Exploring place-making in the Vredefort Dome, South Africa: A mixed-method approach

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Abstract

Any space – interior, exterior and landscapes – becomes a place to which people attach meaning. The process where by meaningful space or a sense of place is formed is rarely considered in developmental planning. This article argues for an interdisciplinary approach to the identification of different types of meaning attached to the Vredefort Dome World Heritage Site, and proposes a methodology for assessing these as an aid to sensitive development interventions in such precious places.

ONTDEKKING VAN PLEKSKEPPING IN DIE VREDEFORT KOEPEL, SUID-AFRIKA: GEMENGDE NAVORSINGSMETODE BENADERING

Enige ruimte, hetsy dit 'n interne ruimte, eksterne ruimte of 'n landskap is – kan beskou word as 'n plek sodra mense betekenis daaraan heg. Die proses wat betrokke is by die skep van betekenisvolle ruimtes of sin van plek, word nie algemeen toegepas in ontwikkelingsbeplanning nie. In hierdie artikel word die gebruik van 'n multidissiplinêre benadering as belangrik beskou vir die identifisering van verskillende betekenisse wat aan die Vredefort Koepel Wêrelderfenisgebied geheg word. Daar word ook 'n metodologie voorgestel vir die assessering van hierdie betekenisse as 'n hulpmiddel vir 'n toepaslike ontwikkelingsbenadering met betrekking tot sulke betekenisvolle plekke.

HO ITHUTA HO ETSA SEBAKA MANE VREDEFORT DOME, HO LA AFRIKA BORWA: MOKGWA WA KATAMELO O KOPANENG

Sebaka, e ka ba sebaka sefe kapa sefe – ka hare, kapa ka ntle esitana le dibaka tsa naha, e eba sebaka hafeela batho ba hokella moelelo ho sona. Mokgwa wa tshebetso oo ho botjwang sebaka sa nnete kapa kelello ya sebaka ha se hangata e tadingwang moralong wa kgolo (ntshetsopele). Thuto ena e lwanela mokgwa wa katamelo o kopanetsweng boitsebisong ba mefuta e fapaneng ya moelelo e hokeletsweng ho sebaka sa Vredefort Dome esitana le ho hlahisa mokgwa wa tekanyetso ya yona e le thuso ho dinamolo tsa bohlokwa tsa kgolo dibakeng tseno tse kgahlisang.

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1. INTRODUCTION

Globalisation motivates context-insensitive development, fuelling international and inter-regional competitiveness in terms of economic growth (Hague & Jenkins, 2005: 25). Competitiveness expands cities and influences the rural hinterlands in different ways. Either an expanding semi-suburban rural waste is created, or local communities insist on contextual development for place-marketing purposes (McCarthy, 2008; Hague & Jenkins, 2005; Carmona, Heath, Oc, & Tiesdell, 2003: 101; Raagmaa, 2002; Haartsen, Groote & Huigen, 2000: 148).

South African cities also experience these forces, and high levels of urbanisation cause rapid settlement expansion. This causes uneven land use management, urban sprawl and environmental degradation (South Africa. Department of Environmental Affairs and Tourism, 2007; South Africa. Department of Land Affairs, 2007; Pillay, 2004). Areas with tourism value due to their strong sense of place are threatened by context-insensitive development, such as new middle- to high-income property developments. This threatens to change their place identity that gave rise to its tourism value in the first instance (Ferreira, 2007). The loss of symbolic place elements is therefore real in South Africa, with rural areas being especially vulnerable to such losses (Windsor & McVey, 2005: 151).

Little is known on how to integrate a rural or urban site's symbolic elements in the planning process (Jordaan, Puren & Roos, 2008). This article therefore aims to illustrate first how the symbolic elements of the Vredefort Dome World Heritage Site (hereafter referred to as VDWHS) were explored as an example of a rural place and, secondly, how these symbolic elements were concretised for spatial planning in the VDWHS, South Africa.

2. BACKGROUND TO THE RESEARCH

Place-making is a development process that creates places based on the symbolic and material contexts, implying that any location has a material and symbolic composition (Jordaan, Puren & Roos, 2008). Urban and

regional planning is well acquainted with assessing material components of locations. In terms of the symbolic elements of place, planning is less sure of itself (Hague & Jenkins, 2005; Ravetz, 1986: 45; Hall, 1982: 189). The notion of a location having both material and symbolic elements is not new and dates back to Roman times. Each place was considered to have a *genius loci* that determined the character or identity of a place (Norberg-Schulz, 1980: 18). *Genius loci* is more commonly known as 'sense of place', being the physical attributes (such as topography) of a location, its activities and subjective human experiences generated in that location (Figure 1) (Montgomery, 1998; Rapoport, 1977; Tuan, 1977; Relph, 1976).

