.g. zooming in and out of SAHRIS maps, clearly demarcating map ID with locations of each project. 3. Offering a catalogued information reference service for related information and consultation, e.g. online catalogue with reference to excavation reports and location of excavation material, published information and related information on each specific site. A best practice model for information and database management is the Endangered Archaeology in the Middle East and North Africa (EAMENA) project: http://eamena.arch.ox.ac.uk/
Establishment of legislation that protects heritage sites from encroaching development (through NHRA of 1999 Chapter II 27.)	1. The grading system of sites, and separation of responsible authorities at national, provincial and local levels, should be structured in a way that allows monitoring of provincial sites and provides support for heritage management at all levels, given the fact that provincial and municipal authorities do not currently have facilities and resources to manage heritage. Most municipalities have not yet established heritage management departments and structures. 2. The Act may be made more useful if there is a standard procedure for contract archaeologists to follow. This can be done by creating a standard requirement clause that all CRM reports should follow. In May 2007, ASAPA created guidelines that can be used to create and update standard procedures for contract archaeologists. An example can be to update CRM procedures to be legally binding.
Inclusiveness of legislation. NHRA (1999) Chapter II 38(3)(e) states that there has to be a consultation of the communities affected by the development and interested parties when conducting CRM	1. Legislation can be strengthened and made more specific in terms of contract archaeologists producing evidence of community consultation in decisions to destroy heritage. SAHRA could withhold permits if evidence of community consultation is lacking. 2. The May 2007 minimum standards of Phase 2 of CRM reports stipulate that the executive summary of the report should name stakeholders
NHRA (1999) Sections 35 and 30(2)(e) deal with the protection of heritage sites through imposing fines, and give heritage officers the legal right to stop any work or development when there is evidence that the heritage is vulnerable or endangered.	1. Implementation of legislation through monitoring and inspection by heritage inspectors should be strict on developers who do not comply with legislation. Hall (2009) adds that giving such powers to heritage authorities can assist in deterring perpetrators. 2. NHRA 1999 Chapter 3 Section 51(3)(45)(a) states that the maximum fine for destroying heritage is R10 000. Increasing this fine will increase adherence to legislation (see Ndlovu 2012, 2014). Ndlovu (2012) supports the need for NHRA 1999 to be updated and fines increased for developers who violate legislation. 3. Withdrawing of licences of contract archaeologists who produce incomplete or inadequate CRM reports.
Both SAHRA and SAHRIS have presented an opportunity for the general public and archaeologists to manage heritage information through the use of information technologies and online CRM reports.	1. Creating a sophisticated information management system integrating site name, site location, link to related CRM reports and publications, artefact storage information.

TABLE 3 (continued).

Commendations	Recommendations
	2. Improving the technical skills of officers to enable them to track and manage heritage destruction. Using information technologies such as SAHRIS integrated with GIS.
Wits Archaeology archives was able to establish a repository to collect and keep information and documentation.	1. Integration of the online database and paper-based CRM records by creating a records management system that creates consistency between SAHRIS and paper-based catalogues.
SAHRA has given provision for developers to identify heritage during construction of the development.	1. The NHRA (1999) should empower SAHRA heritage inspectors to monitor construction during development and on private property to restrict developers from intentionally destroying heritage. 2. Resolving contradictions between the NHRA (1999) and South African Constitution Bill of Rights (SACBR) Chapter 2 (1996). For example, Chapter 2 Section 14 of SACBR states that "Everyone has the right to privacy, which includes the right not to have (a) their person or home searched; (b) their property searched; (c) their possessions seized" (Ndlovu (2011: 39). This appears to contradict the NHRA 1999 which gives heritage officers the mandate to inspect and monitor development. 3. Introducing heritage inspectors to monitor construction projects by SAHRA. Stine (1992) suggests that construction projects have to be monitored by a heritage inspector so as to prevent the destruction of heritage without documentation during construction and clearing of land.

environmentalists, journalists and various experts, all working to sustain their livelihood (Mudzamatira, in press). The community revealed that before they were unlawfully removed from their land by the colonisers, they could practise agriculture on the fertile soil and could rear cattle. Thus, as is revealed in Mudzamatira (in press), this community expresses its opinions and sentiments towards the destruction of their SWS, and shows how SWS destruction has affected their livelihood and prospects.

CONCLUSION

Heritage management through CRM provides contract archaeologists with the opportunity to save heritage *in situ*, or by recording it. The effectiveness of heritage management can therefore be measured by the quality of work produced in terms of the accessibility and comprehensiveness of CRM reports. Due to the expansion of urbanism in the southern Gauteng Province since the 1960s, SWS have been under ongoing threat. I found that 248 SWS had been destroyed by development since 1961. Only 18 of these destroyed SWS had accessible records of CRM intervention, and most of these records were less than comprehensive. Proper information management, adherence to legislative procedures, and adequate field and laboratory documentation, are necessary to ameliorate this situation.

The use of GIS and remote sensing has become common in archaeology and heritage management in many parts of the world (Chase *et al*. 2011; Deroin *et al*. 2011; Giardino 2011; Casana *et al*. 2014; Agapiou, Alexakis *et al*. 2014; Agapiou, Lysandrou *et al*. 2015). Free and open source software is useful for routine archaeological work, including the recording of excavation data and cultural resources management (Costa 2010: 435). The use of spatial information technology is integral to how archaeologists collect, store, analyse, and represent information in digital formats (McCoy & Ladefoged 2009). The use of such spatial information technology is still in its infancy in the South African CRM sector, and its increased use in CRM should be encouraged, if not legislated. Studies by Sadr (2017) reveal the potential spatial information technology has to enhance accountability in CRM and to monitor developmental damage of heritage in South Africa.

As an exercise in hindsight, it is worth revisiting the recommendations that came out of the workshop by the National Monuments Council (NMC) in August 1994 at the University of Pretoria, on the future directions for heritage conservation. It is through the implementation of these recommendations that the National Heritage Resources Act of 1999 was legislated. A presentation by Ian Liebenberg at the Pretoria workshop suggested conservation of historical ruins at the provincial level to generate interest among local people (NMC 1994). However, it is essential to facilitate the enforcement of some recommendations through heritage institutions such as the Gauteng provincial heritage authorities.

In future, and as a sequel to my study, it will be of interest to assess the awareness and opinions of different stakeholders – the public, developers, local and national government authorities – about the rate of destruction of SWS in southern Gauteng Province, and what they would like to see being done about it.

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Chapter 4: Public Archaeology in Southern Gauteng Province, South Africa

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Contents

CHAPTER 4: PUBLIC ARCHAEOLOGY IN SOUTHERN GAUTENG PROVINCE, SOUTH AFRICA

Abstract

Community participation is an essential part of Cultural Resources Management (CRM). Public opinion and sentiments are vital for effective and inclusive heritage interpretation and presentation. I investigate public awareness of pre-colonial stone-walled structure (SWS) and their destruction in southern Gauteng Province. While the majority of the public is ignorant about the SWS, the descendants of the pre-colonial communities are acutely aware of them and their deliberate destruction. I discuss public opinions and sentiments about the SWS raised in the study, and show that heritage management can benefit from the participation of all stakeholders.

Keywords: Public, Stone-Walled Structures, Heritage Management, Awareness, Opinions.

Introduction

Pre-colonial Stone Walled Structures (SWS) are a common feature in southern Africa (Sadr, 2012). Most of the SWS date within the last 500 years. Great Zimbabwe is the best-known example of stone-built structures, many of which are believed to be designed to control settlement and movement of people and livestock (Sadr, 2012). The pre-colonial structures are an important heritage resource. In the absence of oral and written histories, they are all the evidence we have for how pre-colonial Africans organised their society, economy and daily life in these parts during the three or four centuries before the arrival of European settlers (Naidu, 2018). Close to urban areas, development has become an increasing threat to the stone-walled structures. Most of the SWS are not adequately recorded before they are destroyed (Mudzamatira, 2019).

I ask whether the public is aware of the existence of SWS, and if so, what their opinion is with regards to their destruction and in general about heritage management in the study area. This cultural heritage asset serves a multitude of user groups, including tourists, local community and other local residents, who value heritage assets for different reasons, with each group being attached in a different way (Lwoga, 2017; Masele, 2012; McKercher and du Cros, 2002). To set the context of the paper, a brief background on cultural and heritage management in South Africa, public and scholarly opinions, community identity, and colonisation concepts will be presented.

Cultural Resources Management (CRM) in South Africa is imperative before any development takes place. The National Heritage Resources Act (NHRA) 1999 Chapter II. 38 (3) (e) states that the responsible heritage resources authority must specify the information to be provided in the report, which must include “the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on

heritage resources". The legislation stipulates that enquiry of public opinion, sentiments and values are a necessary procedure before heritage destruction. However, it was important for this paper to evaluate public awareness and opinions with regards to SWS.

It is difficult to separate SWS from graves and also the landscape components such as rivers, animals, sound, intangible heritage, plants and people. These components define the heritage landscape of this paper. Ginzarly and Teller (2018) suggest that there is a need to unveil the different cultural values generated from the interaction between people and their environment to maintain the identity and integrity of communities. However, human activities in heritage landscapes determine the spiritual health of those landscapes (Sinamai, 2017). In this regard, sustainable development on African heritage sites is essential to giving local communities a sense of identity, religion and ownership to resolve conflict, promote indigenous knowledge systems and cultural tourism (Macheka, 2016; Ndoro, 2001).

Colonisation, through various activities, destroyed cultural landscapes. Introduction of new land uses destroyed both community identity and heritage sites. Colonial ideologies stripped away the identity and sense of belonging of African societies in South Africa with white settlers taking control of the land and displacing indigenous communities. In order to distort African heritage, the colonial regime also used heritage resources such as Great Zimbabwe to foster their settler identities by adopting the site's symbols (Sinamai, 2017; Fontein, 2006; Hall, 1905; Bent and Swan, 1896). This approach influenced the marginalisation of the public in heritage management, allowing only archaeologists as scientists to be the sole custodians of heritage. Therefore, most local communities across Africa were viewed as passive agents and not equal partners in heritage management (Chirikure and Pwiti, 2008; Macheka, 2016; Ndoro, 2001), and in some cases, they are viewed as "subjects" to archaeological research (Pikirayi and Schmidt, 2016).

Consequently, infrastructural, mining, waterbodies, road and powerline network developments of the southern Gauteng Province have over the years destroyed archaeological heritage, including SWS. In this regard, urban landscapes have defaced cultural landscapes with any documentation (Mudzamatira, 2019). Many African landscapes have faced this challenge in colonial and post-colonial eras. At Great Zimbabwe World Heritage Site in Zimbabwe, sacred mountains such as Ruvhure, Nyuni and Sviba are said to have been desecrated by the construction of air navigation, radio and telephone communication towers, silenced the voices and sounds (Sinamai, 2017: 6). Where lies the balance between the infrastructural needs of modern, technologically sophisticated societies and the preservation of traditional values and material remains such as SWS and their associated physical and spiritual landscape?

Over the years, international organisations have played a significant part in promoting the inclusion of local communities in heritage management. The United Nations Educational, Scientific, Cultural Organisation (UNESCO), was one of the first organisations to set up conventions in the 1950s to the 1970s which were aimed at the preservation and conservation of

heritage. The 1990s came with the introduction of sustainable development, with more concern being shifted to the effects of globalisation and industrialisation (Bushozi, 2014). One of the most vital declarations were set by the United Nations (UN) in 1992 which was concerned with environment and development in which local communities were given a vital role in heritage management and development projects because of their knowledge and traditional practices (United Nations, agenda 21of 1992). In 1998 the World Trade Organisation (WTO) and UNESCO introduced the need to involve communities in issues of sustainable development and recognise custodial communities as the rightful owners and managers of heritage. In recent years, scholars have urged UNESCO on a re-evaluation of heritage sites to incorporate indigenous perspectives in contrast to a Eurocentric one (Prosper, 2007; Stiefel, 2018). Other post-processional archaeologists have also advocated for the decolonisation of heritage management in different African countries (Pikirayi and Schmidt, 2016). In this light, communities should be involved in establishing goals, strategies, policies and protocols for the identification, conservation, management, presentation and interpretation of their heritage resources, cultural practices and contemporary cultural expressions (ICOMOS 1999, article 4.1). Therefore in this paper, I evaluate awareness and opinion to understand if heritage management in southern Gauteng enables stakeholder engagement.

My research questions focus on pre-colonial SWS in an area of over 9000 square km between Johannesburg and the Vaal River, in the southern part of Gauteng Province of South Africa (Figure 1). In view of the ongoing destruction of these heritage resources, it was necessary to ask about the awareness, opinions and sentiments of the public about the SWS in relation to heritage management in this area. This study is based on the notion suggested by Ghareeb (2016) that there is a need for facilitation of awareness and involvement of stakeholders and associated communities in the development and implementation of heritage management. It is the right of communities for their opinions and perspectives to be heard. Therefore, interpretation and presentation programmes should be open for public comment and involvement (ICOMOS 2008, principle.6).

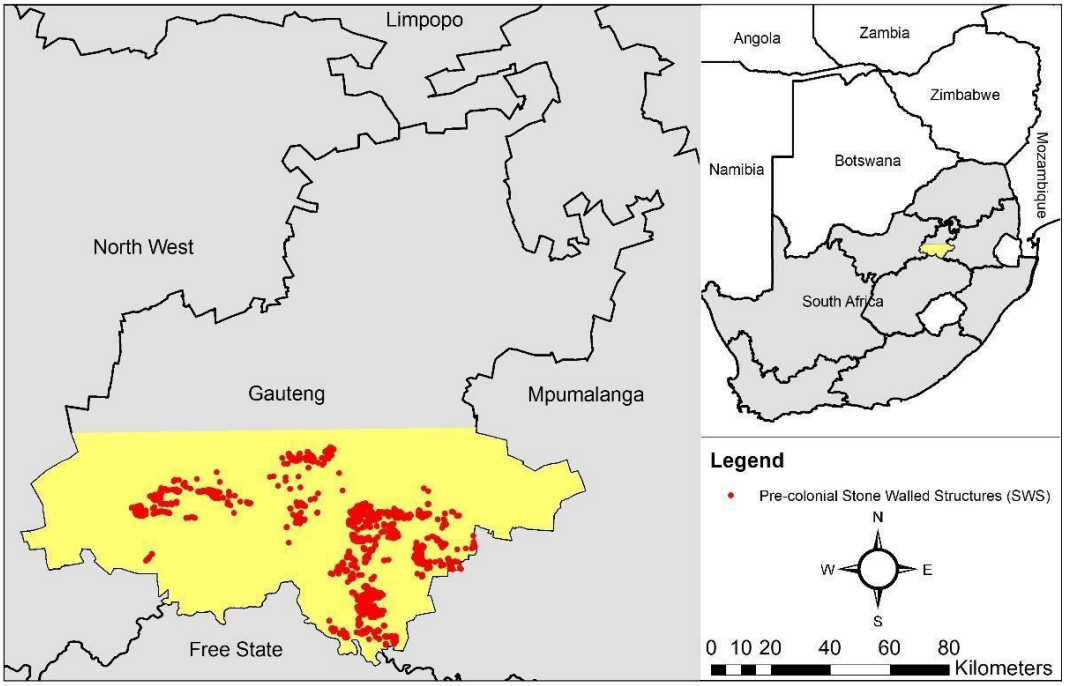


Figure 1. *Map showing the Southern Gauteng Stone Walled Sites (SGSWS) study area as a yellow polygon against the provincial map of South Africa.*

Materials and Methods

The choice of location was determined by the focus of previous work on the distribution and destruction of SWS (Mudzamatira, 2019; Naidu, 2018; Sadr, 2017). The interviewed participants in this study are categorised into two broad categories; general public and stakeholders who are in one way or another affiliated with the SWS in the southern Gauteng province. These include the custodial communities, residents, developers and heritage professionals in the study area. General public refers to university students, visitors to the reserves and Mall of the South.

I interviewed members of the general public using convenience and snowball sampling methods. The convenience sampling technique was used to choose among individuals available for interviews. Thereafter, the snowball sampling method was used to allow the preliminary study participants to recruit future subjects from among their acquaintances. An initial sample of 200 participants grew with snowballing to, a total of 262 participants at the end of the study.

I used one-on-one semi-structured interviews with professionals in heritage management. One-on-one semi-structured interviews allowed flexible re-ordering of the questions sequence, use of open-ended questions and enhanced in-depth feedback from experts. With respect to the custodial communities and university students, I relied on focus groups (FGs). FGs allowed me

to obtain detailed information about personal and group feelings, perceptions and opinions. FGs also save time and resources compared to individual interviews and provided me with a broader range of information. Visitors to the reserves and the Mall of the South were randomly stopped for quick semi-interviews. These interviews were targeted at various members of the general public, residents and stakeholders, as stated in Table 1.

In the interviews, open-ended questions solicited participants' knowledge of the pre-colonial stone-walled structures. Topics of discussions were (i) awareness of pre-colonial SWS existence (ii) awareness of destruction (iii) public participation in heritage management (iv) heritage significance (v) preservation, interpretation and presentation (vi) development and heritage management (vii) heritage legislation opinions (viii) role ascribed to custodial communities in the area, among other topics emanating from these discussions. After the data gathering process, the statistical and descriptive analysis was used in the description of numerical data that emerged. With regards to qualitative data thematic analysis was the strategy used.

All participants that took part in this research were above 18 years old with a mixture of races in all categories except the custodial communities who were predominantly black. With the assistance of a translator, interviews were conducted in Tswana, Zulu, Xhosa and English which are prominent languages in the study area. Lack of willingness to participate in the study resulted in a low number of heritage professionals compared to other categories of participants. In some organisations, professionals did not respond even after numerous attempts to interview them. Custodial communities, nature reserve visitors, students and residents produced a relatively large number of participants.

In terms of ethics requirements, I do not mention the specific names of the respondents without their permission. In instances where permission was not given for the use of actual names, pseudonyms were used to express the opinions that may result in a conflict of interest and may put respondents at risk. I used written and verbal consent forms to explain the potential risks of the research to participants before conducting research. Audio recordings were used after consent was obtained. These audio recordings will be discarded after the research in accordance with the ethics clearance specifications. Table 1 summarises the category, location, type of respondents and sample size.