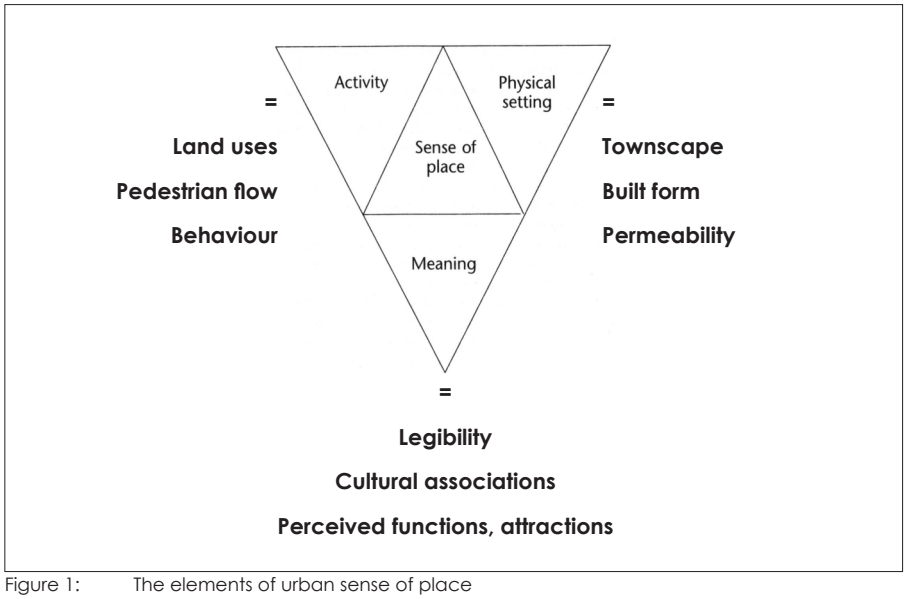

Figure 1: The elements of urban sense of place
Source: Punter, 1991: 27

Figure 1 illustrates the components of urban sense of place. What constitutes rural sense of place is more vague. Haartsen, Groote & Huigen (2000) found that the components of a rural place identity depend on the physical setting, the symbols linked to the landscape, and the functions associated with the place. In this respect, urban and rural sense of place show general consensus on its components. Rural sense of place can thus be defined as the character of a rural location based on the physical setting, the symbols associated with the physical setting and the functions present (agriculture or recreation).

It is generally agreed that the composition of both natural and built environments are material and symbolic (Hague & Jenkins, 2005; Thwaites & Simkins, 2005; Wheeler, 2002; Meethan, 2001: 168; Montgomery, 1998; Sharpley & Sharpley, 1997: 16; Norberg-Schulz, 1980; Rapoport, 1977; Relph, 1976). This dual nature of places implies a connection between places and the people who inhabit or use these, as people assign to and derive meanings from places. These place meanings translate into emotional bonds that influence attitude and behaviour within those places (Davenport & Anderson, 2005: 627). The importance of the symbolic nature of places becomes obvious when the sense of place is threatened or lost. Such loss may affect individuals' psychological, physiological and economical living standards (Windsor & McVey, 2005; Holmes, Patterson & Stalling, 2003; Bell, Greenen, Fisher & Baum, 2001: 286). Loss of sense of place is the result of forced relocation, destruction of a place due to war or natural disasters (Holmes, Patterson & Stalling, 2003), and contextually insensitive physical development, empty of meaningful places and symbols (Arefi, 1999; Relph, 1976).

Planners may have knowledge about the effective ordering of physical elements and activities of places without understanding the subjective experiences of these places (Hague & Jenkins, 2005; Bell, Greenen Fisher & Baum, 2001: 382). A multidisciplinary approach can broaden a planner's grasp of the subjective experiences of a site and how these can possibly influence development.

Researchers from planning and psychology are engaged in this joint research effort to achieve a more holistic view of people's experiences of the VDWHS. The findings assisted the planners to spatially concretise the symbolic elements for the purpose of spatial planning (Manzo & Perkins, 2006; Hague & Jenkins, 2005).

3. RESEARCH SETTING

In 2005 the Vredefort Dome, South Africa, was declared a World Heritage Site (UNESCO, 2008). The Vredefort Dome forms part of a 2,023 million year old meteorite impact site, the oldest known site of its kind. It is located approximately 120 km south-west of Johannesburg and has a radius of 190 km, making it the largest astrobleme yet found on earth (UNESCO, 2008). The Vredefort Dome is located in the Free State and the North-West provinces (Figure 2).

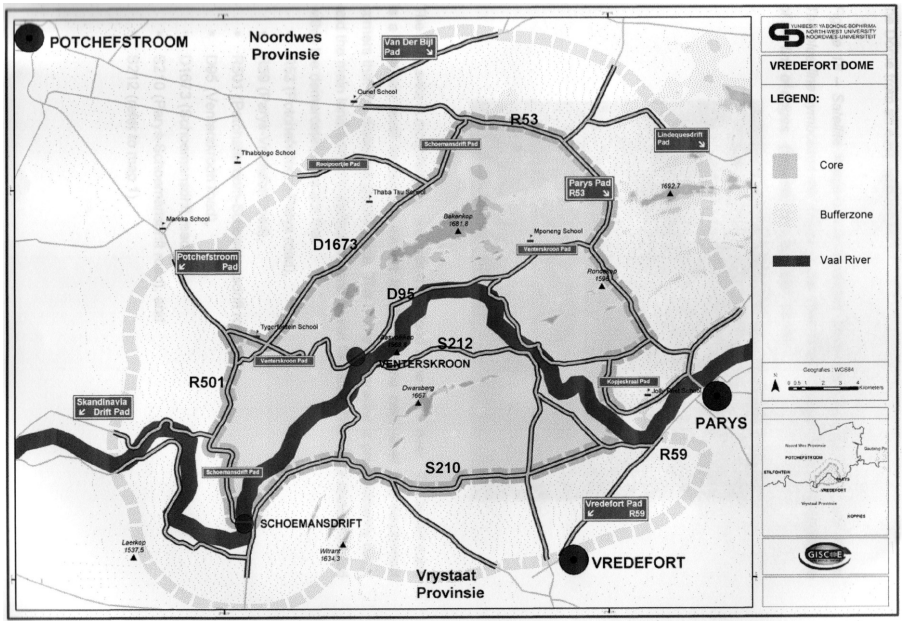

Figure 2: The core and buffer areas of the VDWHS, important routes, urban centres and the Vaal River
Source: Giscoe (Pty) Ltd, 2006: map

The prominent physical features of the Dome are hillocks, the Vaal River and ridges (Figure 3). The character of the Dome is predominantly rural and the main land uses are agriculture and tourism-oriented facilities.

Figure 3: Prominent features of the Vredefort Dome World Heritage Site
Source: Jordaan, 2006a: own pictures

The World Heritage status increased the awareness of the potential tourism value in the area. This newly acquired status created concerns about the increasing number of tourists, and future (possibly inappropriate) development that can affect the area's natural character and its unique sense of place (Drewes, Puren & Roos, 2006). Such conflicting expectations between preservation, conservation and the use of resources (especially in the tourism sector) are not confined to the VDWHS, but is a relatively well-known international phenomenon in rural places (Kaltenborn & Williams, 2002: 189).

4. RESEARCH METHODOLOGY

Previous studies on sense of place use either qualitative or quantitative approaches. Quantitative studies focus mainly on measuring sense of place and its components, or identifying variables that play a pivotal role in the formation of sense of place (Kyle, Graefe and Manning, 2005; Shamai and Ilatov, 2005; Nanzer, 2004; Williams and Vaske, 2003; Kaltenborn and Williams, 2002; Williams, Anderson, McDonald and Patterson, 1995; Williams and Roggenbuck, 1989). Qualitative studies focus on understanding sense of place by means of understanding people's world view and the way they experience the world (Davenport & Anderson, 2005: 629). For the purpose of this study it was decided to follow a mixed-method sequential exploratory strategy (Figure 4).

Since little is known about the symbolic meanings of rural areas such as the VDWHS, the qualitative study was completed and then used to direct the quantitative study (Creswell, 2003: 216). This means that phase one explored the sense of place experience of the inhabitants of the VDWHS, while the second phase determined the locations and the physical features in which these experiences were constructed.

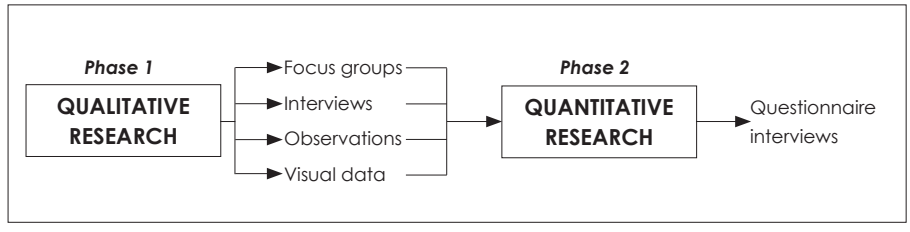

Figure 4: Sequential exploratory approach followed in the sense of place research
Source: Jordaan, 2006: own drawing

4.1 Qualitative study

An inductive approach[1] was used to explore sense of place, allowing the researchers to investigate peoples' place experiences and their structures of the world in their natural settings (Denzin & Lincoln, 2000: 3; Merriam, in Creswell, 1994: 145). A qualitative approach was appropriate for this study as it emphasised the importance of contextual knowledge (Creswell, 1994: 5).

4.1.1 Participants

Purposeful sampling was used to obtain rich and contextual data (Creswell, 1994: 148). The selection criteria made it possible to include participants from different cultural backgrounds, gender and age groups (ages 7 to 65). The following participants were included:

- 13 people with a vested interest in the area, either as property or product owners, who participated in two focus groups;
- 12 participants who participated in one-on-one interviews;
- 26 learners from Tygerfontein Primary School who made visual presentations of their relationship with the environment;
- 20 people who took photos of the environment and were interviewed to explore the meanings attached to these photos, and
- 40 people who participated as observers during all of the above.

4.1.2 Data gathering

Data was gathered using various methods, including focus groups, individual interviews, observations, photographs and the Mmogo™-method[2].

4.1.2i Focus groups

A focus group is an effective and economic way to obtain rich, descriptive data from a small group of individuals in order to understand their sense of place experience of the VDWHS (Wilkinson & Birmingham, 2003: 90; Sarantakos, 1998: 249). The data was collected in a conversational manner, focusing on the participants' experiences of the physical and social contexts of the Vredefort Dome. The following question was used to start the discussion: 'Please tell us about your relationship with the Vredefort Dome.' Follow-up questions explored the experiences that emerged, such as elements that made the identity of the VDWHS unique will have to be preserved in the face of potential future development.

1 Following an inductive approach allows researchers to move from the particular to the general and to make inferences from observations with the aim of finding patterns and associations derived from the data (Leedy & Ormrod, 2005; Babbie, 2007).

2 The Mmogo-method™ emphasises the relevance of understanding the symbolic meanings within culture-specific contexts. The method is based on the imaginative reflections that are the complex outcomes of the ongoing alignment of interactions with the contexts surrounding people. The Mmogo- method™ is regarded as a visual narrative that assists people to recount experiences and to make sense of the context in which they function. It extracts the implicit knowledge of culture into visual "writings" to produce a new form of social text to which people can relate (Roos, 2008).

3 For example, during the Mmogo-method™ session, some children kept looking at the observers for unspoken affirmation. Others were not interested in their own initiative and were influenced by their classmates. Some were very shy in the beginning which influenced their tempo of work and quality of the model. Environmental qualities recorded were the observation location (such as a classroom), the quality of the surroundings and aspects such as seating arrangements.

4.1.2ii Individual interviews

The flexibility of individual interviews enabled the researchers to meet diverse situations in which the interviews were conducted and to gain detailed information concerning the research subject (Babbie, 2007: 306; Wilkinson & Birmingham, 2003: 43; Sarantakos, 1998: 464). The participants were presented with the same open-ended question as the one that was posed to the focus groups. These interviews offered the opportunity to record spontaneous answers from participants and immediate follow-up of questions and clarification of statements when required (Babbie, 2007: 306; Sarantakos, 1998: 266; Kvale, 1996).

4.1.2iii Observations

The researchers observed and recorded participants' ongoing behaviour while they were participating in the research and interacting with their environment (McBurney & White, 2007: 215; Wilkinson & Birmingham, 2003: 117). For the purpose of this study aspects[3] such as non-verbal communication (individuals' roles and mannerisms), the nature of the physical setting, the way participants interact with each other and the environment, the tone of the session, and the way the interaction ended, were observed (Gay, Mills & Airaisian, 2006).