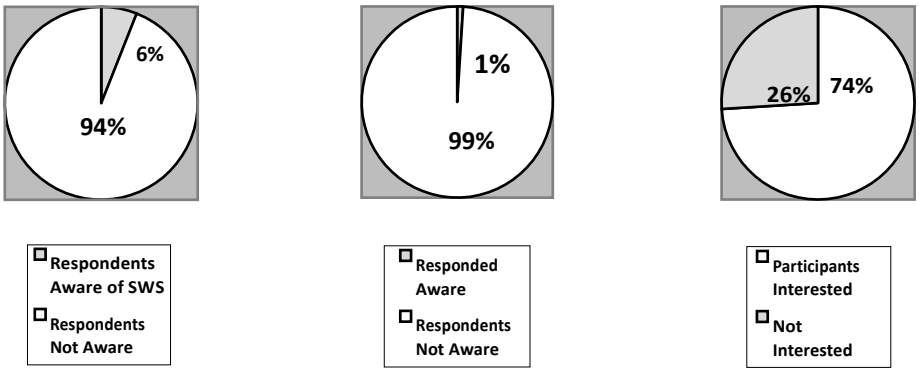
Category No.	Category	Name of Location/Description	Types of Respondents	Number of Respondents
1	VISITORS AND RESIDENTS	Mall of the South	Shoppers	90
			Security Guards	10
			Mall Management	2
		Klipriviersberg Nature Reserve	Visitors and Hikers	30
		Suikerbosrand Nature Reserve	Visitors/Cyclists/Hikers	30
2	HERITAGE PROFESSIONALS	Klipriviersberg Nature Reserve	Conservators	2
		Suikerbosrand Nature Reserve	Conservators/Heritage Manager	5

	AND CONSERVATORS	Gauteng Heritage Professionals	SAHRA	1
			Wits Academics	2
3	**CUSTODIAL COMMUNITIES**	Bakwena Ba Mare a Phogole	Elders	15
			Youth	20
			Committee	8
		Sotho Tswana of Suikerbosrand	People and Parks	2
		Thabela Thabeng	Batswana	3
4	**STUDENTS**	University of Witwatersrand	Students	33
		University of Johannesburg	Students	10

Table 1. *Categories, locations, types and samples of respondents in the study area.*

Results and Discussions Awareness of SWS

Figure 2 illustrates the response of participants in category 1; figure 3 illustrates category 2, figure 4 illustrates category 3, while figure 5 illustrates category 4. Figure 2a indicates that the majority of approached participants didn't seem to care about SWS and their interpretation; all they wanted was a good hike, a picnic, cycle, or just to hang out. Figure 2b shows the responses of participants interested in heritage management, as shown in Table 2.



2a) b) c)

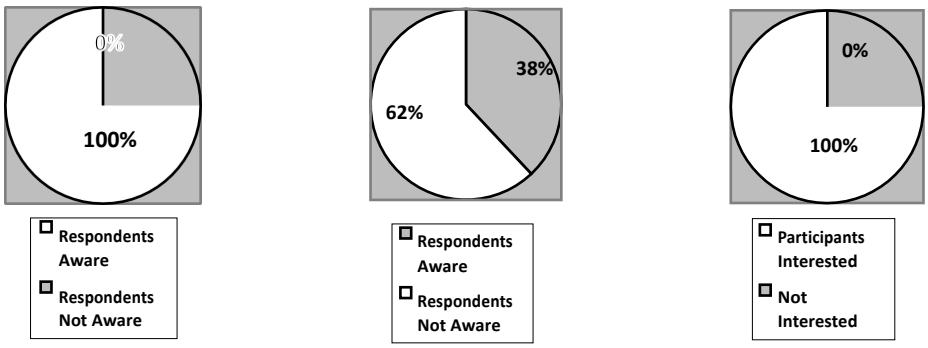
Figure 2. *Shows charts with results of Category 1 Residents and Visitors of Klipreviersberg and Suikerbosrand Nature Reserves (a) Awareness of the existence of SWS, (b) Awareness of SWS destruction, and (c) Interested in heritage management in southern Gauteng Province.*

Category Number	Category of Respondents	Total Number of Respondents	Awareness of SWS Existence	Awareness of Destruction	Need for Presentation and Education Initiatives
1	Reserve Visitors (Suikerbosrand and Klipriviersburg)/ Residents of southern Gauteng Province/Thabela Thabeng	162	10	2	120
2	Heritage Professionals/and Conservators	13	13	5	13
3	Custodial Communities	48	48	48	48
4	Students	43	43	2	43

Table 2. *Shows the total number of respondents, number/percentage of respondents to awareness of destruction and existence of SWS, and a number of those that need more education and awareness in SWS presentation*.

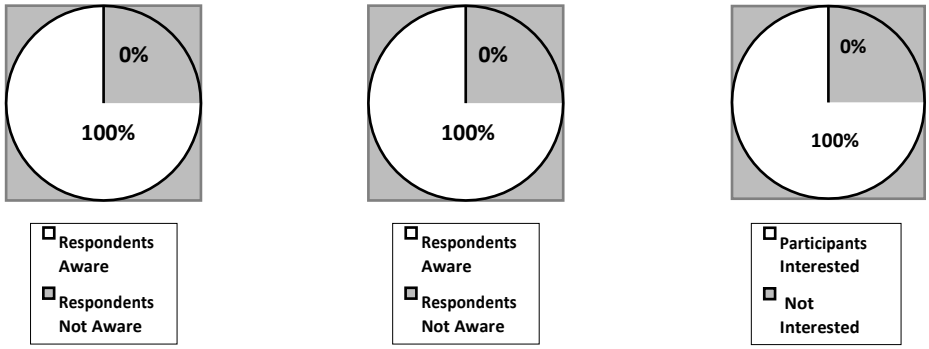
Those who were aware of this destruction were aware that development destroyed SWS without community consultation. The majority of this destruction was attributed to farmers and developers who destroy evidence for land claims. On the other hand, those aware of heritage destruction were not aware of the extent of the damage.

On both the nature reserves, efforts had been made to present information to the public about the heritage resources. At Suikerbosrand, a museum with detailed information on the Sotho-Tswana sites is available, but it seemed that most visitors were not generally interested because they wanted just to have a picnic or go cycling. The majority of the visitors that visited the reserve did not even seem to care or want to know more of the SWS that are in the area. Most presentation and detailed information were found to be on the Marais household, which was well preserved and frequently visited. One possible reason why the majority of visitors are not interested is the lack of a well-preserved SWS near the car park, readily accessible to the public (refer to Figure 2c). At Kliprivierberg, there was no SWS presentation. Most hikers did not seem to know or understand what they described as a “pile of stone” (SWS) they saw during their hikes. There is no heritage centre or museum. However, all visitors expressed their desire to see more presentation of SWS.



3a) b) c)

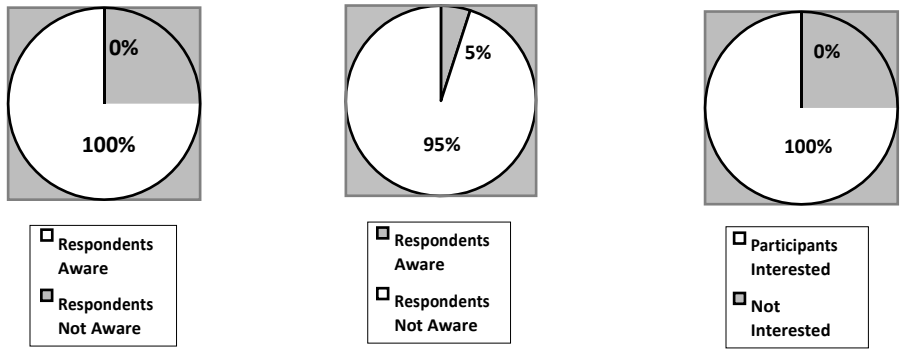
Figure 3. *Shows pie charts with results of Category 2, Heritage Professionals, (a) Awareness of the existence of SWS, (b) Awareness of SWS destruction, (c) Interest in heritage management in southern Gauteng Province.*



4a) b) c)

Figure 4. *Shows pie charts with results for Category 3, Custodial Communities, (a) Awareness of the existence of SWS, (b) Awareness of SWS destruction, (c) Interest in heritage management in southern Gauteng Province.*

For the general public, awareness plays a role in educating the public about the history of the Batswana. The fact that 74 per cent of reserve visitors and residents expressed their interest to learn more is a reflection of the need for more educational initiatives. At Suikerbosrand Nature Reserve, out of 60 visitors that were asked about their knowledge and understanding of the SWS in the reserve, only 15 participants were aware of the SWS and their use or remembered where they saw them. Most of the visitors indicated that they saw the SWS along the cheetah trail without any presentation provided on the site. At Klipriviersberg, out of 30 respondents I interviewed, only 5 visitors were aware of SWS but without any historical information. More presentation is likely to increase awareness.



5a) b) c)

Figure 5. *Shows results for Category 4, Students, (a) Awareness of the existence of SWS, (b) Awareness of SWS destruction, (c) Interest in heritage management in southern Gauteng Province.*

Awareness of Destruction

Members of the custodial communities were aware that their heritage was being destroyed. They mentioned farmers who had destroyed graves and SWS in order to conceal evidence for land claims. The Bakwena Ba Mare a Phogole also observed that most developers and contract archaeologists ignored the destruction of their heritage despite efforts made through the mediator, Mr Mosiane to stop the development of the area. Part of the recommendations made by the mediator to the Randburg Land Claims Court was,

"*to fully implement Bakwena Ba Mare A Phogole demands for protection and not to give roads access to more than 11 graves sites throughout the land claim area and heritage sites. Historical evidence of where our beloved ones lie in those graves and pre-colonial SWS which were affected by developments and the reasons why we were not consulted during developments on issues that have a negative impact on our clan is disturbing.*" (Jacob Ngakane pers. Comm, BE 04, Male, Mid-60s)

All focus groups of the Ba Phogole confirmed that a lot of their SWS, graves and churches were being destroyed without their consultation. Examples raised were SWS near Wessels church. The church was destroyed along with SWS during the time of Brother Seven and the Church of England: St Peters (Bakwena Ba Mare a Phogole elders pers.comm). Although most examples are not only SWS, this highlights the vast portion of heritage that the community is not consulted on before destruction. Bakwena Ba Mare a Phogole told stories they heard from their elders of developers and "government" destroying their SWS and graves. One elder narrated how their parents managed to stop the apartheid government from destroying their graves along the N1 road to Free State. The elder (BE 12, Female, Mid-80s) reiterated that their forefathers approached the "government" in Pretoria and convinced them to change the road plans, which

was successful. Ba Phogole were angered that, “if the apartheid government and heritage institutions could respect their heritage to divert the N1 road away from their heritage, why can't the current heritage institutions respect their heritage after apartheid” (BE 20, Male, Mid-70s).

Access and public archaeology

Many SWS in this study area are open to the public. Kliprivierberg Nature Reserve is open to the public for free whereas Suikerbosrand charges a fee for entrance to the reserve. However, all custodial communities at both reserves expressed that although they are given permission to enter their land, they feel that asking for permission disowns them from their property. A Gauteng Province Heritage officer observed that the custodial community of the Suikerbosrand is not comfortable with the arrangement of asking for permission to get access to their land. The officer added that the Batswana people are secretive of their burial sites and thus, the organisation has taken steps to avoid access to some of the SWS and graves to the visiting public.

Some organisations, such as the Mall of the South, should make their heritage resources accessible. A lot of SWS in this area are preserved despite some of them being destroyed to enable development (Huffman *et al*. 2006/7). None of the interviewed shoppers and employees at the mall were aware that there are SWS near the mall or there were SWS on the exact location where the mall is located. Access in the form of awareness generates an interest that fosters preservation and heritage education of the public. Most of the SWS at the Mall of the South are unknown, and most of the residents cannot recognise such heritage or know what to do with heritage if they discover it.

In most, if not all, privately owned properties such as farms, eco-estates, protected areas in southern Gauteng where SWS are present, no access has been granted to the public or custodial communities. Most of the farmers are more comfortable to give access to researchers and tourists rather than the custodial communities. The uncertainty of land claims and expropriation of land without compensation in South Africa poses a threat to farmers due to fear of losing their land. However, in lodge farms like Thabela Thabeng graves are fenced with no access to owners of the graves. In an interview with one of the tour guides at the crater, there was an emphasis by him that “the farmers in the area destroy any evidence such as graves that poses a threat to land claims on their farms” (CR 01, Male, Mid-30s).

To add, one community member of the Sotho at Suikerbosrand expressed that the difficulties in getting access to their land and graves demotivate them to take part in the initiatives of tourism and heritage management. At Kliprivierberg, although access is given to the public, there is not enough information on teaching the public about heritage or how to respect the land. Social activities seem to dominate, with the board of trustees being dominant in the decision making processes of the site. Therefore, information access and physical access are essential for community participation in southern Gauteng Province heritage management.

Community participation in heritage management

Johannesburg City Parks and Gauteng Provincial Office have made significant efforts to involve the custodial communities in the management of heritage in this area. Initiatives such as the People and Parks have been essential to incorporating communities in tourism and conservation at both Suikerbosrand and Klipriviersberg Nature Reserves. However, from my interviews with the Bakwena Ba Mare a Phogole and the Sotho Tswana, these initiatives were more centred on the biodiversity conservation and not heritage.

Most of the communities felt that education was needed on heritage and culture so that students and general public benefit from the rich heritage of their people. One of the conservators alluded that communities are essential to learn about tourism and heritage presentation. However, the colonial systems have stripped communities of that role. He further emphasised that it is only from the people that we can learn more about culture and what to present. An example is the Bakwena Ba Mare a Phogole who have made tremendous strides to organise cultural events on national heritage day of each year to teach and showcase their culture at Klipriviersberg Nature Reserve (KNR). This community has also collaborated with Wits Library Archives to document and store their oral history. In this regard, collaboration in educational initiatives plays a crucial role in heritage management by informing the public and learning from the public and, thus, should be better promoted.

Furthermore, most members of the public expressed their interest in participating in more heritage interpretation and participation. The Bakwena resent the lack of consultation by researchers on their heritage and history at KNR. From the Bakwena focus groups, most of the participants said that "we have encountered many researchers that come from various universities (local and abroad), mostly white, who come for research for CRM never consult us to hear our views on our heritage" (BG Group 1, Mixed Sexes, all Between 30-75). Another example was the concern raised on lack of consultation on re-building the Batswana hut in KNR. Elders of the Bakwena Ba Mare a Phogole reflected on the lack of respect of their traditional materials and architecture in constructing of the "hut". "We are always the last to know and sometimes never told or consulted in building of our own heritage, for example, that "hut" that was erected in on our landscape" (Mr Muekweng pers.comm 03 February 2018, BE 33, Female, Mid 60s). All custodial community members expressed that they feel marginalised to have a voice or power to control their heritage. "How do you hold so much power to marginalise us from our land, our graves and our heritage, our ancestors gave us that land" (Tshepo, pers.comm 02 March 2018, BY 04, Male, Mid 30s). Inclusiveness initiates effective heritage management that reduces conflict among stakeholders and needs to be facilitated in this highly contested context.

Heritage landscape

From the interviews, Bakwena Ba Mare a Phogole emphasised the need for "archaeologists not to separate the aspects of the landscape in defining what is heritage and what should be protected" (Tswambo, pers.comm 12 January 2018, BE 24, Male, Mid-50s). Elders of the clan said that sacredness and uniqueness of their landscape are interconnected, from land ownership, plants, animals, heritage sites and rivers among others. This view was also raised by Sinamai (2017), who reiterated that sacred birds like the Fish and Bateleur eagles, preserves not only the species but also the valuable soundscape they represent. He emphasised the need for scientists to see the connection between features of landscapes. According to Norton (2004), the environmental determinism theory also alludes that the physical environment largely determines the cultural landscape. Another example in Africa similar to this case study is of Somalia society which illustrates the relationship between artefacts and environment through indigenous knowledge systems (Mire, 2011). Somalis regard heritage as knowledge rather than artefacts. Their notion is that artefacts are a product of environmental adaption of people, thus, as long as the heritage knowledge is passed from generation to generation heritage will never be lost due to the reproduction of that knowledge using the materials from the environment. Therefore, separating heritage in some African traditions might give a wrong perception of what heritage means to them.

To add, the introduction of new foreign elements such as new owners of land, development and alien sounds distorts the authenticity of heritage spaces. Sinamai (2017) states that noise from cars and trucks, unfamiliar music and new uses of landscapes disturb the authentic environment for a landscape to be sacred. The Bakwena had been traumatised with the destruction of their pre-colonial SWS as it disturbed the traditional architectural facade of their landscape. Mire (2011) notes that for custodial communities to lose essential shrines and gravesites either desecrated or destroyed, they experience trauma. The elders of the Bakwena Ba Mare a Phogole expressed the distress of acquiring their land and how this has negatively affected their community for years. The elders expressed how the lack of rains in their area might have been caused by the desecration of the land.

Bakwena committee members outlined what Dippie (1982); Durham (1992) and Reynolds (1982) stated which is, most post-colonial governments such as in this case the African National Congress (ANC), disregard community engagement and abilities in managing cultural landscapes (Bakwena Elders per.comm, 24 June 2018, BGroup 4, Mixed sexes, all 50s-70s). The Phogole committee also highlighted that despite the constant delays and frustration by the Land Commission, they are well equipped to manage their landscape. They already set up developmental plan using vast skills they have among their tribe. Their development plan spans from tourism, infrastructural, cultural, mining, conservation to mention but a few (Bakwena Ba Mare a Phogole pers.comm, 24 May 2018). This, in my view, is a sign of competence and willingness to collaborate.

The sacredness of landscape is regarded as the ethos of African Society. Bakwena Ba Mare a

Phogole see the southern Gauteng as a landscape that is part of their sacred belief system. The community emphasised the need for rituals to grant permission for development to go ahead. This avoids the desecration of the landscape, resulting in good rainfalls and fertility of the land. Contract archaeologists' side-lining of communities in issues that affect their spiritual well-being is not proper heritage management and is illegal in terms of the NHRA Act of 1999. According to Sinamai (2017), ritual ceremonies that affect the whole community are usually done at sacred places. Therefore, destruction of sacred landscapes, which includes SWS, results in community disasters (Bakwena Ba Mare A Phogole elders pers.com; Sinamai, 2017).

Dialogue, Initiatives and Public

Dialogue between the public and heritage management officials is essential. Bakwena Ba Mare a Phogole were not aware of the extent of any of the developmental threats to SWS. Little has been done in the past to include custodial communities in the presentation and interpretation of the SWS in this case study. Although the NHRA 1999 Act stipulates the need for community consultation during CRM, this aspect of the legislation is often ignored. However, such failures have been blamed on budget constraints to implement legislation, educate and integrate the public in presentation and educational programmes in this case study.