4.1.2iv Visual narratives: Photographs

Photographs allowed for different viewpoints of the same phenomenon to emerge that may not have previously emerged from the written or spoken data (Bolton, Pole & Mizen, 2001: 503). Photographs were particularly useful in this research since they were socially constructed and defined the participants' relationships with the VDWHS (Banks, 2001: 10; Harper, 2000). They allowed for the active involvement of the participants for a specific purpose (Banks, 2001: 45; Bolton, Pole & Mizen, 2001: 504). Participants were asked to take photographs of the places that had special meaning to them. Since the participants themselves took the photographs, they were the 'authors' of the photographs – the photographs carried the meanings of their own choosing (Banks, 2001: 10; Bolton, Pole & Mizen, 2001: 506; Rose, 2001: 22).

4.1.2v Visual narratives: Mmogo-method™

The Mmogo-method™ [4] is based on the theoretical principles of social constructionism[5], symbolic interactionism[6] and community psychology (Roos, 2008). This method acknowledges that meaning-making is based on interaction within specific sociocultural contexts.

The Mmogo-method™ facilitated an understanding of the symbolic meanings of the participants in their culture-specific context (Roos, 2008). The participants created their own data with visual representations, based on the open-ended question: 'Make a visual presentation of your life in this area (the VDWHS).' In addition, the built models made it easier for the children to express abstract concepts or experiences that might have been difficult to verbalise.

The Mmogo-method™ used clay, grass stalks, and coloured beads as a projective technique to understand the presentation of meanings when participants found it difficult to express themselves regarding abstract and emotional content (Roos, 2008). Participants were divided into groups (eight to ten individuals per group) and asked to build their models simultaneously, allowing observations of the interactions between participants. After completing the models, individual participants were asked about the meanings of the visual presentations.

4.1.3 Data analysis

All data were analysed according to thematic content analysis[7], aimed at qualitative analysis of the content of texts, pictures and other forms of verbal, visual or written communication (Sarantakos, 1998: 279). It also allowed for a more in-depth study of the research topic, as both the 'explicit meanings' (the visible, surface text) and the 'implicit meanings' (the underlying meanings and symbols) could be included in the research (Sarantakos, 1998: 280).

Textual data were analysed according to the steps of Giorgi (Burns & Grove, 2001). The first step was to read the entire description. Then units from the descriptions were discriminated according to a psychological perspective with a focus on the phenomenon under study. In the third step the psychological insight contained in each of the meaning units was expressed more clearly. The last step was to synthesise all the transformed meaning units into a consistent statement with regard to the participants' experiences.

The visual data were analysed by listing and categorising the constituent elements and literal meanings of the photographs and visual presentations. The categories chosen were exhaustive, exclusive and singular in order to ensure replicability. In addition, participants were asked what the listed elements meant to them. Linking the visual data with the textual data allowed themes and statements to reveal themselves within the context and meanings that participants experienced in the VDWHS (Rose, 2001).

Data from the Mmogo-method™ was analysed in four steps, focusing on both the explicit and implicit socialcultural content of the visual presentations. During the explicit analysis, participants were asked questions about the physical components of their presentations. This was followed by determining the relationships between the various objects in the visual presentation. The explicit content of the presentation was then applied to the initial research question. Implicit analysis of the data explored the contextual meanings of

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4 Mmogo is a Setswana word, meaning relatedness, co-ownership, togetherness, co-construction, and interpersonal threads.

5 Social constructionism is based on the notion that sociocultural and historical processes are central to people's constructions of reality. Language practices are important in the never-ending flow of intersubjective communication (Willig & Stainton-Rogers, 2008; Creswell, 2003).

6 Symbolic interactionism focuses on how meanings emerge from people's interaction with others regarding designating symbols to the objects to which they relate. Objects become symbols when human beings assign meaning to them through social relationships (Charon, 2001).

7 Thematic content analysis is concerned with determining topics from the data. The data is analysed by placing the topics into themes and subthemes produced inductively or deductively. Thematic content analysis is particularly useful in applied and practical research (Brown & Locke, 2008).

the specific objects in the presentation, especially with reference to the VDWHS.

4.1.4 Trustworthiness

Triangulation[8] was used to increase the trustworthiness[9] of the data and findings (Lincoln & Guba, 1985: 307; Sarantakos, 1998: 469). Various data collection methods were used for methodological triangulation (Ammenwerth, Iller & Mansmann, 2003). Data triangulation included different sets of data such as focus groups, individual interviews, observations, photographs and Mmogo-method™ models (Halcomb & Andrew, 2005: 74). Investigator triangulation involved various researchers, observers or interviewers, each with their own personal methodological background, in data gathering and analysis (Ammenwerth, Iller & Mansmann, 2003). Multidisciplinary triangulation was obtained by involving researchers from the disciplines of planning and psychology (Sim and Sharp, 1998).

4.1.5 Ethical aspects

Permission to conduct the research was acquired from the North-West University's Ethical Committee, the Department of Education and the Chairperson of the Vredefort Dome Bewarea, as well as informed consent from all the participants. Participants were given a description of their purpose and involvement in the research, the content of the research, the duration of their involvement, confidentiality issues and their voluntary participation. The relevant people were contacted for appointments, and data for this part of the research was obtained in March 2006.

4.1.6 Results

Six main themes (Figure 5) emerged from the study. These themes informed the second phase of the research.

4.1.6i Theme 1: Importance of relationship with environment

In the Vredefort Dome different people and groups had different relationships with the area, which were expressed in relation to the unique historical heritage, the natural environment and its rural and untainted atmosphere. The following quote provides an example of the importance of a relationship with the natural and untainted environment:

> 'Vir my is dit nogal baie belangrik om die stukkie natuur ongeskonde, so ongeskonde as moontlik te kan behou.' [For me it is quite important to be able to keep this piece of nature as unspoilt as possible].

services and opportunities due to the Dome's physical isolation from neighbouring towns such as Potchefstroom and Parys.