Dialogue is essential for airing views from communities about their relationship to SWS and other heritage sites. Many archaeologists do not listen to or negotiate with indigenous people (Smith, 2004: 29). However, power dynamics disregards the communities on their rights to manage their heritage. All of the members of the public that I interviewed testified that they have never been informed of any of the developments in this case study. Lack of community consultation in CRM creates a lack of interest in the building of heritage infrastructure and archaeological research among community members (Mire, 2011). Lack of support and interests from communities increases heritage destruction through vandalism. Organised communities such as the Bakwena Ba Mare a Phogole have indigenous knowledge that can enhance heritage management through collaboration. Although there are efforts to engage the Bakwena Ba Mare a Phogole at KNR, the community complained of being undermined in vital decision-making processes.

The lack of inclusiveness in the presentation of heritage often creates conflict between communities and heritage managers. The Batswana hut in the Klipriviersburg Nature Reserve has been a subject of conflict between the Johannesburg City Park and the Bakwena Ba Mare a Phogole, with disgruntled community members expressing the lack of respectful consultation in presenting their heritage correctly. The community members state that the methods, materials and architectural structure of the hut do not represent their culture. The Batswana hut in Klipriveirsburg was built through consultation with archaeologists and uses materials such as cement and a thatching style that does not resonate with Bakwena Ba Mare a Phogole architecture.

Furthermore, there is a difference in how the archaeologists and custodial communities manage and perceive heritage which distorts dialogue. This approach has distorted how to approach initiatives and dialogue among the stakeholders. Colonial influences have contributed to what is regarded as heritage and dictated what was of importance and how it should be managed (Ndoro and Wijesuriya, 2015). At KNR, Bakwena Ba Mare a Phogole regard heritage as the whole landscape (Jacob Ngakane, pers.com, 21 May 2018), whereas archaeologists prioritise material culture. Perceptions of what is, or what should be heritage also differ depending on culture, especially in African traditions. Other African examples are the Somalian traditions which regard heritage as ancestors' activities in relation to their landscape, oral cultural history and poetry: where, how and why (Mire, 2011). The Somalian society holds no particular regard for material culture. Most African societies do not even acknowledge the subject "archaeology" or "heritage management", but somehow in their culture, they preserve some form of material culture through indigenous knowledge systems such as norms and taboos. Therefore, dialogue to engage all stakeholders enable efficient heritage management.

Education and Heritage management

The delivery of public education to the public about the archaeological heritage and through the history curriculum of South African schools has been a significant challenge over the years (Esterhuysen and Lane, 2013). Efforts in recent years are being made through the Department of Education to make consultations to create a curriculum that includes heritage. It is with this hope that the content of archaeology is included in the curriculum to educate primary and secondary students. The majority of University Archaeology students that I interviewed had no knowledge of archaeology or SWS before enrolment to study the subject at the university level. Gauteng university students also highlighted that the history curriculum of South Africa seems to have erased the Iron Age period, and South African history seems to be only about apartheid and human evolution.

To add, heritage professionals also highlighted that economic benefits such as tourism, have been the drive to prioritise what should be regarded as heritage, what is worth teaching and what is worth researching. The scientific approach to evaluating heritage and support of archaeological theories has indirectly contributed to the type of content which should be taught (Andrew Murray, pers.comm, 04 August 2018).

The decolonisation of education can be a useful tool to improve the inclusiveness of the education curriculum in South Africa. Smith (2004) states how education was used as a tool by colonial powers to eradicate indigenous languages, culture and heritage. This, however, has been the case for all colonised African, American and aboriginal societies. In South Africa, this facilitated erosion of indigenous traditions, thereby distorting their interpretation of their precolonial past. During my fieldwork, one of the Italian visitors at the Lascaux exhibition at Sci-Bono highlighted the lack of interest among South African people in issues of heritage due to lack of education. The interviewees expressed how Italian education has influenced the

consciousness of the public on the importance of heritage and how it should be protected (Mario Zara, pers.comm, 02 Sepetmber 2018). Therefore, the education curriculum needs to incorporate heritage to facilitate awareness of school pupils.

Colonialism and Heritage Management Legislation

Colonialism and the redistribution of land in Africa is one of the factors that resulted in the conflict between communities and heritage authorities in this case study. In southern Gauteng, the Bakwena Ba Mare a Phogole are in a land claim battle to get their land back (Land Claims Court of South Africa Case: LCC21/2007). Regardless of the fact that land claims are not the topic of this paper, it was hard to ignore how land grabs during the colonial and apartheid eras have affected heritage management. Colonisation throughout Africa included resettlement of African societies. This led to new legislation that prohibited the custodial communities from entering their previously owned landscapes, granting access to white settlers for the exploitation of the land and its natural, mineral resources and tourism, which has continued in post-colonial Africa (Chirikure *et al.* 2010; Hall, 1905; Schmidt, 2009). The Native Land Act of 1913 is an example of the legislation that displaced African South Africans from their native. This resulted in conflicts that are still existent to this today. Examples across Africa are at Kunduchi, Dar es Salaam, Tanzania, the Antiquities Division and private investors were at loggerheads with the local communities in making their sacred landscapes open to tourists. In Kalenga and Mlambalasi villages also in Tanzania, the Hehe community has been facing challenges as they have been sidelined in the management of heritage by the Antiquities division (Bushozi, 2014). Great Zimbabwe World Heritage Site in Zimbabwe has long been a focus of conflict between the National Museums and Monuments of Zimbabwe (NMMZ) and the Mugabe and Nemanwa communities. These communities feel sidelined in heritage management, and their cultural landscape is being desecrated by scientific methods (Fontein, 2006; Ndoro, 2005; Sinamai, 2017). In Somalia, the conflict has also arisen over the years were Somali society has been in conflict with the Garesa Museum together with the Somali government in the presentation, interpretation and over efforts to prevent the looting of artefacts in war conflicts in the area. Lack of decolonisation of legislation has resulted in these conflicts between communities and scientists that still haunts heritage management in southern Gauteng province today. In essence, the extension of colonial legislation has stimulated conflict between communities such as Bakwena Ba Mare a Phogole, Sotho Tswana communities and heritage authorities.

Similar legislation allowed the control and forceful removal of aboriginal groups in Australia and Native Americans in America (Smith, 2004) and of the Pedi and Shangani people out of the Kruger National Park in South Africa (Meskell, 2005). As was highlighted by Bakwena Ba Mare a Phogole, heritage is not only crucial in the negotiation of land claims but also for control and maintenance of community cohesion and identity, cultural expression and community continuity (Langford, 1983). For the Bakwena Ba Mare a Phogole, post-colonialism meant the redress of the land redistribution that forcefully displaced them.

African countries that were not colonised or were protectorates did not experience as much conflict over heritage management with communities. In Ethiopia and other West African countries where the policy of indirect rule was strong with the result that land expropriation was minimal, local communities were never disenfranchised from their heritage sites such as the Abomey Royal Palaces in Benin (Mumma, 2002). In southern African countries such as Zimbabwe and South Africa, much of the land that belonged to indigenous populations were converted into National Parks and commercial farming land, for example, around Khami ruins in Zimbabwe (Chirikure *et al*. 2010), Kruger National Park in South Africa (Meskell, 2005; 2006), and Kliprieversberg Nature Reserve and Suikerbosrand Nature Reserve in South Africa among others. Although the displacement of custodial led to difficulties in the identification of custodial indigenous populations in some particular cases, this is not the case with southern Gauteng Province communities. Klipriviersberg custodial communities such as the Bakwena a Mara a Phogole community have kept their culture from generation to generation to this day. It is with the benefit of heritage organisations to engage such communities to enhance heritage management.

Shifting of blame is one of the problems raised by all respondents. Heritage professionals outlined the need for updating the NHRA Act of 1999. They highlighted how outdated legislation hinders inclusive heritage management. Another opinion was that archaeologists blame the legislation, while communities blame the developers and government, thus, leaving no one to account for heritage destruction (Marcus Developments, pers.comm, 22 May 2018). The developers also blame the archaeologists for not showing them what needed to be done. One development consultant I interviewed highlighted that failure by heritage specialists to create awareness and provide information means that developers can not protect what they did not know. The developer also went on to indicate that at a particular development in the south of Johannesburg, a contract archaeologist did not see SWS and graves on the construction site during CRM. The developer later discovered residues of destroyed heritage and graves. The developer further indicated that "contract archaeologists are afraid to lose jobs; that is why they would rather ignore the damage of heritage sites" (DV 02, Male, Mid-50s). These concerns were previously raised by Chirikure (2013) and Ndlovu (2011). Contract archaeologists, on the other hand, blame legislation as the cause of why heritage is destroyed through development. However, the lack of interest and participation in this study reflect the attitude of archaeologists towards heritage management. A key finding to emerge from this study is that shifting of blame over responsibility for heritage destruction is common in the study area.

Furthermore, the National Heritage Resources Act (NHRA) of 1999 in South Africa still gives sole control of the management of heritage to the South African Heritage Resources Agency (SAHRA), Provincial Heritage Authorities and Municipal Heritage Authorities (Ndlovu, 2011). Most opinions of heritage professionals seemed to dodge controversial questions and were not comfortable addressing this question. NHRA also grades the sites according to the values scientists (archaeologists) ascribe and do not include the religious value that communities might have. This has inserted economic perspectives through tourism fostering destruction of less aesthetic heritage without proper recording. Although efforts have been made under NHRA 1999

Chapter II 38 (3) (e) which emphasizes on the need for the contract archaeologists to produce evidence of community heritage destruction, no effort has been made to enforce such legislation in southern Gauteng Province (Mudzamatira, 2019). Therefore, without a decolonised and community inclusive legislation, heritage management becomes counter-productive.

Identity and Heritage Management

Colonialism entailed strategies to control indigenous people by changing their perceptions of religion and culture, thus, disregarding the indigenous views that controlled their own lives. Racism through archaeological scientific explanations was used as an instrument to justify colonial superiority (Cattirs *et al.* 2018). Heritage legislation was an instrument to guide these ideas resulting is devastating social consequences. Efforts to change legislation were made in the post-colonial era, but with minimal progress towards incorporating community heritage management. In interviews with the Bakwena Ba Mare a Phogole, they raised concern over their right to control their identity and heritage. They reiterated that their heritage is scientifically presented and interpreted disregarding the maker. Example are the names of Kliprivierberg Nature Reserve which does not resonate with their culture, the change of name of Thaba Yaba Batswana lodge to Thaba Eco-Estate and Klip River formally known as Thithe River among others. Youth members of the tribe emotionally expressed themselves on this topic, saying, "imagine going to a Baptist church or your home and destroying a people's religion and identity, is that fair?" (BGroup 3, Mixed sexes, Mid-20s to Mid-30s). Other respondents asked, "what then is freedom and independence if there are still the same laws and restrictions that limit their freedom of identity and control of their heritage" (BGroup 5, Females, Late 20s to Mid 30s).

Consequently, the identification of indigenous people as primitive and heritage management as a "white" discipline was justified superiority complex of heritage institutions fuelled the need they had to remove people from their land and for cultural assimilation (Ndoro and Wijesuriya, 2015; Smith, 2004). Colonialists regarded the land as vacant and perceived the indigenous cultural practices as eroded and changed following the depredations of colonisation; thus, no real indigenous communities of Africans, Native Americans or Aboriginal Australians existed anymore (Dippie, 1982; Reynolds, 1982). This topic resonated in most of the discussions I had on how the Bakwena Ba Mare a Phogole felt side-lined in the management of the SWS. The community highlighted the arrogance they face in claiming their land has been intentionally frustrated in their efforts prove their identity over the years, yet the historical, archaeological and oral evidence is available to prove their ownership of the land.

Providing evidence for land claims has resulted in heritage becoming a target of intentional destruction by developers and farmers (Thando Ndlovu, pers.comm, 09 October 2018). Bakwena highlighted that legislation is set up in a way to frustrate their claim. Although most elders of their community passed away without getting their land back, their community structure is still well organised through their indigenous knowledge system and their effort to research and

promote research.

Interpretation of SWS has caused custodial communities to lose interest in archaeology and heritage in southern Gauteng (Riphilwe Makhado, pers.comm, 22 September 2018). The purpose and function of SWS in southern Africa have been the subject of discussion in both the archaeological and historical literature (Beach, 1980, 1994; Huffman, 1981; 1996). Some scholars suggest the use of SWS for religious purposes (Connah, 2001; Garlake, 1973; Manyanga *et al.* 2010; Thornton, 2018), other scholars suggested the Central Cattle Pattern (CCP) (Huffman, 2007), while others suggest residence and urbanism (Manyanga *et al.* 2010; Pikirayi, 2013; Sinclair *et al.* 2010). However, in this study area, most custodial communities argued the lack of respect by some scholars who studied southern Gauteng Province resulting in misinterpretation of the use of their SWS as mere stone kraals has played a part in the ascription of scientific values to SWS. Opinions by Robert Thornton (pers.comm, 02 September 2018) also suggested that the current anthropological set up of rural African settlements does not suggest the use of SWS for cattle settlement. He argues that the hills and hilltops in Zimbabwe (Ziwa) and South Africa reveal constant evident that refute cattle settlement suggesting a religious approach (Thorntorn, 2018). He suggested that circular SWS in relation to the present-day African religions and apostolic sects today reflect the same architectural element. Circular architecture in African religion connotes a way of protection against evil spirits (Robert Thornton, pers.comm, 02 September 2018). Although these conclusions can be challenged with a lot of scientific evidence, I courage further ethnographic research to discuss these conclusions. Therefore, all these opinions and sentiments need further research to engage custodial communities on how they utilised their SWS.

The religious significance of landscape is an identity aspect reflected in SWS, caves and mountains (Bakwena Elders, pers.comm, 14 August 2018). An example of such a place is Thaba Ya Monong, a site next to Walkerville, a cave called Banku cave, where previously they would go and hear voices of people talking, beating wheat and grinding. At this cave, their forefathers used to go and leave food for their ancestors. Thaba Ya Ntate is now the cave they still go to for rainmaking ceremonies, which entail the preparation of unfermented and un-drained sorghum beer. However, the community emphasised that all these mountains and caves are within the landscape were their architectural heritage (SWS) exist. However, for the Bakwena, each cultural landscape is an identity that entails ancestral consultation through rituals for ancestors to approve new land uses. However, reasons for the preservation of SWS can be part of Africa religion is part of their identity.

Recommendations and Conclusion

Awareness and education in heritage management are essential in the preservation of heritage. Heritage preservation in the southern Gauteng Province is essential because the growth of development poses a severe threat to SWS in the area (Naidu, 2018). Pieter Grobler, the heritage

manager of Suikerbosrand indicated, “people, cannot protect what they do not know or have information about” (HO 02, Male, Late 50s). Changing the heritage education curriculum, presentation methods and promoting initiatives such as People and Parks are initiatives that promote awareness among the public. The archaeological profession should take a more responsible role to foster an archaeologically-informed public (Ascher, 1960; Davis, 1978; Fagan, 1984). Although most of the programs are already in place for the presentation and preservation of nature, more work can be done for heritage.

The government should continue to fast-track its efforts at including archaeology into the history curriculum, especially the Iron Age. This will promote interest and awareness among pupils. Although ideas and interest were evident among the participants, most institutions such as the Gauteng Provincial Department have budget constraints resulting in financial priority being given to protecting bio-diversity. However, public support is vital for archaeologists to acquire funding through lobbying the government and private sector to recognise the importance of heritage in their budgets (Pokotylo and Guppy, 1999). Bakwena youth highlighted their interest to start such an initiative through legislators.

Heritage presentation can be enhanced through inclusive interpretation and presentation of heritage sites. Researchers are encouraged to consult and conduct more ethnoarchaeology to understand heritage values from community perspectives fully. To generate more presentation and awareness methods, archaeologists should take advantage of information technologies and information dissemination tools such as social media platforms and using geographic information systems to enhance heritage management, in an ever-evolving environment linking people and values (Howard, 2003). These methods will foster awareness for preservation in southern Gauteng Province.

Community awareness creates positive feedback for heritage management. The lack of interest by participants at public locations in my study area is evidence that there was a lack of dialogue, education and awareness among the public. It is essential to incorporate communities into heritage management to ensure that various interests are recognised and protected, at the same time inclusive activities that allow community participation as a strategy to raise awareness and continuity of traditional architecture, heritage and culture (Martínez *et al.* 2017; Chirikure *et al.* 2010). Chirikure *et al.* (2010) further notes that communities and the public are the consumers of heritage; they give data and receive feedback from the scientific community. Therefore, a collaboration between stakeholders in heritage management is essential to create community participation policies as suggested by the participatory development theory (Lwoga, 2017).

Opinions and sentiments on the SWS in this study area stressed the effects of colonisation on land rights and values ascribed to landscape and legislation on heritage management. Most heritage management challenges are complex and interwoven; thus, to resolve these challenges, heritage management needs a comprehensive approach to understand these dynamics. The decolonisation of heritage management and legislation are among the solutions that effect positive change (Pikirayi and Schmidt, 2016). This can be achieved by including the public

values in heritage management by fostering the implementation of NHRA 1999 Chapter II 38 (3) (e) (Mudzamatira, 2019). In essence, contract archaeologists and heritage institutions are encouraged to implement legislation in a proactive manner (Ndlovu, 2011).

Another recommendation is to update NHRA 1999 to give custodial communities heritage management rights to present and interpret their past and to monitor development that is a threat to heritage. Heritage managers and archaeologists have been accused of being unwilling to share power with the public and descendant communities, thus, seeing them only as passive agents and disregarding their role in preservation and conservation (Chirikure and Pwiti, 2008; Bushozi, 2014; Ndoro and Wijesuriya, 2015, Pikirayi and Schmidt, 2016). Colonial legacy through legislation continually prejudices the rights of local communities to own their culture; a process that has dissolved the symbolic bond between inherited resources and the perception of local people (Bushozi, 2014). This institutionalised scientific approach has necessitated and dictated the pace of heritage management in most African countries to this day.

Furthermore, the identification of custodial communities as primitives justified colonisation and the special treatment they received, in particular, the removal of people from their land and various attempts made by the colonial government at cultural assimilation (Smith, 2004: 18). This notion played a significant role in setting up colonial legislation that would also disregard indigenous values and deny people access to their heritage sites. However, heritage is a value-based concept that relies on the power dynamics that exist in the present moment; thus, re-evaluation of values is essential (Chipangura, 2016; Steifel, 2018). In most African countries, post-colonial heritage legislation did not change, hereby, fostering scientific heritage management and alienating the markers of the heritage. In this sense, my research discovered this divide embedded deeply with regards to why archaeologists never consult the public on values they place on SWS and their values on landscapes.

Addressing land claims as a heritage conservation threat is another recommendation to which this study alludes. Community conflicts over heritage often place heritage at the risk of vandalism. Examples of this conflict are seen at Kruger National Park, which is affiliated to the Venda, Shangani and Pedi (Meskell, 2005). This has resulted in disputes about land rights, community identity, and failure to identify an absolute custodial community of the Mapungubwe heritage site. Southern Gauteng Province is no exception, were the Bakwena Ba Mare a Phogole are affiliated to the Klipriviersberg Nature Reserve, with land claims dragging both stakeholders to court since 1998. Therefore, addressing these land claims will avoid conflict and cultural erosion.