4.1.6iii Theme 3: Symbolic meanings

Several symbolic meanings emerged from the research. Feelings of independence and autonomy, in particular freedom from the pressures of city life

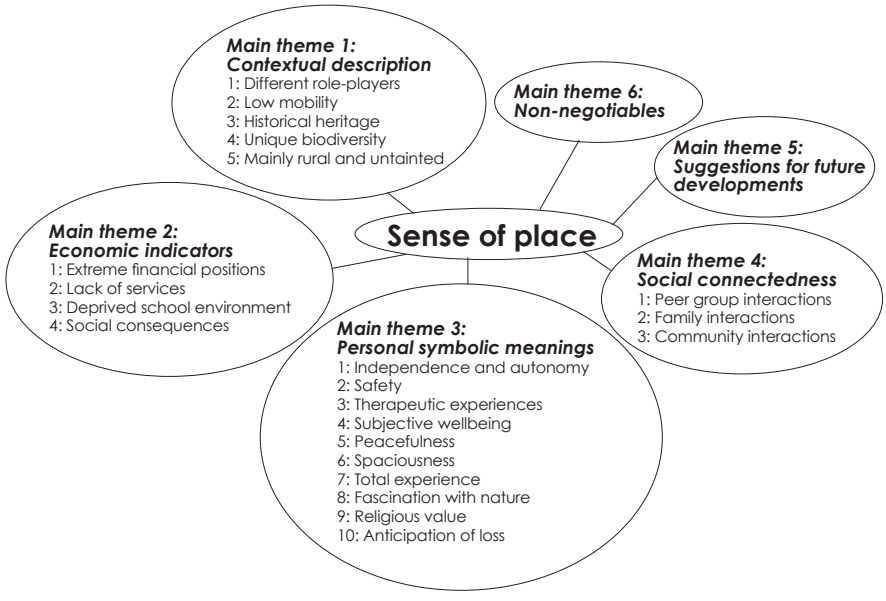

Figure 5: Main themes surrounding sense of place in the VDWHS.
Source: Drewes, Puren & Roos, 2006: 8

4.1.6ii Theme 2: Economic indicators

Extreme financial situations existed among inhabitants (Figure 6), especially between landowners and non-landowners. A lack of services – such as electricity supply or public transport – was especially prominent for the poorer inhabitants. Whereas several landowners experienced the area positively (as a place to get away from the 'rat race'), some poorer non-landowners experienced frustration at the lack of and the 'rat race', were described. Physical safety and property were not threatened by crime:

> '[W]ant jy kan stop en iemand oplaai…en ek het geen vrees nie.' [You can stop and give someone a lift and have no fear for your personal safety].

Therapeutic experiences and feelings of subjective well-being in the VDWHS provided a setting to recentre

Figure 6: Extreme financial situations among inhabitants of the VDWHS.
Source: Jordaan, 2006b: own pictures

8 Triangulation is a strategy that ensures the trustworthiness of qualitative research findings. Triangulation refers to the use of multiple approaches, because the strength of one approach will not only compensate for the weaknesses of another. Information derived from a variety of angles can confirm, eliminate, or clarify the research problem. Triangulation provides a complete understanding of the concept under investigation (Halcomb & Andrew, 2005; Lewis-Beck, Bryman & Liao, 2004; Decrop, 1999; Sim & Sharp, 1998; Chadwick, Bahr & Albrecht, 1984).

9 The credibility and scientific values of qualitative findings are ensured by applying trustworthy guidelines such as credibility, transferability, dependability and confirmability. These guidelines include a prolonged engagement in the research field, persistent observation, different forms of triangulation, peer debriefing, negative case analysis, referential adequacy, member checking, a confirmability audit, reflexive journals as well as the inclusion of raw data, the theoretical basis of the study, field and methodological notes, data management and surveys (Lincoln & Guba, 1985).

participants' lives in times of personal emotional unrest:

> '[J]y kan op jou eie stukkie [eiendom in die Koepel] sit en jy kan voel hoe daai moegheid uitgaan, sonder om 'n woord te sê' [Sitting on your property in the VDWHS you can feel fatigue seeping away, without even saying a word], and 'Dis soos 'n herlaai van batterye' [It's like recharging your batteries].

In addition, feelings associated with peacefulness and spaciousness prevailed:

> '[D]is 'n innerlike vrede wat jy kry' [It's a feeling of inner peace]. 'Ek dink dis die…rustigheid van die omgewing. Die feit dat dit totaal onderontwikkel is…daar is groot oop ruimtes…' [I think it is the peacefulness of the area. The fact that it is underdeveloped and has great open spaces].

Participants expressed a 'total' (holistic) experience. It touched the participants on a physical and emotional level, which is why the participants considered it important to preserve the local sense of place:

> '[J]y moet fyn ingestel wees op die omgewing...Jy moet dit nie bederf nie' [You must be in tune with the environment. You must not spoil it].

There was a fascination with nature that was not only ecologically unique and varied, but also provided a livelihood for some of the inhabitants:

> '[Die omgewing] het absolute unieke berge, klowe…plantegroei, uitsig, klimaat, die rivier. Al daai elemente is wat mense aantrek' [The area has unique mountains, ravines, vegetation, scenery, climate and a river. All those elements attract people]. Also, 'I go into the field…I get some meat and eat it…I catch them, I eat them'.

Religious experiences and a connectedness to God were expressed: 'ek sien die Here se hand in die natuur' [I see God's hand in nature].

Some of the inhabitants foresaw a feeling of loss in anticipation to potential future development in the area.

4.1.6iv Theme 4: Social connectedness

Participants felt that social interactions and relationships with their families, friends and other residents were an important part of life in the VDWHS. The area offered the inhabitants opportunities to develop various social relationships with other people. This became especially clear during the Mmogo™ session where participants' models reflected symbols of social interactions and community relationships (Figure 7).