Consequently, it is through land rights and heritage that communities identify themselves. Community identity and sense of belonging have negatively affected African societies emotionally and spiritually over the years. Identity creates an understanding of the value of heritage to the locals (Moshenska and Dhanjal, 2011). Community identity through SWS has played a role in southern African countries. An example is from Zimbabwe, where the name of the country has been derived from the Great Zimbabwe National Monument (Sinamai, 2017).

This, in essence, has set a precedent for how communities perceive heritage such as SWS for them to take part in heritage management. Therefore, recognition of community identities will assist heritage management in this case study.

The use of recommendations by international heritage organisations such as the United Nations Scientific, Cultural Organisation (UNESCO) among others can urge heritage organisations in different countries to be inclusive of local communities (Buhozi, 2014). Bushozi highlights the efforts by the conventions such as the 1992 Rio Declaration of Environment and Development, and the 1998 World Bank Agenda to encourage heritage institutions to recognise and take advantage of indigenous knowledge systems in heritage management. Therefore, SAHRA can improve the heritage management of southern Gauteng by considering UNESCO guidelines.

In conclusion, this research has identified that there has been a lack of research in public archaeology and community consultation in heritage management in southern Gauteng Province. Mudzamatira (2019) highlighted that there was no evidence suggesting community consultation in this area. More can be done on the existing initiatives such as People and Parks to include public participation, opinions and sentiments to heritage management. Archaeological research in this area also needs to consider the input of the public formulating an informative heritage presentation and preservation. Lopez-Guzman *et al.* (2018) discovered that there is a high level of visitor satisfaction if new information and communication technologies are utilised. Such initiatives can attract the interest of the public. Heritage management without the inclusion of stakeholders creates a scientific understanding of heritage presentation and interpretation, which often ignores other perspectives. However, collaboration is vital. In the future, collaborative systems could be developed in this study area using different theories to formulate heritage management that involves the opinions of various stakeholders. Furthermore, more research can be done to study the relationship between archaeology and land claims in the context of post-colonial governments and power dynamics that influence heritage.

Notes on contributor

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Chapter 5: Heritage Awareness and Education in the Southern Gauteng Province, South Africa.

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Contents

Chapter 10
Heritage Awareness and Education in the Southern Gauteng Province, South Africa

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ABSTRACT

Heritage awareness and education in Africa is vital to heritage management. The knowledge of pre-colonial Stone Walled Structures (SWS) and Iron Age is an important element of South African history. Without awareness and education of both heritage managers and heritage stakeholders, SWS are at risk of destruction from development. This chapter reviews awareness and information dissemination techniques that can make people more aware of SWS in southern Gauteng Province. The results of the author's study revealed there are international best practices such as the use of information centres, education, and information technology tools that can apply in this study area.

INTRODUCTION

Many pre-colonial stone-walled structures (SWS) in the area between Johannesburg and the Vaal River are under threat by development (Sadr, 2017). Southern Gauteng Province (case study) is located in South Africa, with Johannesburg being part of the case study (Figure 1). These SWS were built by ancestors of today's Batswana between the fifteenth and the mid-nineteenth century AD (Hall, 2012; Loubser, 1985; Pelser, 2003; Taylor, 1979). The Late Iron Age ruins are a valuable source of information about conditions here before written historical records (Sadr, 2017: p.1). The preservation of heritage sites is also important for tourism, aesthetic values, enhancing a location's sense of place, educational and scientific purposes (Graham, Ashworth, & Tunbridge, 2000; Timothy & Nyaupane, 2009). So, what should be done about the threatened ruins?

Through awareness, heritage conservation and preservation can be attained(Shankar& Swamy, 2013). The significance of heritage preservation is based on the values that are ascribed to tangible heritage (Graham *et al*. 2000), and intangible heritage (Ndoro, 2001; Ndlovu, 2011). However, to preserve these

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values, initiatives to promote awareness and education of heritage are necessary. Nyaupane and Timothy (2010), reveals a gap of heritage research on awareness all over the World, with a few exceptions of Yan and Morrison's (2007) study of visitors' awareness of a site's World Heritage status in China. Poria, Butler & Airey (2003) evaluated heritage tourists based on their awareness of, and motivations for, visiting historical sites in Israel. Nyaupane & Timothy (2010) studied heritage awareness of tangible heritage and buildings in Arizona, United States. Shankar and Swamy (2013) suggested heritage awareness strategies for heritage sites in Mysore City, India and Mudzamatira (forthcoming) who researched public opinions and awareness of pre-colonial stone-walled structures in the southern Gauteng Province. This chapter suggests strategies that may assist in improving this gap.

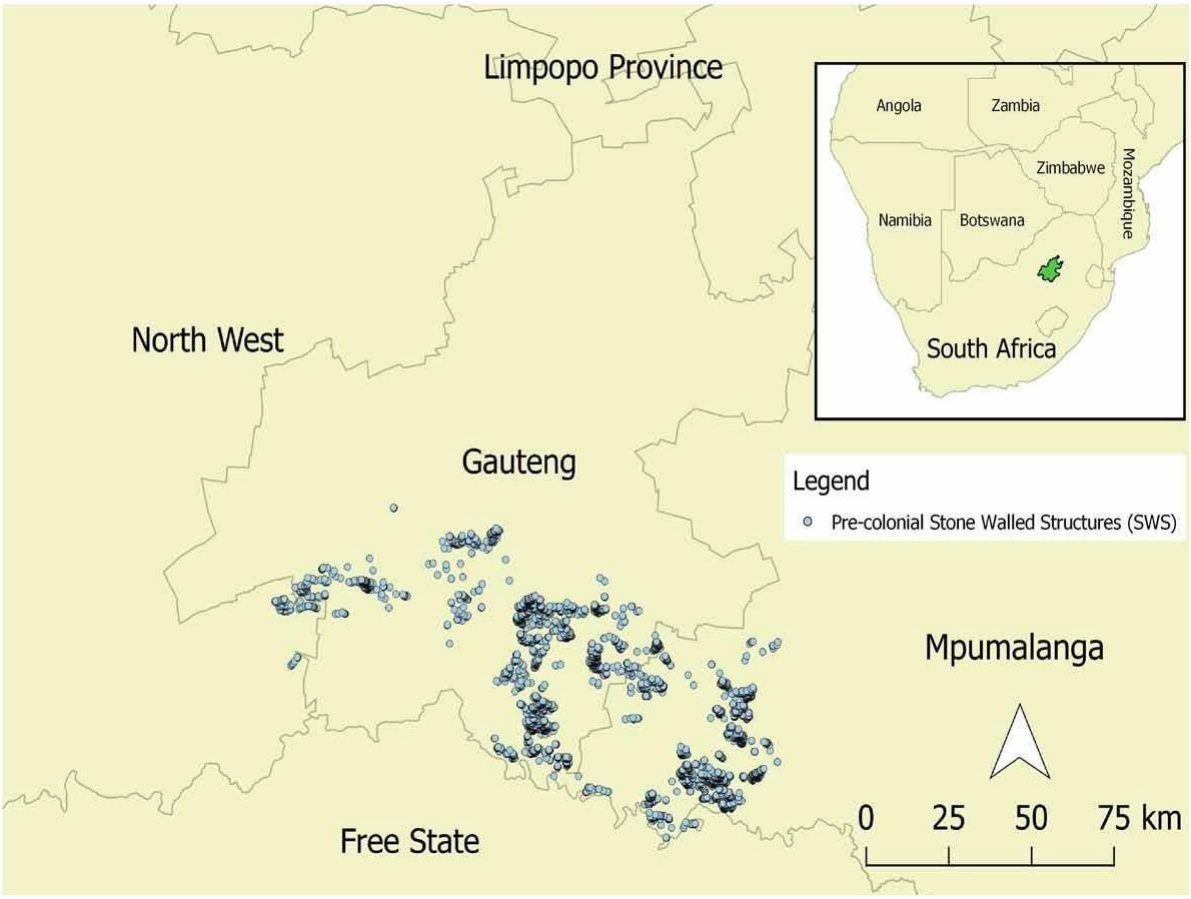
To add, international organisations such as United Nations Education Science and Cultural Organisation (UNESCO) rely on the global awareness of World Heritage Sites to foster heritage conservation and preservation through educational and informative efforts (Kuijper, 2003). These efforts range from using Information and Communication Technologies (ICTs) for the dissemination of information, educational projects of awareness and education. Therefore, to understand the importance of awareness on heritage preservation, I give an international example is highlighted below.

There are lots of heritage sites lost due to lack of public awareness (Nyaupane & Timothy, 2010). Historic buildings and heritage sites in Chicago were once prone to developmental threat. These sites were destroyed due to a lack of public awareness, and failure of the public to lobby against the development of an Olympic village as part of a bid for the 2016 Olympic games campaign (Nyaupane & Timothy, 2010). Many journalists and academics attested that there was not enough public outcry to lobby against development that threatened the 1880s historic building complex in Chicago (Becker, 2009; Timothy & Nyaupane, 2009). Due to this public outcry, the development was stopped. Without effective communication between communities, heritage practitioners and other stakeholders, heritage sites are at risk of developmental destruction. Therefore, this chapter will suggest strategies that can improve awareness of SWS in this case study.

Furthermore, the key concept of heritage awareness in this chapter is defined by separating heritage and awareness. Heritage has two aspects, tangible and intangible. Tangible refers to historic buildings, monuments, architectural remnants, and sites. Intangible heritage refers to philosophies, traditions, values, ceremonies, music, dance, and oral histories (Nuryanti, 1996). Awareness is defined as having the knowledge or cognisance of one's environment (Tuan, 2001), which can be formed and influenced by an individual's experiences. Education is a form of awareness that is used in academic institutions (Nyaupane & Timothy, 2010). Heritage awareness in this paper includes the awareness of the existence of SWS and awareness of the destruction of SWS.

This chapter focuses on awareness of SWS and awareness of developmental damage. The threat of development to SWS in the study area can be traced back to the population growth of Johannesburg, which enabled infrastructural development (Mudzamatira, in-press). The growth of Johannesburg followed the discovery of gold deposits in 1886 (Mubiwa & Annegarn, 2013: p.7), thus, influencing the migration of workers for mining. To supply goods and services for this migrating population, other industries were prone to increase their capacities. Suburbs expanded north and south of Johannesburg (Harrison & Zack, 2012: p.564). According to the City of Johannesburg Records in 1967, the population of Johannesburg was 1.3 million people, and the city covered nearly 246 square kilometres. Today, the population of Johannesburg is estimated to be 4.4 million, with an area of over 1600 square kilometres (Statistics South Africa [STATSSA], 2016). From the 1960s onwards development such as mining, transport networks, and power lines have damaged or destroyed SWS (Mudzamatira, in-press).

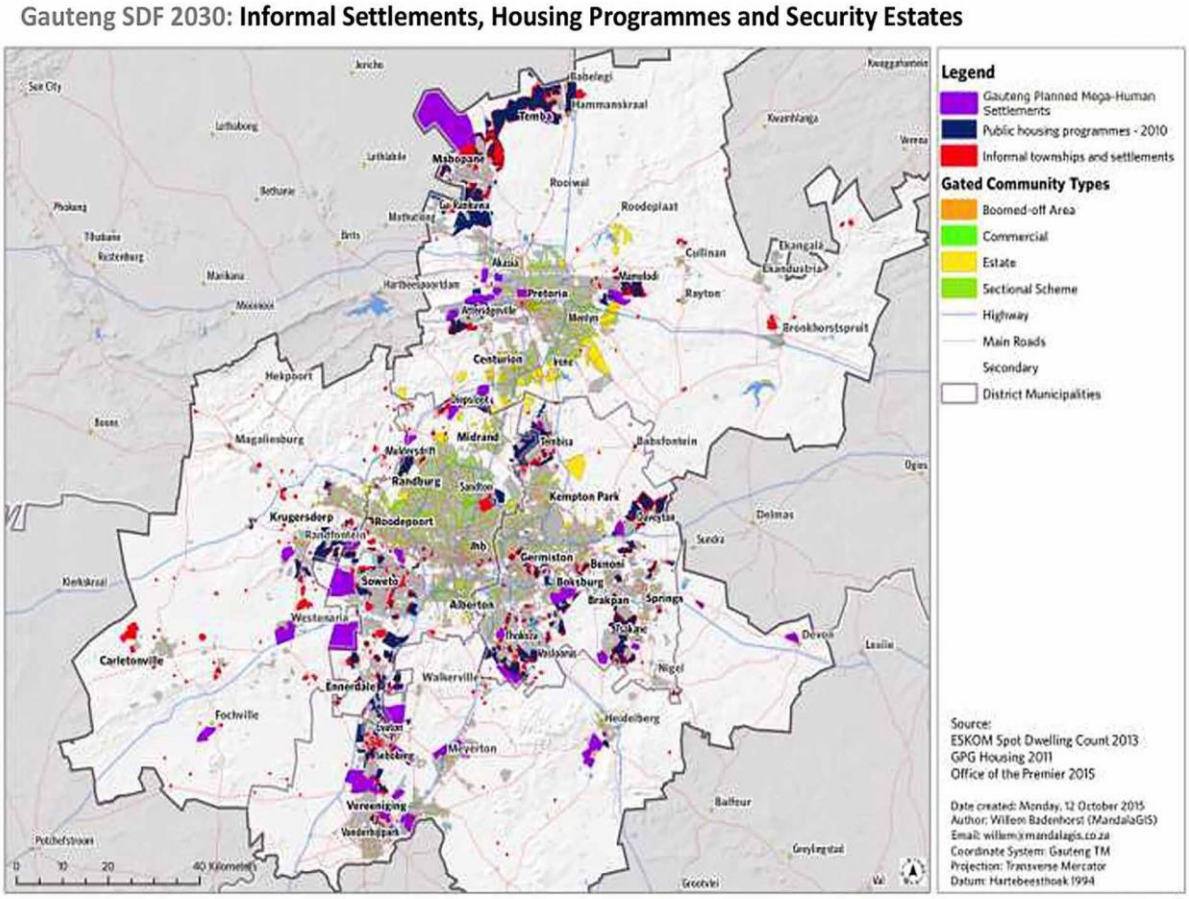
Figure 1. Shows Study Area Map southern Gauteng Province and Pre-colonial Stone Walled Structures



There was limited monitoring of this development to assess the possible impact on heritage sites. The Gauteng Province Office of the Premier (GPOP) 2016, for example, created the Gauteng Spatial Development Framework (GSDF) 2030 that predicted the population growth of the province to rise from 13 200 300 in 2015 to 18 702 844 in 2030 (Figure 2). The planning provision has set out a conservation plan by assessing the possible impact of developmental growth to natural resources. This provision enables the province to manage the infrastructural system to withstand the future growth in housing, water supply, power networks, and transport networks among others (Gauteng Province Office of the Premier [GPOP], 2016). The provincial policy provisions of this framework highlight only the need to protect natural resources such as green energy, agricultural land, environmentally sensitive areas, water resources and climate (GPOP, 2016). However, the framework fails to recognise how cultural heritage site (e.g. SWS) in the province are in dire need of protection against the increasing development.

To add, South Africa is not the only African country with threatened heritage. In Kenya, population growth has destroyed old buildings and movable heritage (Deisser & Njuguna, 2016). War and development in northern Africa and the Middle East have wreaked havoc on heritage sites (Bewley, 2017). Governments in poorer countries tend to support development rather than conservation and prioritise

Figure 2. Shows the proposed development Gauteng Map of the Gauteng Spatial Development Framework 2030 (by Gauteng Provincial Government Office of the Premier, 2016: p.41)



basic survival over cultural heritage (Irandu & Shah, 2016: 170). Therefore, developmental planning, government policy and colonial history can all become determining factors to the survival of heritage.

To further understand the context of the case study and its stakeholders, it is crucial to understand heritage management in former imperial colonies. In most African countries, including South Africa, colonisation has played a role in depriving the custodial communities with information on the existence and destruction of heritage (Ndoro & Wijesuriya 2015; Ndoro 2009). Often, local communities were not seen as relevant to heritage management (Garlake, 1982; Pwiti, 1994, 1997). Heritage education was scientific and still detaches itself from communities. Heritage presentations often exclude input or participation of custodial communities and the public. Post-colonial governments in Africa encouraged archaeological research along with the expansion of museums and the development of monuments as centres of education (Pwiti, 1997: p.82). However, despite these efforts, heritage awareness and education are still poor in the southern Gauteng Province (Mudzamatira, forthcoming).

Consequently, there is evidence that suggests the disjunction between the heritage profession and communities over heritage management. Examples are case studies such as Great Zimbabwe in Zimbabwe.

Ndoro (2001) outlines that heritage managers identify the SWS as a heritage site while communities affiliated with the SWS such as the Mugabe and Nemanwa regard the site as a shrine. Meskell (2005) highlights how heritage presentation and interpretation of heritage in the Kruger National Parks in South Africa fails to relate to community views of the heritage sites such as Thulamela. With the knowledge of these complex factors and dynamics in heritage management in Africa, this chapter is aimed to suggest effective communication strategies of archaeology applicable to southern Gauteng Province, South Africa.

Many scholars have blamed lack of awareness as one of the contributing factors to the lack of effective heritage management (Aas, Ladkin & Fletcher, 2005; Marc, Serageldin, & Taboroff, 1994; Shankar & Swamy, 2013). As one heritage officer at Suikerbosrand Nature Reserve, South Africa said "you cannot protect what you do not know" (Mudzamatira, forthcoming). Heritage awareness creates positive attitudes towards heritage preservation (Carter, 1994; Light, 1995; Tilden, 1977). The majority of the public in southern Gauteng Province are not aware of the damage to the SWS. The lack of awareness-raising initiatives, dialogue and education with local communities hinders sustainable development, which is essential for heritage management (Mire, 2011: p.17). However, awareness can be an instrument to alarm communities into taking action against the destruction of heritage (Cismaru, Lavack, Hadjistavropoulos & Dorsch, 2008; Rogers, 1975).

The International Council on Monuments and Site (ICOMOS) 1998 recognizes cultural heritage as a human right that should be respected as one's cultural identity within the human family; the right to better understand one's heritage and that of others; the right to appropriate use of heritage; the right to participate in decisions affecting heritage and the cultural values it embodies; and the right to form associations for the promotion of cultural heritage (Kyule, 2016: p.34).

All these rights can only be safeguarded through awareness and education. Therefore, awareness strategies suggested in this chapter can protect values ascribed to archaeological sites.