Figure 7: Examples of Mmogo-method™ models that reflect symbols of social interaction in the VDWHS.
Source: NWU Potchefstroom Campus, School of Psychosocial Behavioural Sciences, 2006: Mmogo-method™ models by school children

In Figure 7 a participant's social interaction with friends was symbolised by a mattress because it allowed his friends to sleep over at his house. The second and third models contain human figures of a grandfather and an uncle, respectively. The participants explained that the extended family plays an important role in their lives, especially in the sense of protecting and raising the children.

Participants felt that the environment facilitated social interactions at different levels. If the relationships between human beings and the environment were disturbed in a major way, the social connectedness of the area might suffer as a result of insensitive development decisions or actions.

4.1.6v Theme 5: Suggestions for future developments

Future development ought to happen in zones, with each zone's nature determined by factors such as the number of tourists, type of recreational facilities, private ownership of land, and the natural and cultural resources. The type, quantity, and style of developments must not contrast with the environment, and the sense of place must be preserved:

> 'Die struktuur sal aansluit by die omgewing, dit sal struktuur wees wat uit hout, klip, natuurlike herfskleure bestaan, met ander woorde saamsmelt en nie skreeu teen die omgewing nie. Daar sal oop ruimtes wees, grasvelde, berge…daar sal `n element wees van rustigheid' [The structure has to be in harmony with the environment, consist of wood, stone, natural autumn colours, blend in with the setting and not be in glaring contrast. There must be open spaces, grasslands and mountains. There must be an element of tranquility].

4.1.6vi Theme 6: Non-negotiables

Non-negotiables identified included high noise levels, pollution, large-scale development, disruption of the horizon line, vehicular-related activities (motor sports) and facilities that attract large numbers of people:

> 'Ek dink van my kant af is die eerste ding jou uitsig op die koppe. Sodra jy begin om jou um ... jou horisonlyne en daai goeters te breek, sodra jy jou geboue hoër sit want jy het ligte wat jy orals kan sien. So ... so jou estetiese waarde gaan verlore ...' [The first thing is your view of the hills. As soon as you start to break the horizon line, as soon as you build your buildings higher, you have lights that can be seen from everywhere and your aesthetic value is lost].

4.1.7 Themes informing the second research phase

The researchers found that the Dome was experienced in terms of different relations, including a unique personal and subjective relatedness, close interpersonal and social relationships, and an awareness of the broader sociocultural context. For example, an awareness of the economic diversities among inhabitants guided the researchers to include participants from varied income brackets. An inclusive approach made it possible to take note of the lack of services and facilities by groups such as the unemployed, children and the elderly. To improve these shortages with the proposed planning guidelines, participants were asked to identify specific needs in terms of services, facilities and infrastructure that will guide future place-making decisions in this area.

Personal symbolic meanings were used to determine what type of sense of place is important, since individuals' relationships with and meanings of their environment differ, not only from person to person, but also from culture to culture and between different groups (whether it is between demographic groups, or groups such as residents and tourists) (Kaltenborn & Williams, 2002;

Rapoport, 1977; Tuan, 1977: 162). Any future place-making decisions ought to ideally reflect all broad sections of the population.

Suggestions for future development played a very important role in the development of the quantitative questionnaire as it pointed to place-making principles to preserve or strengthen the sense of place of the VDWHS. References to physical place elements alerted researchers to the importance of showing visual representations of the VDWHS to participants (Figure 8). Maps of the VDWHS linked the fifth theme to geographical locations, an important step for incorporating symbolic environmental elements into the planning process. Place-making, therefore, is not only determining a location's sense of place, but also suggesting how this sense of place can be manifested physically.

The final theme guided the researchers to investigate the type of developments and activities that are allowed within the Vredefort Dome, as well as where. This enabled the researchers to address the activity setting of the sense of place of the area for place-making purposes (see Figure 1).

Figure 8: Visual representations of the VDWHS presented to the participants during the second phase of the research
Source: Drewes, Puren & Roos, 2006: 18

4.2 Quantitative study

The quantitative research was based on the assumption that participants had a specific sense of place of the VDWHS, based on their attachment to and relationship with the area. The purpose of including a quantitative survey in the research was to generalise from the small sample of findings (from the qualitative study) to the general population of the VDWHS so that inferences could be made about the inhabitants' spatial meanings and experiences.

4.2.1 Survey design

The aim of the second phase of the project was to spatially link the experiences and relationships of participants with the VDWHS by means of a questionnaire for place-making purposes. A once-off cross-sectional design was used in this phase (Creswell, 1994: 118).

4.2.2 Population and sample

As no census data exists for the VDWHS, sampling could not be based on individuals in the VDWHS. Instead a location-based sample was used. Data available from Giscoe in 2006 stipulated the presence of 420 registered farms in the VDWHS at the time the survey was conducted; this was used as the sampling unit.

A systematic random sampling of the registered land parcels was done and included parcels in both provinces. All the registered farms were listed as a sampling frame and a sampling fraction of 10 was computed, implying that every tenth farm on the list was drawn for sampling reasons (Sarantakos, 1998: 145). In total 42 farms were included in the survey, representing a 10%[10] sample. Due to the small population size, this sampling method was appropriate and had the added benefit of being unbiased towards population elements included in the sample (Schnetler, 1989: 96; Steyn, Smit, Du Toit & Strasheim, 1998: 24).

Participants included individuals from both genders, aged 19 years and older. Most participants spoke Afrikaans (53%), followed by Setswana (29%), English (8%), and other languages (10%).

Due to the fact that this research was location-based (as opposed to respondent-based), both the landowner and a non-land owning employee (either the first male, first female, or first child, in this order) were interviewed. The latter means that, for example, on the first farm the first available male employee was interviewed; on the second farm the first female employee, and on the third farm the first available child of an employee. On the fourth farm, the first available male employee would be interviewed, on the sixth a female employee, and on the eight a child of an employee. This sequence was repeated for the remaining 34 farms.