In this chapter, the community refers to the residents and custodial communities that reside in the southern Gauteng province, South Africa and various stakeholders affiliated with the concerned SWS. Manesti (nd) describes the term local community, from South African perspectives as a group of people who constitute a community at local levels or grass-root levels of government. In this case, these include residents, university students, visitors to Klipviersburg and Suikerbosrand Nature Reserves who are near the SWS. The public in this case study is characterised by residents of the southern Johannesburg area, mainly those that reside in suburbs, informal settlements, low-income housing and farming communities surrounding nature reserves.

The Bakwena Mare a Phogole are among the Tswana speaking people that are believed to be the builders of the SWS in the case area (Breutz, 1956). The Bakwena Ba Mare a Phogole are believed to be descendants of the Kwena-Hurutshe who arrived in South Africa between 1300 and 1400 (Breutz, 1956:168). Phatlane (2019) adds that this tribe split into smaller groups such as the Bakwena ba Mogopa and Bakwena ba Mare a Phogole. Archaeological evidence of the existence of the Bakwena in the case study are the SWS and artefacts that were excavated in the area. Mudzamatira (forthcoming) highlights some of the opinions and sentiments on SWS from this custodial community.

However, the study area has been subject to a land claim from the Bakwena ba Mare a Phogole since 1995 to date (Khumalo 2019, Phatlane 2019, Mudzamatira, forthcoming). The land claim has resulted in the community using archaeological evidence such as SWS and graves to prove their ownership and settlement in the area (Phatlane 2019). The community states their exclusion in heritage ownership,

presentation and interpretation. According to Mudzamatira (forthcoming), most of the Bakwena ba Mare a Phogole community members are disgruntled by their further exclusion from most of the heritage management activities and awareness of their heritage. The community expressed their vast knowledge to improve heritage management, awareness and education.

However, this study aimed to find the best strategies to raise awareness and educate the public to reduce destruction and encourage the preservation of pre-colonial stone-walled structures in thesouthern half of the Gauteng Province. The rationale for the study is the social value of cultural heritage that promotes gatherings, solidarity, community identity, appreciation of historical values and group affiliations (Freeman, 1984; Mason, 2002; Serageldin, 2008; Hassan, 2008).

MATERIALS AND METHODS

The author reviews international best practice on heritage awareness and education. The aim is to formulate practical strategies that can be employed to promote heritage awareness in southern Gauteng Province. This builds on previous studies where the author assessed the nature and rate of damage and destruction to the stone-walled structures in the southern Gauteng over the past half a century. It also follows on an extensive interview project wherein the opinions of the stakeholders--such as the general public, custodial communities, government employees and developers—on possible solutions for the threatened heritage resources were gathered.

PREVIOUS AND CURRENT PRACTICES

The Wits University archaeologist Revil Mason is one of the pioneers in creating heritage awareness in Gauteng Province. His research provided much raw material for exhibitions dealing with pre-colonial stone-walled structures. Mason's efforts to reconstruct and present heritage is evident at Klipriviersberg Nature Reserve (KNR), Suikerbosrand Nature Reserve (SNR), Museum Africa and Melville Kopje. At KNR, Mason assisted in the reconstruction of the Batswana Hut in 2000 for the Global Sustainability Summit. Mason in (1986) wrote an educational book (Origins of African People of the Johannesburg Area) as a way to use education in creating heritage awareness although many schools did not purchase the book (Esterhuysen & Lane, 2013). For Museum Africa, he assisted in the exhibition that displays the Batswana Hut and SWS, with information boards and posters explaining the period, type of sites, and displaying the artefacts. At SNR Mason also provided the artefacts for the museum and assisted in the reconstruction of a SWS for presentation purposes. With the assistance of Prof. Esterhuysen, other presentation features at Melville Kopjes included posters on how Batswana settlements looked like.

At SNR, a well-designed and maintained museum and reconstructed homestead inform the public about the first European settler, J.G Marais, in that area. The Reserve's heritage officer, Mr Pieter Grobler in 1992, created an exhibition to showcase the pre-colonial artefacts that had been excavated by Mason at one of the ancient ruins within the reserve's boundary. This effort saw the collaboration of the University of Witwatersrand and SNR Museum in the loaning of some of the artefacts from the Mason collection. An SWS along the Cheetah trail at SNR was cleared for presentation. The efforts by Grobler and Mason have done much to raise awareness of pre-colonial SWS at Suikerbosrand, and their work is highly commendable.

In Alberton, Huffmanand Lathy(1997) conducted a project through the Department of Urban Planning of the Alberton Town Council and Van Riet and Louw Landscape Architects to create an educational, tourism and recreation centre at the Meyersdale Kopjes. This project was initiated after a recommendation to excavate and clear some of the SWS for interpretation, education, and tourism (Huffman & Lathy, 1997). Such initiatives, as highlighted in Huffman and Lathy's (1997) proposal, suggests another form of awareness that can be useful in the southern Gauteng Province. They suggested that local community members familiar with the reconstruction of stone walls should bring their traditional skills to bear and even train guides. Unfortunately, the project did not receive support. The stone walls were partially reconstructed, and although the site is accessible to the public and managed by the Ekhuruleni Municipality, there are no information boards or pamphlets and the guard at the gate has no information about the ruins. Few visitors go there, and the ruins are not maintained, so much of it is covered by vegetation, and the visitors would probably not even see it.

Although the efforts of collaboration between museums and universities in South Africa had been initiated (Esterhuysen, 2012), the lack of museums or interpretive centres at SWS heritage sites is one of the reasons why heritage awareness is poor in the study area. Most of the museums in the study area that house most of the artefacts are located far from the SWS themselves. The SNR Museum, Origins Museum at University of Witwatersrand and Museum Africain Newtown Johannesburgdisplayexcavated artefacts from SWS in the southern Gauteng. But most excavated artefacts are housed in the collections storerooms at the University of Witwatersrand and are not accessible to the public. The displayed pre- colonial material attracts few visitors.

Politics in South Africa has influenced both positively and negatively on heritage awareness and education. Boswell and O'Kane (2011: p.361) state that, in post-colonial South Africa, there is a concern to develop and maintain sites of archaeological significance for political purposes. These complexities often pose a danger to South African history as politics has conflicting agendas (Esterhuysen, 2006), as the political and socio-economic situation in the country determines acceptance and education of archaeology in the country (Esterhuysen, 2000). Before South Africa's independence, history and archaeology were used by the Apartheid Government to justify the actions and values of white supremacy to indoctrinate Asian, Black and Coloured people to conform (Esterhuysen, 2000). In the Nelson Mandela era (1994-1998), heritage was perceived as inclusive, and all aspects of cultures were considered to be relevant and important. The African National Congress (ANC) Education policy mandated the need for education in South Africa to be inclusive, from ideas of segregation of the Apartheid Government (The African National Congress [ANC], 1994: p.10-11). The major problem encountered in this period was that most heritage initiatives overshadowed African heritage while promoting colonial heritage. University students noted that the educational curriculum of history in South Africa seemed to have erased and forgotten that there was life and heritage before apartheid (Mudzamatira, forthcoming). The Thabo Mbeki era (1999-2008) coincided with Pan-Africanism and African renaissance (Esterhuysen, 2012; Ndlovu-Gatsheni, 2007). The African National Congress (ANC) cadres highlighted that young people didn't know much about their heritage; thus, they were losing their identity (Chisholm, 2005). This facilitated the funding of most heritage awareness projects in South Africa, such as the "Legacy Project". Archaeology was introduced into the history curriculum that had been fostered by the Minister of Education at the time, Kadar Asmal.

Between 2009-2017 the Jacob Zuma era was pro-development and 2012 saw the removal of archaeology from the history curriculum (CAPS). Big industry ideas in this era influenced education and awareness, creating academic capitalism and the corporate university (Hamilakis, 2004: p.289). This

phase also saw the rise of contract archaeologists, as a rewarding profession in support of development, a job that benefits the economy and not archaeology (Esterhuysen, 2006: p.131). The Cyril Ramaphossa era since 2017 has created a platform where archaeology is now being considered again to come back into the curriculum. A team was set up by the Ministry of Education in South Africa, which includes Prof. Amanda Esterhuysen and Siphiso Ndlovu, among others. However, politics create incoherent and inconsistent education policies that hinder the development and dissemination of heritage information. At the end of the day, political complexities are the reason why most heritage awareness initiatives have not been successful.

HERITAGE AWARENESS THROUGH EDUCATION

Terminology plays a significant role in how the public perceives heritage. Archaeological experts in heritage education, such as Prof. Esterhuysen urge the use of new terminologies to allow for transformation (Esterhuysen, 2006). She argues that current terminologies were used by the apartheid government to create barriers that alienate the general public from history and archaeology. Esterhuysen (2006) explains how some of the misconceptions from the apartheid era remain unchallenged. Terms like Iron Ages create a barrier because they are unfamiliar terms to African populations. Therefore, transformation in terminology can improve heritage awareness in the southern Gauteng Province.

To add, museums have played a significant role in heritage education in Africa. At many heritage sites in South Africa, Zimbabwe and Somalia, for example, museums encourage awareness of heritage. Museum presentation plays a key role. Only two local museums (Suikerbosrand Nature Reserve and Museum Africa) present the material culture associated with SWS. Not much has been presented on the SWS themselves to promote awareness for the visiting public (Mudzamatira, forthcoming). There is a need for collaboration between museums, schools and tertiary educational institutions who provide the archaeological knowledge that can enhance heritage awareness (Cohen, Marquet, & Pathy-Barker, 2006; Colley, 2004; Moe, Coleman, Fink, & Krejs, 2002;).

The use of academic education as a tool of awareness can play a significant role in heritage management in southern Gauteng Province. Studies have shown that archaeology education plays a significant part in raising heritage awareness and appreciation of the historical and archaeological contributions made by all South Africans (Esterhuysen, 2000: p.162). UNESCO Article 14 (2005) states the importance of educational, awareness-raising and information programmes, aimed at the general public, and in particular young people (Hufner, 2009). It is in childhood that the foundations of education are laid from which a lifelong engagement with archaeology and heritage is most likely to emerge (Esterhuysien & Lane, 2013: p.239). Mire (2011) mentions the role of indigenous knowledge systems as a useful awareness and education technique to societies in Somali society. Despite the effectiveness of museums, which is strongly encouraged here, the "knowledge centred approach" is another approach that can assist in heritage awareness and education (Mire, 2011: p.78). Therefore, through academic education, awareness can be achieved.

Indigenous knowledge systems are another form of education that promotes heritage awareness. The Somali culture entails the learning of how the traditional material culture of the people engages with their environment. Indigenous knowledge systems of the Somali culture teaches its people how to adapt to the harsh environments. Awareness in this sense encourages the generational knowledge that promotes and documents heritage against the risk of political, natural disaster and looting of cultural

heritage in Somalia (Mire, 2011). Cultural heritage education holds great potential for encouraging better participation and innovation in learning (Abdelazim Ahmed & Ünlü, 2016: p.2). Education through curriculum change of subjects like history and anthropology can assist heritage institutions in encouraging indigenous knowledge systems. Such techniques can be effective in promoting heritage preservation in southern Gauteng Province.

Student archaeologists in Gauteng lacked knowledge of SWS before they started their degree program (Mudzamatira, forthcoming). This has been a common trend in most African countries, as highlighted by Esterhuysen and Lane (2013). Intensifying the relationship between family and school is the best solution to shape children's cultural awareness and behaviour (Binh, 2012; Fox, 1944; Stone, 1994). It is also a good way to encourage public support for the conservation of the material traces of the past (Esterhuysen & Lane, 2013). Creating educational programmes is a technique that can be used in creating awareness of SWS and awareness of their destruction.

An example is the Local Education and Safeguarding Programme in Somalia where the department of Antiquities staff is acquiring basic knowledge of the significance, protection, and preservation of cultural heritage (Mire, 2011: p.84), and use trained staff to educate locals on heritage management. This programme entails courses that encourage the government staff to give a heritage landscape tour to the public and local people. The program entails the employment of local people to safeguard archaeological sites and enrol locals and staff in capacity building programs. Community presentations of their heritage also enable discussions on collaborative techniques and acknowledging the ownership of heritage to the custodial communities. This reduces conflict and encourages a collaborative approach to heritage management. The motive of this program is to create awareness through programs that engage the public in all aspects of heritage management. Some of these methods can be useful in the southern Gauteng to create awareness among the public.

Heritage training is one of the most useful strategies for heritage awareness that can benefit both heritage professionals and communities in southern Gauteng Province. It entails outreach programs to create a dialogue among stakeholders and education of heritage preservation and presentation. Training can be in the form of conferences, leadership training courses, volunteer coordination courses, workshops, heritage days, festivals, etc. (Kadlec, 1997; Shankar & Swamy, 2013). Heritage training for the Allegheny Heritage Development Corporation in south-western Pennsylvania has achieved more grassroots support and provides communities with jobs that will expand the heritage community's base (Kadlec, 1997: p.6). Kadlec (1997) further notes the usefulness of training to increase awareness of heritage.

Another example is the Society for American Archaeology, which has developed an educator's series of lesson plans aimed at different grades for school teachers and runs periodic professional development workshops for teachers, to teach archaeology (Bender & Smith, 2000). In Fiji, the Ministry of Women established a programme to revitalise traditional handicrafts, ceremonial mat making, and weaving catalysed by the UNESCO World Craft Council meeting held in Suva (Techere, 2011: p.330).

Similarly, in the southern Gauteng Province, the Bakwena Ba Mare a Phogole community has tried to use heritage days to help awareness and education of heritage in their community. However, heritage organisations such as Johannesburg City Parks, South African Heritage Resources Agency (SAHRA) and universities can contribute more and participate in such programs to increase heritage awareness. An example is an approach to heritage education in Europe through the realisation that there is a need to support schools and universities to develop consciousness about the cultural heritage (European Commission Office of Cooperation EuropeAid, 2007).

UNESCO Article 14 (b) (2003) states that awareness through education creates an opportunity for heritage professionals to inform the public of the dangers that threaten the survival of heritage. The more people who know about the heritage, the more the chances that heritage can be protected and validated. Creating initiatives such as 'heritage ambassadors' encourages local residents of all professions to assist in directing tourists and assisting research (Kadlec, 1997). Cultural heritage collections are central toa person's understanding of history and can help one form a better sense of self, preserving the identity and transmitting heritage from one generation to the other (Mannon, 2010: p.17). The implementation of such suggestions on the awareness of heritage in the southern Gauteng Province will be useful.

AWARENESS THROUGH ETHNOGRAPHY

Ethnographic studies may provide helpful adjuncts to curriculums designed to promote cultural awareness and deeper understanding of familiar surroundings (Krall & Gitlin, 1982: p.360). In essence, the concepts of awareness through ethnography entail a cognitive, cultural approach of reliving cultural scenes to educate and make people aware. This approach can be useful in schools or among social groups as a way to encourage people to understand the heritage of the Batswana culture about their SWS. Insofar as it encourages participation and interaction, it is an approach that is particularly well suited to young learners.

UNESCO in 1993 started an initiative to encourage communities to teach and pass down their knowledge and skills to the next generation. Bouchenaki (2003) states that Japan formulated a policy for the protection of "Living National Treasures" whose system was designed to enable tradition holders to pass their know-how on to future generations. Ethnographic approaches such as these can be used by heritage and government to encourage the Bakwena Ba Mare a Phogole of southern Gauteng to educate and create awareness in the study area.

AWARENESS THROUGH MEDIA

In Africa, the use of documentaries and educational TV programs to promote heritage awareness and education is common. In South Africa, the Sowetan TV has made educational programs through EduSpace which profiled and showcased archaeology as a discipline in South Africa. Such programs can be used for SWS awareness in the future. In Somalia, Somaliland TV produced two programmes on the significance of heritage and archaeology, which were broadcasted on two television channels (National STV and Boorama TV) during October and December 2007 (Mire, 2011: p.85). The programs had been initiated to raise awareness, research, and preservation of heritage resources and archaeological remains. The Somalian TV programmes raised awareness of the threats that heritage in the country faces, such as illicit digging and looting of artefacts. The community was educated on the reasons why they should take part in preservation.

International networks can be useful in creating awareness of heritage and its destruction. Examples of television networks such as National Geo Wild, British Broadcasting Corporation (BBC) and Cable News Network (CNN) can be used to encourage the public (local and international) to preserve heritage. Other examples of television heritage awareness were done by Prof. Esterhuysen on ETV on 23 September (Heritage Day) 2018. The program outlined awareness of the need for archaeology in South Africa to be transformed to allow in-depth analysis of historical events. A recent local and international

media blitz--in print, television, and radio--on the newly discovered pre-colonial city of Kwenengnear Johannesburg was aimed to promote interest in archaeology among Africans and South Africans. Its success remains to be judged in the next few years.

A particularly useful and cost-effective heritage awareness tool is Radio. In South Africa, there are radio shows on SAfm's Saturday magazine show. This program promotes archaeology and heritage in general. However, radio can be used to raise awareness of the destruction of SWS and educate on the pros and cons of preserving this heritage. Radio easily reaches people in remote areas so it can cover the ground that other media cannot.

AWARENESS THROUGH CONSERVATION ASSOCIATIONS

Effort has been made in the southern Gauteng province to use conservation association initiatives to educate the public. However, such initiatives are meagre, and they have not been effective for SWS awareness in the area (Mudzamatira, forthcoming). Initiatives such as People and Parks in both Klipriviersberg and Suikerbosrand Nature Reserves are good programs that try to engage the local communities to engage in the management of nature reserves. However, these initiatives tend to focus predominantly on bio-diversity and fail to mobilise custodial communities in managing heritage such as SWS in the areas.

Lack of infrastructure and resources is a perennial problem. The purpose of museums is to provide the display, storage, public education and activity centres (Mire, 2011). Building interpretive and education centres near the SWS would help. Such centres can create a platform for custodial communities to showcase their indigenous knowledge. An example is women in Somalia who record and present their skills and knowledge at the Sanaang Cultural Education Center in Somalia (Mire, 2011). Raising funds for such institutions is a major challenge.

DOCUMENTATION AND INFORMATION TECHNOLOGIES

Recording heritage sites mitigates the threat of heritage destruction to set up inventories. New technologies enhance presentation, interpretation and access to heritage resources (Kulezs, 2016: p. 4). Technologies such as Geographic Information Systems (GIS) can be used by facility managers and city planners to record historic buildings (Warden, 2009). Use of open-source software and open data empowers communities, resulting in a new participatory approach to heritage management (Kulezs, 2016: p.12). Online social networks can be a valuable tool for disseminating information about threatened heritage resources. These days, foregoing new technologies can limit the effectiveness of heritage management initiatives.

The digital revolution has transformed all aspects of life (Warden, 2009). Computing innovation enhances archaeology, with software developments in structural, material analysis and GIS being some of the heritage preservation technologies used (Warden, 2009: p.5). Open source GIS software such as Quantum Geographic Information Systems (QGIS) has been used to assess the damage done to SWS in the southern Gauteng Province (Mudzamatira, in-press; Naidu, 2018; Sadr, 2017). Use of technologies such as LiDAR at heritage sites such as Molokwane (North West Province) and Kweneng (Gauteng Province) has helped us to reconsider the scale of urbanisation in the pre-colonial past. These new technologies are useful to raise awareness of heritage resources as they appeal to many of the younger members of the general public.

To document and create awareness of destruction, the Endangered Archaeology in the Middle East and North Africa (EAMENA project has been an exemplary project. It records endangered archaeology in North Africa and the Middle East using satellite imagery, including the freely available Google Earth platform. It is crucial to recognise that the destruction of cultural heritage in areas of conflict and natural disaster is a humanitarian emergency (Mire, 2011).

Information technologies have played a crucial and cost-effective role in assessing the damage and documenting heritage. They greatly help to formulate new heritage management strategies, including awareness and education. Freely available open-source software such as Google Earth and QGIS, among others, can play a significant role in heritage documentation and awareness.

AWARENESS THROUGH THE WEB AND SOCIAL MEDIA

The use of websites to promote the awareness of heritage sites is useful. UNESCO seminar on tourism and information technologies in 2017 highlighted the role that information technologies such as web- sites play in the awareness of tourists about heritage sites. This technique can be useful in the southern Gauteng to promote the awareness of the existence of SWS and awareness of the threat of development to these SWS. An example of such a website is Cahokia Mounds State Historic Site, Illinois (https:// cahokiamounds.org/visit/). The website presents the public with detailed information on the type and features of the world heritage site. It also gives information on the events, news and planning your visit. This website enables the public to see the location, direction and satellite images of the heritage sites. This type of precise reference encourages developers and visitors to be aware of the heritage and sensitive areas.

Kulezs (2016: p.20) states that digital tools can be clear allies in promoting the participation of civil society and raising awareness. This is enabled by the ability of social platforms to create awareness and connect people. In Latin America and Spain, social platforms such as Facebook, Twitter, YouTube and websites like Taringa have become powerful platforms for cultural exchange (Kulezs, 2016). An example of this success is Mexico's Secretariat of Culture, which has a Twitter account that has 1.5 million followers (Kulezs, 2016). Having the ability to have such a number of followers can ensure dialogue and communication on heritage management issues in the area. Although SNR has a Facebook page, its concentration is on the bio-diversity, ignoring the vast cultural heritage of the nature reserve.

UNESCO has tried to encourage heritage organisations in different countries to use Information Communication Technologies (ICTs) to improve heritage awareness. An example of such initiatives is the 8th seminar of UNESCO on tourism and Information Technologies (6-7 December 2017). This seminar looked at digital technologies servicing tourist experiences and World Heritage Sites, Web analytics and Big Data. This seminar discussed various concepts such as adopting social networks, blogs, 3D animations, virtual environments, among others https://whc.unesco.org/en/events/1418/. South African heritage organisations such as the South African Heritage Resources Authority (SAHRA) and Johannesburg City Parks could participate to learn more about raising heritage awareness.

AWARENESS THROUGH GOOGLE MAPS

Google Earth and Google Maps are digital platforms that can be used for heritage awareness. A local example is the Credo Mutwa Cultural Village in Soweto, many photographs of which have been uploaded to these platforms. Another local example is Lucian James, a fellow student at the University of Witwatersrand, who raised awareness of SWS in the Klipriviersberg Nature Reserve (KNR) by using Google Maps and Google galleries. For one to be a contributor, one needs to be a Google account holder and must have visited the place in question. The Google account uses the locational information provided by the user guide either to rate, alter information or to highlight business hours. However, the location in question should be tagged into the Google Earth or Maps for this to be possible.

However, when locational data is enabled on your device or smartphone, Google will automatically send a prompt message informing the user that they can contribute images as they arrive at different areas of interest. For example, Google can send a notification as shown in Figure 3. It makes the user aware that they can contribute images or reviews, and there is no limit to the number of contributions a user can make. The more you contribute, the more points you earn as a local guide.

For the KNR, Lucien's Google did not prompt him to upload images of the SWS or KNR because the management of KNR did not enable such settings on their Google Earth or Maps location settings. However, because Lucien had geotagged photographs and the location of his mobile device was turned on, as soon as he arrived at the SWS, he could upload the images he took on maps. An example is the SWS he uploaded are located at 26°17'4" S and 28°1'23" E (Site 1), 26°17' 3" S and 28°1'29" E (Site 2). These images are continuously visible on Google Maps via Google search of KNR. The following are links to the images:

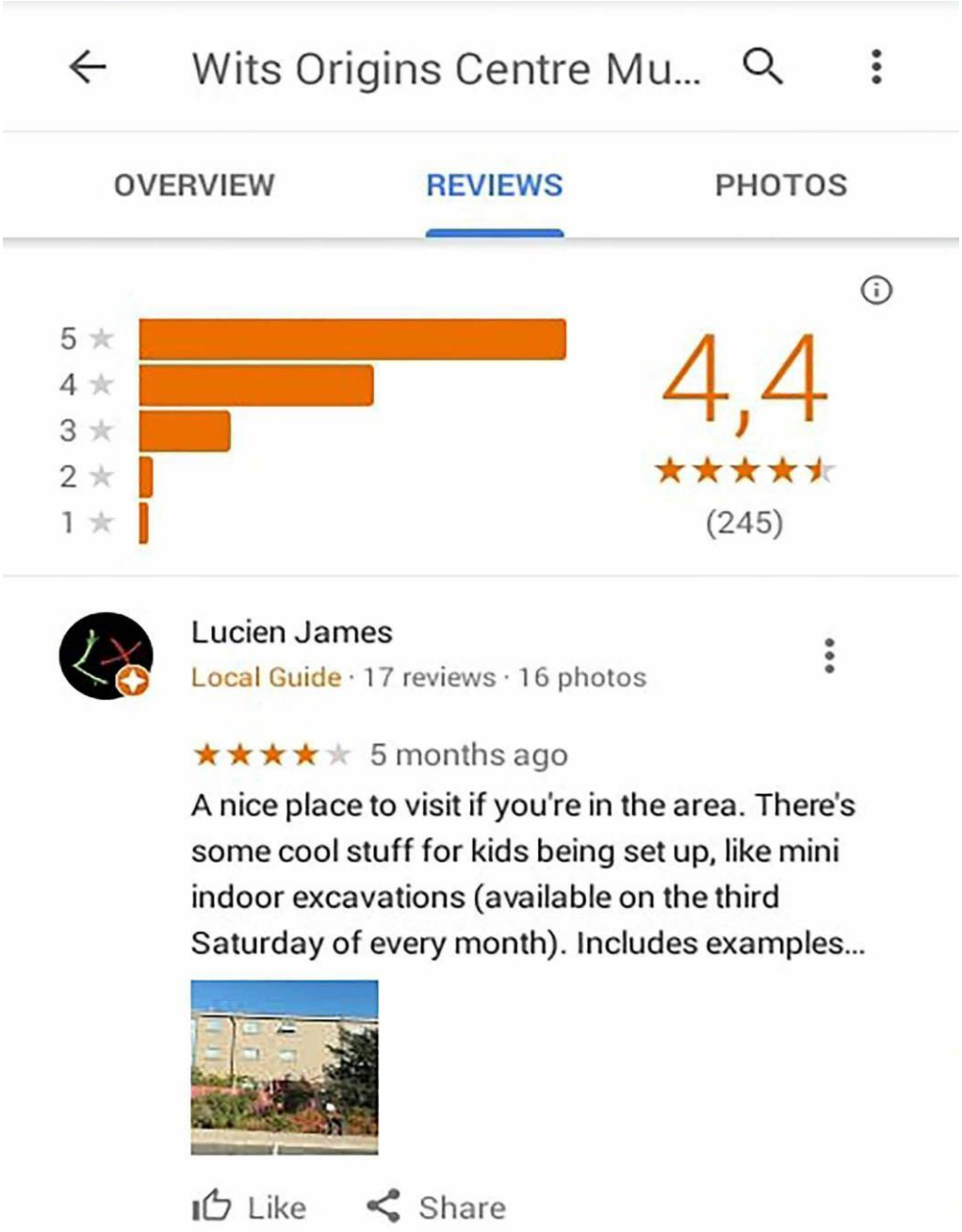
1. https://goo.gl/maps/KRcXhgq6Jj12 - Site 2- my most famous picture of all my pictures contributed to Google Maps with 17 944 views as on 15 October 2018
2. https://goo.gl/maps/vbogb7jiXpG2 - picture of the trig beacon near my study's Site 1- 653 views as on 15 October 2018
3. https://goo.gl/maps/j7kf3mu8zhQ2 - an inner wall of my study's Site 1- 2 622 views as on 15 October 2018

As an example, Lucien's site two images at KNR had 17 944 views (30/10/2018). Using this technique, one can start an awareness campaign to encourage the public to visit such sites and to stop the destruction of SWS by development. People can post their pictures on the SWS in a "know your heritage" campaign. In solidarity, other visitors can then tag or upload their images as they visit the sites to disseminate information about SWS.

USE OF 3D VISUALS FOR PRESENTATION AND AWARENESS

Another awareness information technology tool is 3D technology, which can be used to enhance information dissemination of archaeological data (Lercari, 2017). According to the International Principles of Virtual Archaeology (IPVA. Principle 2.1), any proposed computer-based visualisation will always aim to improve aspects related to the research, conservation or dissemination of archaeological heritage. Over the years Virtual Reality (VR) technologies have developed from being only limited to military

Figure 3. A screenshot of contributions to Google Maps on Origins Centre by Lucien James (04 November 2018)



and scientific visualisation into multidisciplinary areas, such as education, archaeology, art, culture, and humanities (Roussou, 2002). This technique can be used in exhibitions and publications to assist in attracting people towards heritage such as the SWS in southern Gauteng Province.

A first look is to assess what has been done in the Gauteng Province using this method. Stephen Banhegyi and his brother are creating virtual 3D images of SWS that are helping to attract the attention of the public. They used software called Gaia, which imports real-world geographic information in the form of DEM height maps into Unity 3D. (https://www.bbc.com/news/av/world-africa-45836912/south-africa-s-ancient-lost-city-of-kweneng-rediscovered-by-lasers).

Other case studies around the world have used Microsoft's Kinect to create a low-cost and portable system to virtually navigate, through a prototype 3D GIS, the digitally reconstructed ancient sites such as the Maya city and United Nations Education Scientific and Cultural Organisation (UNESCO) World Heritage Site of Copan in Honduras (Richards-Rissetto, Remondino, Agugiaro, von Schwerin, Robertsson, & Girardi, 2012). This project was a partnership between the MayaArch3D project and the HUM lab at Umea University (Sweden). The 3D GIS, named QueryArch3D, was developed as part of the MayaArch 3D project (http://mayaarch3d.unm.edu), which explores the integration of databases with 3D digital tools for research and teaching of ancient architectures and landscapes (Richards-Rissetto *et al*. 2012: p.331). This software has the capacity to handle multi-resolution 3D model images, query geometries and attributes in the same virtual environment, supports 3D visualisation and navigation of the models and permit access to the content locally or online (Richards-Rissetto *et al.* 2012). It allows users to move through an archaeological site in control free navigation in Virtual Reality (VR) and have a better interactive understanding of the architectural nature of the heritage site in its environment. This method can also be adopted in the southern Gauteng Province in order to have an architectural 3D presentation of the SWS and encourage a better understanding of pre-colonial landscapes.

3D digital reconstruction promotes heritage awareness and education about archaeological sites. 3D technologies help to simulate material culture and ancient environment, making archaeological data more easily accessible to the general public (Lercari, 2017). Most members of the public are interested in archaeology when it is visualised well (Hodder, 1997). This makes heritage relatable. However, to offset the expense attached to the use of such technologies, heritage organisations, universities and other stakeholders need to collaborate in fundraising initiatives. Lawler (2017) outlines the use of collaboration between the United States Department of State and Afghan researchers in using United States spy satellites and military drone images to trace archaeological sites and protect them from the war and developmental damage. Researchers in this project have discovered caravanserais, huge complexes designed to house travellers and built from the early centuries B.C.E. until the 19th century and networks of ancient canals invisible from the ground to facilitate awareness that boost economic development through tourism and identity (Lawler, 2017: p.1364).

The temple of Apollo Delphinius, the Council House, the Hellenistic Gymnasium, the Ionic Stoa and the North Agora in Greece are some of the examples were 3D virtual technology (InfiniteReality2E visualisation subsystems) has been used (Roussou, 2002). The idea to use such technologies for architectural structures such as SWS in southern Gauteng Province is to enhance the aerial view of SWS in the context of their terrain. These details reveal the environmental context easily relatable to the public. 3D Graphics team uses the scientific data for the accurate and detailed digital reconstruction of the buildings. The Geographic Information Systems (GIS) specialists use the terrain information to create low polygon views of the city in order to establish concepts (Roussou, 2002). Therefore, this enables a better understanding of the use and tradition through the architecture of the heritage site such as SWS for research, awareness and education.

To reduce expenses for such techniques, I suggest creating fundraising initiatives such as the Foundation of the Hellenic World (FHW), based in Greece. This is a non-profit cultural heritage institution working to preserve and disseminate Hellenic culture, historical memory, and tradition through the creative use of state-of-the-art multimedia and technology (Roussou, 2002: p.95). The objective of this institution is to finance virtual technology projects in order to promote heritage awareness and education. Southern Gauteng Province can use this idea to source funds for the promotion of SWS. Setting up new virtual presentation museums can attract the school children and young population to be educated. Roussou (2002), outlines how 3D is an effective tool to showcase the Ancient Miletus on the Magic Screen using 3D for children. Creating such fundraising initiatives in southern Gauteng Province has the potential to boost heritage awareness and education.

CONCLUSION

Many heritage presentations in African countries reflect a colonial discourse which suppresses the authentic indigenous context in which heritage was created (Ndoro & Pwiti, 1997). Most awareness and educational principles applied to heritage sites were created with the intention to undermine the religion, heritage and indigenous knowledge systems of Africans. Due to this approach, heritage awareness and education in Africa and most colonial countries are impaired to this day. In South Africa, post-1994, heritage management and tourism are still heavily influenced by the legacy of apartheid (Boswell & O'Kane, 2011: p.361). This chapter aimed to highlight strategies that can be used to mitigate the lack of heritage awareness and suggest effective information dissemination tools to educate the public of SWS in the southern Gauteng Province.

It is impossible to ignore the impact of colonisation and politics on heritage awareness and education in South Africa. These factors have negatively and positively affected the type of heritage information that people were and still are exposed to. It is from this realisation from this paper that I recommend that stakeholders such as SAHRA, Joburg City Parks, Bakwena, residents of southern Gauteng and academics from the University of Witwatersrand take steps to lobby the Culture Department of South Africa to create consistent policies that do not hinder heritage management. An example of this recommendation can be to create a forum that stipulates long term and unchangeable heritage policies that include all stakehold- ers of the Gauteng Province. This forum can formulate objectives, approach and impact assessments of heritage awareness and education techniques. Research and contributions from academics such as Prof Esterhuysen can help in outlining factors that are needed to change aspects such as the "language" used in heritage education (Esterhuysen, 2006), politically motivated heritage policies, communication techniques and consultation of custodial communities (Mudzamatira, forthcoming).

Concerns on heritage awareness and education in South Africa have been raised before, and many scholars wrote extensively on heritage education in South Africa such as Esterhuysen (2006), Esterhuysten (2012) and Esterhuysien and Lane (2013). Other scholars such as Thomas Huffman and Revil Mason did this through museum exhibitions, reconstructions, and writing books about SWS in this the study area. These resounding efforts are often ignored because of lack of financial and structural support systems by heritage institutions who are also constrained by lack of funding and lack implementation and follow up techniques. Failure to identify an effective type, form and attractive mode of information dissemination to educate people about heritage often results in heritage destruction. Therefore, more can still be done

in future to support previous awareness strategies with more new and recent ones that attract the 21st century generation.

Although lack of funding is a challenge to most heritage awareness techniques (Pwiti, 1997), collaboration, using freely available ICT tools, media, ethnographic awareness, social media and education curriculum awareness-raising initiatives can be used to reduce lack of heritage awareness. I recommend the use of these strategies to succour education and awareness through collaborative initiatives between universities, corporate companies and heritage institutions. An example can be collaboration University of Witwatersrand and the South African Broadcasting Cooperation (SABC) to produce SWS heritage awareness episodes to educate the public about the nature, use and history of SWS in this study area. It is with sadness that most South African media houses are only interested in South Africa heritage when the international media houses take an interest. Thus, the collaboration of different stakeholders has the potential to create necessary awareness of SWS destruction in southern Gauteng Province. This can assist in mobilising funding to encourage heritage conservation through awareness.

This research also brings to attention the need to include heritage awareness and education as part of essential social priority. The developmental threat to heritage destruction in southern Gauteng province needs amore sociological approach to instigate other values that SWS have. Mire (2011) suggests that people suffer not only in their lack of access to security, food and health but also mentally through the loss of their homes, their valued belongings, their graveyards and their sacred sites. Nyaupane and Timothy (2010) observed from their research on public awareness of Chicago historic buildings, the most aware and educated visitors of heritage sites had more positive attitudes to the preservation of the heritage sites they visited. Therefore, the idea of cultural heritage as an emergency issue that requires the communities to speak out on heritage destruction and force heritage institutions to respond and have recovery actions in place (Mire, 2011).

To add, urban planning and development in southern Gauteng Province needs to be monitored. It is with great concern that urban planning in Gauteng Province such as GPOP (2016) is silent about the conservation of SWS in this area, yet they have been destroyed and still face the risk of developmental destruction. This is also entangled in the context that there is now evidence that shows that SWS in this region have been destroyed without proper information management (Mudzamatira, in-press), and without any community consultation, awareness or approval to destroy SWS (Mudzamatira, forthcoming). I argue in this chapter that lack of effective heritage awareness in southern Gauteng province is one of the contributing factors to developmental heritage destruction; and without awareness, SWS are at further risk of destruction. This destruction has been propelled by a variety of factors that include the lack of dialogue with custodial communities and other stakeholders to find common ground in ownership, land management and heritage management. I recommend dialogue with stakeholders in the area to create initiatives that protect SWS. Heritage identification and protection process cannot succeed without heritage awareness among visitors and community residents (Munjeri, 2004).

Lastly, future research from this paper can be to experiment with these awareness strategies to assess the response of the public in this case study. This can be through an Honours or Master's research project, which can assess the impact of suggested in creating in improving heritage awareness and education in this case study.