4.2.3 Data gathering

Data was gathered using a survey questionnaire during a structured interview between July and September 2006. A structured interview ensured minimum interviewer bias and the highest degree of uniformity of procedure (Sarantakos, 1998: 247). In addition, as sense of place is not a term widely known to lay persons, the trained interviewers were able to clarify any uncertainties the participants had in connection with the research topic. In terms of the survey questionnaire, the advantages were those of economy of design, a rapid turn-around in data collection and the ability to identify attributes of a population from a small group of individuals (Creswell, 1994: 119).

Interviews were conducted in the mother tongue of the respondent (Afrikaans, Setswana, or English) to lower the chance of communication distorting the responses (Henning, 2004: 54). Respondent responses not related to the questionnaire, but relevant to the topic, were taken note of during the interview.

4.2.4 Instrumentation

The structured interview was conducted according to a questionnaire completed during an interview (Appendix A). The initial questionnaire mainly focused on the material dimension of the study area. After much consultation with psychologists, more questions that focused on the symbolic elements of the area and visual aids (photographs and 1:125000 cartographic maps) were included. The highly visual nature of the questionnaire made it possible to gather subjective responses from participants in a systematic way that might not have been possible if a purely textual questionnaire had been used.

Questions were based on the themes identified during the qualitative research phase and were therefore grounded in the views of the VDWHS inhabitants (Creswell, 2003: 221). The questionnaire was designed to capture symbolic environmental elements (participants' environmental meanings and experiences) and link these spatially to zones or landscape features in the Dome. Participants were asked to:

10 The VDWHS Sense of Place Project was mandated by the Department of Environmental Affairs and Tourism, who stipulated the use of a 10% sample in the research. This determined the sample size used by the researchers.

- mark the priority and intensity of symbolic experiences;
- demarcate the location (or zones) where they experienced the sense of place of the VDWHS on a cartographic map, and
- identify three-dimensional features that reflect the visual character (natural and built) of the area.

Participants scaled symbolic experiences of the Dome according to a set of affective statements (see section 4.1.6iii). A Likert scale was used to scale responses. A Likert scale employs a set of response categories ranging from very positive to very negative, one of which the respondent has to choose (Sarantakos, 1998: 465). Using a Likert scale in this instance enabled the researchers to determine not only the direction of experiences, but also their relative intensity according to unambiguous ordinality (Babbie, 2007; McBurney & White, 2007).

For determining the sense of place zones, participants were asked to mark the areas where they experienced the area's sense of place. This is a well-known research tool, especially in geographical and psychological research (García-Mira & Real, 2005; Polic *et al.*, 2005; Smrekar, 2005; Broderick, 2003; Tuan, 1975; Lynch, 1960). These types of maps provided spatial information on the participants' personal experiences in the study area (Smrekar, 2005: 11).

The three-dimensional features (routes, edges, districts, nodes and landmarks[11]) that represented the visual character of the VDWHS were tested using a selection of photographs, in conjunction with a simple Likert scaling. Participants had to identify the photographs that best represented the visual character of the VDWHS. They also had to scale these material elements according to their perceived importance in terms of sense of place.

4.2.5 Data analysis and validity procedures

The quantitative data was analysed using descriptive statistics. Descriptive statistics is useful to order and summarise data, making it possible to discover inherent trends and characteristics of the data (Steyn *et al.*, 1998: 5). Each possible response available on the questionnaire was assigned a code, after which frequencies (the number of times a specific answer was chosen) of the answers were calculated.

The sense of place maps were analysed according to a grid system placed over the map (Figure 9). Results were tabulated in a frequency table. These maps were drawn free-hand by participants and the demarcated areas were only taken as relative geographical indications of the experience of sense of place in the VDWHS. As it was the aim of the researchers to gain a general impression of sense of place spatial trends, it was not considered necessary to digitise the exact markings of each participant using a GIS program, as was done by Smrekar (2005).

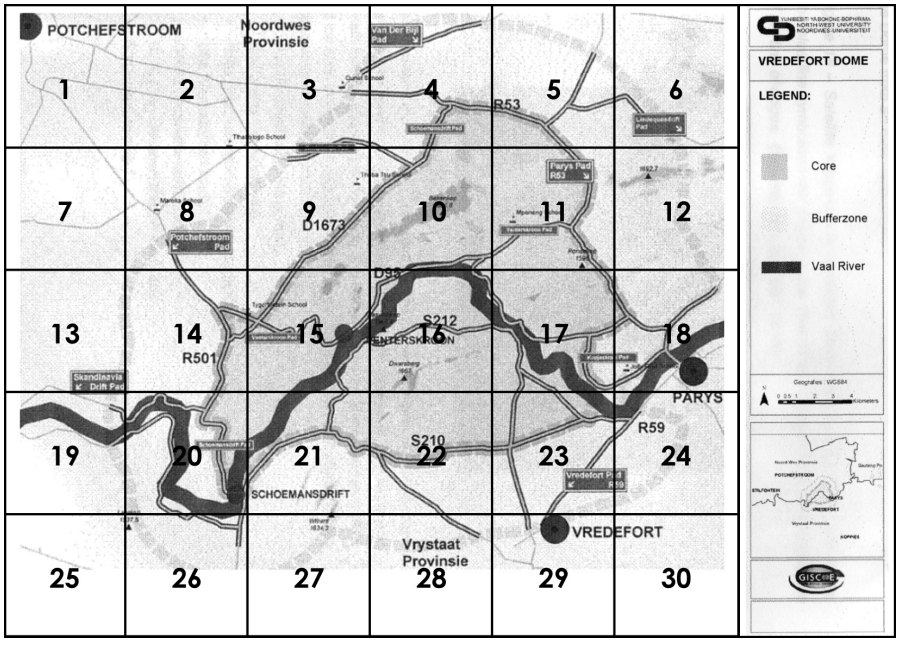

Figure 9: Grid system according to which the sense of place maps were analysed
Source: Jordaan, 2006c: own drawing, adapted from Giscoe (Pty) Ltd, 2006

As for the Likert scale questions, using Likert scales to scale the participants' experiences and their perceived hierarchy of the material elements was appropriate as it provided a high degree of validity and reliability (Sarantakos, 1998: 90). Furthermore, the main data collection tool was applied to the different groups, making it possible to validate the research instrument with a sample representative of the VDWHS population (Creswell, 2003: 221).