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CHAPTER 6: SUMMARY AND CONCLUSION

6.1 Summary

In this thesis, I sought to answer various research questions that were presented in Chapter 1. I conclude by illustrating how each of the research questions in Chapter 1 were answered and suggest a way forward. From my research questions, I highlight how spatial information technologies may assist in identifying the threat to heritage and suggest ways to improve heritage management through awareness. Precolonial stone-walled structures (SWS), in this case study, face a developmental threat that spans back to the 1960s. Therefore, I was able to identify damaged SWS, evaluate the awareness and opinions of the destruction of SWS, and suggest strategies to improve awareness and education for SWS preservation.

Based on the finding of my research in southern Gauteng, I uncovered that indeed, there is a disjuncture between how professionals view and manage heritage and how communities view heritage. Conclusions of chapters 3,4 and 5 revealed a common trend to the influence of colonial and post-colonial heritage management practices that, in my view, allowed heritage destruction without notice. However, without a clear understanding of this disjuncture, heritage management proposals become ineffective (Meskell, 2005a). However, I further argue that more should be done in this case study and beyond to enhance heritage management techniques and create awareness of the endangered SWS. Through Spatial Information Technologies data collected, I revealed the challenges faced in managing heritage such as SWS in southern Gauteng, South Africa. Through using this technology, I acquired new knowledge in tracing colonial and post-colonial effects on heritage management. With this mind, it was my objective to suggest heritage awareness and education strategies for potential use to preserve SWS in the southern Gauteng Province.

In my study, it was essential for me to understand the political influence that impacts heritage management. To understand how archaeology and heritage management is structured today, I had to briefly reflect on how colonial and post-colonial factors influence heritage management. In the colonial era, colonial ideologies fostered the introduction of archaeology as a field to justify colonialism (Shepard, 2002). As Ndlovu (2011a) once reflected, it would not be logically correct for the oppressor to promote the heritage of the oppressed. This approach created the “top-down” approach in the relationship between heritage professionals and communities (Ndlovu, 2009; 2011a). I argue that to understand any suggestions on effective heritage management, this evidence on the imbalance should be understood to assist future research in ways to decolonize, but at the same time staying relevant to modern society.

First, to note from the research data are the unique factors that triggered my research. Southern Gauteng Province, as a case study, presented factors that are difficult to find in any other case study. These are (i) the availability of historical aerial photographs (ii) the rise of the 1960s development of Johannesburg (iii) Wits archival Cultural Resources Management (CRM) reports (iv) Archival Maps (v) Colonisation and apartheid in South Africa (vi) freely available open- source software and (vii) custodial communities interested in heritage management. The results of this thesis fills in a knowledge gap on the use of spatial information technologies for the preservation of SWS through awareness and education (i.e.

open-source software). The following conclusions are drawn from the collected data.

In Chapter 3, I identified a total of 248 SWS destroyed by development between 1961 and recent years. In this chapter I illustrated the use of QGIS, Google Earth, digital archival maps, and historical aerial photographs to measure the damage of heritage sites. Although the results of this study reflect on similar studies done in the same study area by Sadr (2017) and Naidu (2018), this chapter made a comprehensive identification of damaged and partially damaged SWS. It identified damage done by infrastructural development, mining, road, and power network, and waterbody development. Through this study, infrastructural development was rated the most destructive development to SWS in the southern Gauteng.

Other studies, such as Sokolic (2017) and Mire (2011), used such technologies for land claims and heritage studies in different case studies. The use of spatial information technology in this chapter aimed to measure the rate of destruction. Sadr (2017) had raised concerns that for every 10km2 of development, 5 SWS are destroyed. Using Sadr's hypothesis, 255 SWS should have been destroyed since 1961 and my study recorded a total of 248, 7 SWS less from Sadr (2017)'s predictions. Therefore, using a larger geographical area, research data from this chapter confirmed the threat SWS are facing from development.

The chapter revealed that other factors contributed to the destruction of heritage, such as legislation, colonial influence, and land displacements. Like many other African countries, colonial South Africa saw the introduction of European heritage management systems that excluded communities from determining the fate of their own heritage. In this chapter, I provided evidence on conclusions drawn by Ndlovu (2011a) that South African heritage legislation is outdated and lacks proactive measures mitigating developmental damage to heritage, especially and more specifically on the exclusion of custodial communities, such as the Bakwena Ba Mare a Phogole. As Ndlovu (2011a) had highlighted, communities do not have any legal right to claim to stop development, and all Heritage Impact Assessments (HIAs) assessed in this chapter revealed a lack of community consultation as required by the NHRA 1999 legislation. I further still heed the call by Ndlovu (2011a; 2014) for the need for action, not words, and not more legislation. Judging from this chapter, I have exposed the superiority complex of heritage professionals over the artists of heritage.

The unreliability of Cultural Resources Management (CRM) and heritage legislation to protect pre-colonial SWS is a continuation of the colonial system of management. Despite the legislation insisting the need to have community consultations, heritage legislation lacks enforcement from heritage authorities. There are contradictions and lack of consistency between the environmental legislation and heritage legislation exposed the need for more initiatives to create coherent legislative structures in South Africa, especially environmental laws, constitution, and heritage laws. I also observed the inconsistent use of SAHRIS application to use as a heritage database in the Gauteng Province, which correlates to the conclusions of Smut *et al*. (2016). Lack of training and cooperation with SAPS officers was also evident in this chapter. Therefore, considering the various challenges raised, the chapter suggested recommendations, as highlighted below.

I recommend the use of Information Technology (IT) tools to enhance data collection and accuracy in Heritage Impact Assessments (HIA). As much as this is not a decolonization

strategy, this method will assist in assessing developmental damage and has the potential to monitor development in heritage sensitive areas in the future. The use of freely available open-source software such as QGIS and other technologies can aid in improving heritage management (Agapiou *et al.* 2014, 2015; Chase *et al.* 2011; Deroin *et al.* 2011; Giardino, 2011).

Another recommendation was the restructuring of heritage, as once suggested by Ndlovu (2011a). This chapter provided evidence to support his conclusions. Other recommendations were the implementation of legislation, charging of fines, licensing, and making South African Heritage Resources Information System (SAHRIS) to become more efficient in providing accurate information and CRM documentation management platform. The effectiveness of SAHRIS can be improved by adopting recommendations suggested by Ndlovu (2014), Benson (2013) and Smut *et al.* (2016). These recommendations are: (i) to train SAPS officers in using SAHRIS in tracking illegal destruction of SWS, (ii) foster collaboration which commercial operators in developing SAHRIS, (iii) establishing regulations for Section 39 of the NHRA that will make it mandatory for all PHRAs to adopt SAHRIS, (iv) engaging cooperation with SAPS for enforcement and recruitment of more heritage officers to a proactive approach to stop SWS destruction.

I further suggest that Gauteng provincial authorities need to enforce these recommendations. Despite the current challenges of the use of SAHRIS identified in this chapter, there is a need to improve the software and encourage Gauteng Province to make it mandatory for heritage practitioners to use SAHRIS and uploading quality up-to-date information. Findings from this chapter influenced the need to assess public awareness of developmental damage and the existence of SWS, as was discussed in the following chapter.

In Chapter 4, I assessed the level of SWS awareness and their destruction in southern Gauteng Province. This chapter allowed public participants to express their opinions on SWS and heritage management in the case study. The study established that the custodial communities were aware of both the existence and destruction of SWS, although they complained of being sidelined in the heritage management of the area. The study established that one of the causes of SWS destruction in the study area was due to a lack of heritage awareness as the majority of the public were not familiar with SWS. Examples of these respondents were residents, shoppers, and visitors to nature reserves. Most of the heritage professionals, students, and custodial communities were aware of SWS, although they were not aware of the magnitude of SWS destruction. However, all stakeholders were interested in the heritage management of SWS and learning more about SWS.

In this chapter, I highlighted some of the causes of the lack of awareness of the public. Through interviews, my study allowed the custodial community of the Bakwena Ba Mara a Phogole to express how they feel about being excluded in the CRM processes and heritage management of the area. Their opinions revealed their rift with the South African Land Commission due to the lack of respect for the sacred landscapes. The communities blamed the government for their failure to establish collaborative initiatives after 1994 to enable comprehensive heritage management of the case study. I review the post-colonial continuity of exclusion of communities in deciding the fate of heritage, as Mahachi and Kamuhengeri (2009) noted. According to Mahachi and Kamuhengeri (2009), community displacements in

the colonial era negatively affected traditional heritage management systems. Evidence from this chapter suggests a continuation of disregarding traditional knowledge systems and communities in post-colonial South Africa. In this view, I argue that the very concept of not addressing identity, religious, and cultural heritage after attaining independence in 1994 defeats the ideas of post-colonialism. The superiority complex that we, as professionals, feel to allow communities to be engaged needs to be addressed.

To add, this chapter revealed how a lack of heritage awareness and information could contribute to heritage destruction. I further recommended that it is a fundamental human right that the definition of heritage and its values should rest in the hands of the artists. I also recommend that communities be included in the decision-making process of the destruction of heritage. This approach will act as a proactive measure to mitigate heritage destruction, as Ndlovu (2011a) had suggested. Therefore, from this chapter, there was a need to suggest the best awareness and education strategies to improve information dissemination of SWS in this case study. As one of the significant recommendations of this chapter, I suggested public awareness to educate the general public about the SWS, and their role in monitoring development that threatens heritage. I discussed these awareness strategies in the following chapter.

In chapter 5, I discussed examples of best practice strategies that could improve awareness and education of SWS in southern Gauteng Province. These awareness strategies would educate the public on the existence and destruction of SWS. For this case study, I drew guidance from previous work to suggest possible strategies to enhance heritage awareness and education of SWS. This revealed efforts made by Revil Mason and Amanda Esterhuysen in the area to improve awareness and education of SWS. However, their efforts did not get much support from stakeholders and often went unnoticed. Such efforts included SWS replicas in Museum Africa, an archaeology education book, and education boards erected at Klipriviersberg and Melville Kopjes. However, there was a need to include information dissemination techniques that are effective to the 21st-century audience. By using these techniques, I argue that these techniques are relevant to attract attention to the 21st-century audience that is needed to lobby for protection or tourism. This approach should be encouraged through collaboration between custodial communities other stakeholders to take into consideration the sacredness of heritage places.

In recent years, the world is increasingly becoming an information society where information is an essential tool for the conservation of heritage. In this light, there are conflicting approaches that tend to undermine the decolonisation concepts needed for post-colonial archaeology to include custodial communities. However, this chapter addresses the need for collaboration, taking into account the concerns of the artists of the SWS. Suggested strategies include media, social media, Google Maps, and 3D presentation technologies, among others. Such techniques would also ensure monitoring and auditing of the destruction of heritage, such as SWS. I argue that these strategies will assist the public to mobilise themselves for heritage policy change and proactive mitigation that threatens SWS in this case study. Through public observation, residents could also monitor the developmental destruction of heritage. This information is useful in ensuring controlled development.

6.2 The Way Forward

From objective 1 of this thesis to measure the damage of SWS in the southern Gauteng, I drew some discussions and recommendations as a way forward. As mentioned in chapter 3, comprehensive information management is needed to ensure the effectiveness of SAHRIS and SAHRA documentation. To ensure the effectiveness of this recommendation, I suggest coordination between heritage consultants to ensure easy access to CRM reports physically and on SAHRIS. Information management assists future reference to the archives and easy monitoring. It can be argued that updating of SAHRIS can be expensive; the collaboration of stakeholders is essential. An example can be a collaboration of stakeholders to fundraise for resources and get skills to update SAHRIS, such as volunteer software programmers who can improve SAHRIS efficiency or create better software to replace it.

I further recommend consistent information management policies with guidelines on how to conduct CRM. These should be mandatory, and SAHRA should not accept or approve any HIA report that does not follow those guidelines. If we choose not to preserve heritage such as SWS in-situ, we should preserve it by record. This approach will ensure coherent and reliable CRM reports and records management for future reference. Association of Southern African Professional Archaeologists (ASAPA) has created guidelines in writing CRM reports and standards that archaeologists should follow. Although the ASAPA standards are not legally binding and often ignored, they try to ensure better quality CRM reports. I strongly advise that SAHRA should use such standards together with legal instruments to ensure effective heritage management.

Following the recommendations by Ndlovu (2011a) to enable training of the South African Police Service (SAPS), I further suggest that there is a need for the Department of Home Affairs to enforce and implement a mitigation plan that foresees the looming threats of certain developments. This will initiate the training of SAPS officers to be aware of the legislation and allow them to understand the importance of managing this heritage. I suggest collaborative efforts to mobilise resources and training platforms to create a task force that monitors and enforces heritage legislation. In this light, there is a great need for outreach programs to raise awareness and educate the public on the threats of development to SWS. I believe this will educate society and enhance the value of SWS in this area. The public can be useful in monitoring heritage destruction. The lack of interest of the public, as seen in chapter 4, outlines my argument that people cannot protect what they do not know. For SAPS officers to understand if a developer violates a heritage law, they need to know what the legislative procedure stipulates. Ndlovu (2011) highlighted this as a common problem in NHRA 1999 Act. He states that there is no clarity on what needs to be done in a situation that threatens heritage.

To add, collaborative efforts by members of the communities and authorities such as SAPS creates a cost-effective platform to monitor heritage sites. For Ndlovu (2014), the increase in heritage officers is part of the solution to monitor the quality of CRM reports. As much as I agree with him, I further argue that due to the constant complaint of funding to increase staff for heritage institutions such as SAHRA, there is a great need for collaboration to raise awareness, education, and training. These strategies are effective for all stakeholders to allow monitoring of development in the southern Gauteng Province.

To cater for the lack of mandatory requirements to use current ICTs methods that provide accurate information about heritage sites in CRM, I suggest SAHRA should make it compulsory for the use of GPS and other freely available software in CRM. Ndlovu (2011a) supports this notion and mentions the great need for the improvement of the quality of CRM reports using accurate information using ICT tools such as Geographic Positioning Systems (GPS) for precise mapping of heritage sites. The use of GPS is useful to locate the exact locations of sites. The use of freely available Geographic Information Systems like QGIS is useful as an active database to document, track, monitor, and archive heritage databases. It is to my surprise that such recommendations went unnoticed since 2011. Other useful tools can be the use of historical aerial photographs, Google Earth, QGIS, and Archival Maps. I further argue that without the proactiveness of using such technologies to locate SWS and monitor development, heritage management becomes irrelevant in the 21st Century. These preventative measures should be mandatory and, most importantly, enforced by SAHRA through the assistance of SAPS. The use ASAPA's 2007 guidelines to assist in drafting legally binding legislation will empower SAPS and heritage officers to have a legal right to prosecute developers that destroy heritage, as I will recommend below.

Given the historical background of the introduction of heritage and its legislation, which I discuss in chapters 1 and 2, I acknowledge the efforts done in 1999 to recognise communities that they should be consulted before development. But has this been effective to decolonise heritage to protect it from development? I argue through evidence in chapter 1 that NHRA is lacking. In my view, the very idea that communities are not empowered to stop development discredits the efforts made in 1999. Heritage laws have been criticised for promoting Eurocentric heritage values at the expense of African culture, with a top-down approach that overlooks traditional heritage laws (Ndlovu, 2009; 2011a; Ndoro & Kiriama, 2009; Ndoro & Wijesurya, 2015; Ndlovu & Smith, 2019). Chapter 1 provides evidence that NHRA 1999 has grossly been ineffective in protecting SWS in southern Gauteng.

I criticize the use of heritage legislation and heritage management in post-colonial South Africa. I base my argument in support of observations made by Mahachi and Kamuhangure (2009), Ndoro (2005), and Shepard (2002). These scholars argue that traditional heritage management systems were able to protect heritage for centuries until imperial explorers "discovered" well-preserved heritage protected by taboos and myths. In chapter 1, I reveal the effects of not transforming heritage legislation. The rate of destruction of SWS in southern Gauteng without adequate record keeping reflects ignored recommendations by African Archaeologists in probing various African governments and heritage professionals to set up proactive measures to stop heritage destruction. I suggest the merging of traditional heritage management systems with useful modern heritage management to preserve intangible heritage in southern Gauteng Province. This approach is possible through the engagement of custodial communities into the heritage management system.

The lack of the preservation of intangible heritage is a result of the failure to empower communities to manage their heritage (Ndoro, 2005; Eboreime, 2009; Ndoro & Kiriama, 2009; Ndlovu 2011a). Often, this approach has resulted in many conflicts between heritage institutions and communities with regards to access for spiritual rituals of communities. For example, Duma Clan versus Council of Amafa aKwaZulu-Natali, the provincial heritage

board, in South Africa (Ndlovu, 2009). In Zimbabwe, the National Museums and Monuments of Zimbabwe (NMMZ) versus the custodial community at Domborshava over access to the rock art sites which resulted in one of the rock art painting being painted by oil paint. Therefore, SAHRA should incorporate traditional heritage management systems to ensure the preservation of intangible heritage through collaboration.

To add, I suggest that heritage management consortiums should regionally aim at identifying challenges for heritage management in South Africa. These consortiums can include regional stakeholders in heritage management such as custodial communities, heritage professionals, heritage institutions, among others. These consortiums can periodically meet to discuss how to consider new techniques that cope with the evolution of society, development, technological tools to stay relevant in managing heritage. These consortiums can also lobby legislators to broaden legislative terms in NHRA 1999 to provide clear definitions of terms such as heritage, monuments, and relics to ensure clarity and consistency of definitions (Ndoro, 2009: 25-35). It will also address the contradictions between heritage and environmental laws (Eboraime, 2009), to foster a more coherent approach between government departments that are responsible for development permit approvals.

For objective 2, in chapter 4, I revealed the public awareness and opinions of the local public in the southern Gauteng Province. In this chapter, I recommend awareness and education to enable the public to learn more about SWS. Post-colonial archaeology in South Africa needs to allow transformative heritage education and awareness to promote awareness of pre-colonial heritage such as SWS. In this view, I acknowledge Esterhuysen and Lane's (2013) illustration of the impact of colonisation and apartheid on archaeological awareness and education. An example of their conclusion was the neglect in the use of indigenous language to name and describe archaeological findings (Esterhuysen, 2006). Lack of public interest and knowledge revealed in this chapter supports the notion that the colonial legacy has hugely impacted the attitudes of some custodial communities and general members of the public. I am of the view that part of the lack of interest by the general public in southern Gauteng was caused by a lack of education in school curriculums, as Esterhusen and Lane (2013) concluded. I further argue that the lack of community engagement by SAHRA after 1994 resulted in the loss of indigenous knowledge systems and the interest of most custodial communities. However, those of the Bakwena Ba Mare a Phogole survived. I strongly suggest that consultation of communities before development or in heritage management is not in itself enough. Instead, community engagement with available communities is necessary. This approach will assist in forging an inclusive way to manage heritage, which takes into account the spiritual and land needs of indigenous communities.

I condemn the superiority complex in which we heritage professionals benefit from the colonial legacy. Scholars like Schmidt (2014) once asked, who questions the elite academics? The descendants of the indigenous people have no legal claim to heritage sites and have equal status regarding the protection of this heritage with any other interested party (Deacon & Deacon, 1999; Prins, 2000). This inequality is not unique to South Africa and is reflected in legislation throughout Africa (Mahachi & Kamuhangira, 2009; Ndoro, 2009). In chapter 4, the lack of community engagement testifies to this inequality. This inequality is not unique to this case study or South Africa. In Uganda, imperial heritage and historical professionals ignored the role of subalterns by continuing a colonial project of silencing the oppressed and

marginalised in history. This approach distorted interpretation of historical events through the influence of politics in both colonial and post-colonial Africa (Shepard, 2002; Schmidt, 2014). However, in South Africa, evidence of historical bias that favours materiality and colonial heritage is observed through the exclusion of communities, as chapter 4 sought to establish. Ndlovu (2011a) provides examples of post-colonial Bantu historical settlements that are still being ignored in heritage management today. He adds that there has been favoritism and concentration on the heritage of famous political figures. For example, that Maphikela house in Bloemfontein, known as the birthplace of the South African Native National Congress (renamed the African National Party in 1923) in 1912, was declared a National Heritage Site before the centenary celebrations in 2012. None of the township houses are protected by legislation despite the historical value that some of them have (Ndlovu, 2011a: 38). Sadr (2017) reveals a considerable gap in knowledge about pre-colonial SWS the last 500years, and technology can be the answer to understand this period. These examples highlight the need for transformative action.

To remove heritage management inequalities mentioned above, legislation in South Africa should empower custodial communities. This approach is achievable through granting legislative rights to communities and the general public to stop development if it poses a threat to SWS. Such amendments to legislation are necessary to ensure transformations and implementation of heritage laws. Failure of legislation, as highlighted in this thesis and by Ndlovu (2011a), does not mean that there no instances were they have been effective. Ndlovu (2011a) reveals a successful case of Oudekraal against the City of Cape Town over the proposed development in an area with Muslim graves (kramats). Development ceased after a huge public outcry. The case study revealed that when the development of the township was considered in 1957, it disregarded the existence of Muslim graves. Although such favourable ruling reflects a positive effect of legislation, I argue that not many communities are so well organised to get their voices heard. Many communities lack legal resources and funds to fight developers in courts.

Another recommendation I draw from chapter 4 is that community opinions are essential to any effective heritage management. The intellectual bias with regards to who validates heritage places excludes communities and leaves room for heritage destruction. Makuvaza (2008, cited in Ndoro and Wijesuryi 2015) reveals this disjuncture between heritage professionals and communities, which leaves heritage vulnerable. He gives an example of Njelele where rock art is recognised by ICCROM more than any sacred landscapes in the area. To curb this problem, I suggest dialogue to engage communities and academic research to capture and validate these indigenous knowledge systems in this case study.

Changing the heritage education curriculum, presentation methods, and promoting initiatives such as People and Parks are initiatives that I suggest to change the lack of interest and societal perceptions towards SWS. This strategy has the potential to transform years of marginalised pre-colonial heritage education. Changing these public attitudes and perceptions about SWS in the case study has the potential to gather public support for heritage initiatives. This approach usually encourages the private sector and corporate world to financially support heritage initiatives (Pokotylo & Guppy, 1999).

As this chapter shows, politics has had an impact on heritage management. Land claims to address the social injustice of the colonial era have been a topic of discussion to this date.

Southern Gauteng has not been an exception to land claims. I argue that the separation of heritage, land, environment, religion, and its people was a colonial strategy to disorient. I refer to the observations in this thesis by taking into account the impact of 1948 when the National Party in South Africa took over. Deacon (2020) notes that the shift of political power in South Africa changed the concepts of heritage legislation, which led to the neglect to protect indigenous archaeological remains in favour of a focus on colonial building. A look at the National Monuments Act of 1969 unveils this shift. Development plans of city planners disregarded the value of indigenous settlements which was evidenced by the 1961 aerial photographs.

Furthermore, evidence from this chapter revealed how their religious and sacred landscapes were destroyed and are still under threat of Johannesburg's development. The separation of different aspects that make an African society has benefited colonialists in placing legislation in each that never serves the interest of communities. Therefore, I suggest that for South Africa heritage management to preserve SWS effectively, recognition of the interwovenness of heritage is essential.

Removing political affiliations from heritage management agendas is key to the survival of fundamental principles to improve and transform heritage. Shepard (2002) argued that it is essential to specify the positions that African archaeologists and heritage practitioners found themselves in, as well as the allegiances that structured their political relationships. It is from this juncture that I question our role as heritage practitioners and our professional ethics to ensure the inclusion of communities in decisions making the process of CRM. From the White Paper, Ndlovu (2011a) also argued, ANC had argued that ‘the current statutes legislating heritage are overtly racist, narrow and incapable of upholding democratic principles and values’ (ANC, 1995). One would expect that after the ANC’s rise to power in 1994, it would radically transform heritage management to ensure proactive empowerment of communities to have a voice before any developmental projects. I would have expected more legislative reforms that grant communities access, land, and heritage.

In recent years, there has been a massive increase in the number of land claims in South Africa. Ndlovu (2011a) highlights that although a lot of indigenous people have spiritual connections to their heritage sites and land with a strong sense of identity, there are political and economic gains that also gave rise to land claims over the years. I believe that in cases were communities claim ownership and have archaeological evidence, communities should have the legal right to determine the fate of their heritage and stop development. I further argue that heritage and land legislation were never created to validate African South Africans land ownership, indigenous knowledge systems, and oral traditions, propelling western scientific proof of land and heritage ownership. I also argue, asking wehther it is wrong for custodial communities to claim their ancestral land for economic reasons. Can custodial communities not benefit economically from the same land that colonisation benefited? I believe it is blasphemous for custodial communities to be labeled as economic opportunists for claiming their ancestral land, from which they can benefit economically. The only major question in my view would be, who is best to preserve heritage in developmental processes: communities, or heritage institutions? Already this thesis has provided evidence that the heritage institutions have not done a good job. But how has land heritage legislation impacted indigenous communities such as the Bakwena Ba Mare a Phogole?

I provide a brief insight using reports by Khumalo (2019) and Phatlane (2019), giving insight on the effects of colonisation of heritage and land. To note is the eurocentric way heritage, land, graves, artefacts and other community values have been defined. Khumalo (2019) expresses the concern that all state institutions and legislation define words like 'community' to undermine custodial communities to claim land. Khumalo (2019) discusses the demand by the South African Restitution Act for the Bakwena Ba Mare a Phogole to prove that they operate as a community. The community had to prove their existence, although most of their social and cultural structure had been dismantled (Khumalo, 2019). Decolonising such legislative measures that continuously deprive communities access to and control of their heritage and land should be considered. I resist to dwell much on this discussion, to allow further research and in-depth ethnographic analysis in this study area.

Community engagement to define what communities, heritage, and other legal words are would assist in decolonising heritage. According to Khumalo (2019), the Bakwena Ba Mare a Phogole have shown that they are known, organised, and willing to engage in heritage management, government, heritage institutions, and research. I believe such communities should be recognised and allowed to have rights to their land. There is a great need for researchers to explore the relationship between heritage (in this case, SWS), communities, religion, and land claims in this case study. Historically, the Bakwena Ba Mare a Phogole lodged a land claim of the Kliprvier area in 1995. This has created a keen interest in research and collaboration with the community to preserve their heritage and use archaeological evidence to prove their claim to the land. Similar interest is not new in South Africa. Sokolic (2017) highlighted the potential of such collaboration using heritage sites as evidence for land claims.

To add, community engagement in heritage management plays a pivotal role in heritage conservation. Through heritage awareness, members of communities understand the value of heritage and can assist in the management of heritage. Custodial communities in South Africa have been marginalised from heritage management (Meskell, 2005a). In most African countries, the vast influence of colonial systems has not allowed the indigenous communities to manage their heritage (Ndoro & Wijesurya, 2015). Across Africa, heritage professionals have dominated heritage management with their policies, education, and standards that still echo colonial influence and favor tangible heritage at the expense of conservation of intangible heritage (Ndoro, 2005, 2009; Ndlovu, 2014; Ndoro & Wijesurya, 2015). Therefore, heritage policies should engage with communities.

In that vein, I suggest that future initiatives should focus on creating platforms for communities to express their grievances. In my view, this will help create a conscience for new heritage management procedures and standards that serve the interests of communities. Community projects such as People and Parks conducted by Johannesburg City Parks should integrate heritage management initiatives rather than only focusing on wildlife initiatives. The academic community needs to facilitate collaborative research and dialogue on such projects. Ndlovu (2011a) gives an example of some other countries that have acknowledged the success of a more participatory/collaborative approach such as Australia, where the indigenous Aboriginal people have been involved in management and decision-making in heritage management.

In my view, I argue that post-colonial African governments have prioritised economic

stability at the expense of cultural identity. In South Africa, ANC gave hope for an integrated nation, and that the government would create more jobs. However, the need to reform heritage management policies was not prioritised. Despite the efforts made in 1995 by the National Monuments Council (NMC) to have a forum to suggest new ways to change heritage management legislation and policy, no further strides were made to decolonise and improve tools that protect heritage from development. Besides, the archaeological profession during this time was predominantly white (Ndlovu, 2019). The indigenous heritage interests and opinions of African South Africans were not represented. I challenge the relevance of such legislation to modern-day South Africa. Given the professional transformations inclusion of Africa archaeologists at SAHRA and other heritage institutions, it will be essential to revise NHRA 1999. Therefore, from the opinions and assessment awareness of chapter 4, I further recommend education and awareness strategies for this case study below.

In chapter 5 I discussed heritage awareness and education strategies that may assist in the preservation of SWS in southern Gauteng Province. For this reason, I will give only brief recommendations here. This chapter discussed the recommendations of how heritage management can benefit from tested strategies to educate and increase awareness. Adding pre-colonial SWS in the history curriculum can improve awareness of heritage in South Africa. This recommendation can collaborate with the use of indigenous knowledge systems for custodial communities such as the Bakwena Ba Mare a Phogole to teach their culture and heritage.

Dialogue to educate stakeholders is also essential for heritage awareness. In this case, heritage professionals can benefit from these discussions and learn more about the values of communities. Conferences, leadership training courses, volunteer coordination courses, workshops, heritage days and festivals are training initiatives where all stakeholders can create a dialogue on preservation and development cooperation. In my view, I urge this approach to create a platform for communities to present their concerns. Other suggested strategies are awareness through ethnography, media, conservation associations, documentation using information technologies, web and social media, google maps, and 3D visuals.

I note the dire need for heritage contingency plans in Gauteng urban planning to cater for the projected threats to SWS. This planning is not only the responsibility of heritage institutions and custodial communities, but rather the general public that resides in the southern Gauteng Province. For heritage conservation to be effective, it needs all the support it can get. Chapter 5 revealed that most of the efforts by the archaeologists Mason, Huffman, and Esterhuysen were left unsupported with adequate resources to execute them.

To add, future growth on stakeholder collaboration should encourage the expansion of projects like the University of Witwatersrand Library and the Bakwena Ba Mare a Phogole archiving initiative that has become the repository of the community's historical and archival oral history. The Bakwena also participated in a collaborative exhibition with Revil Mason at the Origins Centre. The community was allowed to unveil the remains of a Phogole girl that were excavated by Mason (1986: 165-181) and now curated in the Wits Anatomy Department, by performing rituals and naming the remains. I also had the privilege to present my research at the event.

Furthermore, Bakwena Ba Mare a Phogole have also initiated social events such as Heritage Day commemoration where they celebrate their heritage. They invite researchers from universities and their community to perform dance and drama and make research presentations. Such initiatives should be promoted within future research studies.

6.3 Interesting Future Research Areas

To curb the increase in developmental damage in the 21st century, there is a need for useful technologies to monitor the destruction of heritage sites such as SWS. Future research studies can focus on in-depth analysis of SWS features from Lidar photographs along the lines followed recently by Sadr (2017), to create new knowledge on the heritage under threat. Researchers should take advantage of freely available software such as QGIS which can effectively analyse and monitor archaeological resources. Without the assistance of spatial technologies it is difficult to trace or monitor developmental damage of heritage sites. Most importantly, it is difficult to trace the threat heritage faces from development. But can technology serve as the only approach to curb the destruction of SWS?

A multi-disciplined approach to heritage management is one concept drawn from the research data of this thesis. Understanding the history of South Africa, apartheid and colonisation may give archaeologists an in-depth understanding of what needs to be done in modifying the destructive elements of eurocentric heritage management strategies. One of the crucial questions that arose in my research was that in the post-colonial era, African countries still heavily rely on colonial heritage management techniques and legislation to govern African heritage. But can we mitigate this post-colonial ignorance?

It would be in the interest of this research to explore methods to come up with useful techniques in the future to identify and remove colonial elements in heritage management to create community inclusive heritage management techniques. As learned from the research results of this thesis, there are no legal instruments giving communities the power to stop, limit, and control development in South Africa. Therefore, there is a need to review how best to decolonise heritage management development.

Another exciting topic drawn from objective 1 and objective 3 is how archaeology needs simple everyday information technologies to raise awareness of SWS and other heritage sites. Instead of worrying about injecting large sums of money, or re-writing legislation, or waiting for the change of government, freely available technologies can assist in spreading information. Objective 3 (Chapter 5) illustrated how Lucien James used google maps to raise awareness of SWS in the southern Gauteng Province. More research projects in testing some of the examples such as Google Maps to create awareness should be tested.

Subsequently, more ethnographic research studies are needed to contextualise archaeological findings in South Africa. The current trends of research tend to focus more on the scientific aspects at the expense of generating new knowledge on the creators of artefacts or what Ndlovu (2011a) refers to as the “artists” especially in pre-colonial archaeology. Although many communities were displaced from their communal lands, other communities like the Bakwena Ba Mare a Phogole are traceable and positioned to take part in the heritage management of SWS and to document the oral history of heritage sites.

To add, there is a need to restructure awareness and education techniques for SWS. The use of colonial methods of heritage management without testing their effectiveness on African heritage has destroyed SWS in the study area. Although this thesis has outlined various factors as causes of heritage destruction, the lack of interest and awareness of the black South African public needs further research to understand why the public is uninterested and not aware.

Finally, although Ndlovu and Smith (2019) gave insight on the institutional and political dimensions that influence archaeological practice in South Africa, there is a growing need to research why black South Africans, unlike in other African countries, do not dominate in the field of archaeology rather than white South Africans. Although various reasons are mentioned in Ndlovu and Smith (2019), it will be interesting to understand how this has affected the destruction of heritage. Arguably from my thesis, most African South Africans interested in archaeology are dominantly those affected by land claims. Therefore, it will be interesting to know what are the perceptions of other African South Africans towards Archaeology? And how best can that information educate professionals on the preservation of heritage under threat of development damage?

6.4 Conclusion

This chapter provided a summary, many recommendations, and a slew of exciting future studies that can be contemplated. I conclude that indeed spatial information technologies are useful tools for heritage management in southern Gauteng Province, to trace the damage and preservation of SWS and to create opportunities in and awareness of heritage managment. With the help of this technology, I was able to gather knowledge of the social, political, and economic dynamics of South African heritage management. I hope that future research can develop further concepts to explore multi-disciplinary research for a better understanding of heritage management in this area.

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APPENDICES

Appendix I

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Mudzamatira

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H18/07/18**
PROJECT TITLE	Spatial information technology and heritage management in the Southern Gauteng province, South Africa
INVESTIGATOR(S)	Mr W Mudzamatira
SCHOOL/DEPARTMENT	Geography, Archaeology and Environmental Studies/
DATE CONSIDERED	20 July 2018
DECISION OF THE COMMITTEE	Approved
EXPIRY DATE	16 August 2021

DATE 17 August 2018 **CHAIRPERSON** _____ (Professor J Knight)

cc: Supervisor : Professor K Sadr

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ Signature

____/____/____ Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Appendix II

Objective 2: Public awareness, opinions, and sentiments regarding pre-colonial stone-walled ruins in southern Gauteng.

Semi-Structured Interviews Open-ended Discussion Topics**:**

- Awareness of the stone-walled ruins and their destruction.
- Feelings towards the destruction/preservation of these SWS.
- Public participation in heritage management.
- Intangible heritage and sacredness.
- Knowledge of heritage legislation
- Importance of preserving pre-colonial sites.
- Managing the pre-colonial ruins in the region.
- Sustainable development.

Formal Questions

- Are you aware of the pre-colonial ruins in this area?
- What is your opinion of them? Should they be preserved/displayed?
- What is your relationship to the ruins and the landscape they are in?
- Do you wish to be involved in the decision-making processes concerning the fate of the ruins?
- Do you feel excluded from accessing the ruins?
- Do you exclude or facilitate visitors to the ruins?
- Can you economically benefit from these ruins and are they worth developing for tourism?
- Have you come across any information on the ruins and their history?

Topics of Discussions and Questions:

Specific questions to the public: SAHRA Heritage Officers

- From their experience working with contract Archaeologists and developers, what are their opinions on the values ascribed to the SWS ruins located southern areas of Gauteng
- How often have they seen development being stopped due to SWS ruins?
- What are their opinions on community archaeology involving the Sotho-Tswana?
- Have they made any efforts before to include custodial communities in the decision-making process on the fate of the ruins amidst development?

Archaeologists

- What are your opinions on CRM reports done in the study area have been inclusive of the publics concerned?
- What values towards SWS in Southern areas of Gauteng?
- What are your opinions in including publics in the management of these SWS ruins?
- What are your opinions of excavation as destructive to the sacredness of landscape?
- To what extent do contract archaeologists ensure that they do not only serve the interest of the paying client in making AIA decisions and opinions on the grading system that completely excludes community custodians?

Staff of Nature Reserves

- What values are ascribed to the SWS ruins in your Nature reserve?
- From their experience at the reserve, have they seen publics especially custodial communities wanting to perform rituals at the ruins? If yes, have they been given access and what is the procedure to allow them?
- Do visitors ask more information on these ruins?

Developers

- As developers what efforts have they done in the past in incorporation the architectural styles into new development and establishing awareness efforts to inform publics what was in the area?
- As urban development experts, what issues have you dealt with that involved preservation and excavation of ruins I n this area? What is town planning doing or did to consider preservation or community awareness on these SWS ruins?