Validity was ensured via content validity, which refers to how much a measure covers the range of meanings included within a concept (Babbie, 2007: 147). Sense of place is a concept that refers to both symbolic and material environmental elements. As the questionnaire was based on the symbolic elements of the initial findings, and linked these symbolic elements to the physical environmental elements present in the VDWHS, content validity was ensured.

Reliability is the property of consistency of a measurement that gives the same result on different occasions (McBurney & White, 2007: 129). This research produced spatially linked findings that confirmed the qualitative findings, meaning that the research instrument could be considered reliable and valid (Ammenwerth, Iller & Mansmann, 2003: 244).

As such, validation was ensured by means of triangulation (Williamson, 2005). Validation of the results indicated a strong experience of the natural and rural identity of the area (Puren, Drewes & Roos, 2008: 140; Ammenwerth, Iller & Mansmann, 2003: 244).

4.2.6 Findings

Participants agreed that the VDWHS elicited unique emotional experiences in people (as opposed to lack of any experience). Therefore the material surroundings of the VDWHS were not considered separately from the symbolic place elements by the inhabitants. The experiences that all participants found to be universal and very strong in the

11 For lack of existing theory on the subject the choice of elements was based on the elements as identified by Kevin Lynch (1960) routes (existing roads), edges (the boundaries of the core area and buffer zone), districts (provinces or core and buffer areas) nodes (existing towns and hamlets) and landmarks (ridges and the Vaal River).

VDWHS were 'peaceful and quiet' and 'free and unbounded'. 'Connectedness with nature' and 'holiness' (sacredness) were other experiences about which participants felt strongly.

In terms of symbolism, participants considered the VDWHS to be rural – basic infrastructure, such as gravel roads, with the presence of a hamlet (Venterskroon) characterised by low development and population densities and scattered historical built structures. Natural features, such as the ridges, hillocks and the Vaal River were considered to be more prominent symbols of the Dome than man-made rural elements such as wind pumps and low-level bridges scattered throughout the area (Figure 10).

The landowner and non-landowner groups experienced some differences in sense of place, as illustrated in Figures 11 and 12. Figure 13 represents the cumulative frequencies for each section on the grid system. However, general consistencies between maps 12 and 13 do exist. The greatest differences between the groups are the inclusion of the town of Vredefort – located outside the VDWHS – and the lower sense of place experience intensity of the non-landowner group.

The final sense of place map shows the sense of place experience to be slightly more extended than either of the groups on their own. It is clear from the final map that participants considered the area's sense of place to be strongest in the core area, around Venterskroon, the ridges, hillocks and the Vaal River. Further away, the Free State areas around Schoemansdrift, Vredefort and Parys were still considered to have a sense of place, though not as strongly as the previously mentioned areas.

5. DISCUSSION

Knowledge of what sense of place means to people, its location, and what elements generate it is the first step towards place-making. In the case of this study, findings indicated the importance of people's relationship with an untainted environment, expressed as strong emotional experiences such as 'peaceful and quiet' and 'free and unbounded'. Relationships with other people were also considered important, as the environment is conducive to meaningful social interactions.

In order to preserve these experiences, the proposed place-making guidelines will maintain the rural character of the area in which people feel safe and free of stress associated with the pressures of modern life, in nodes such as Venterskroon (Puren, Drewes & Roos, 2008: 142). The guidelines, however, should also make provision for the needs of the poorer inhabitants of the area regarding services, such as addressing the lack of tarred roads making public transport and service maintenance difficult.

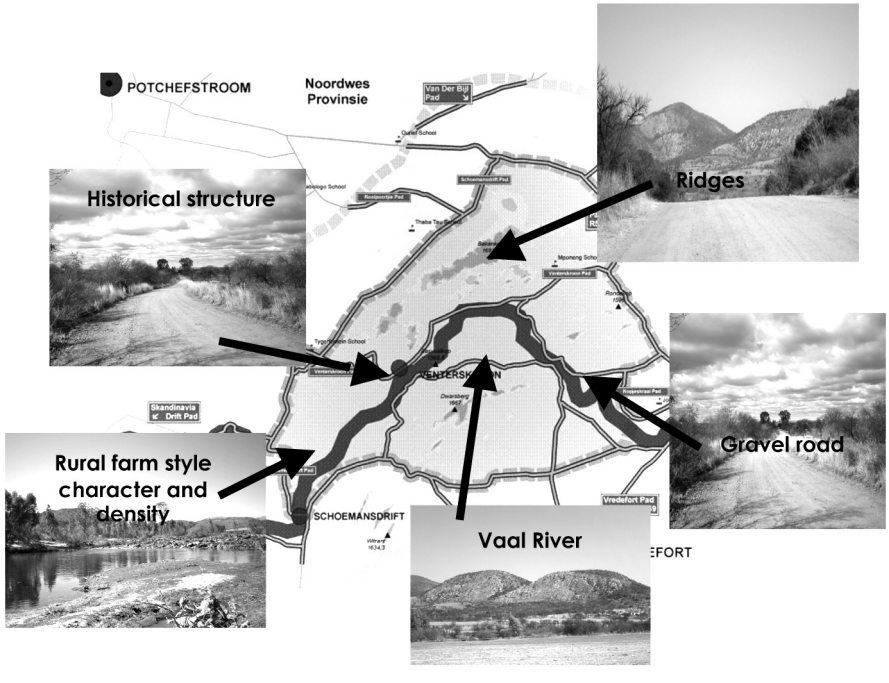

Figure 10: Symbols of the VDWHS and their locations
Source: Jordaan, 2006d: own drawing, adapted from Giscoe (Pty) Ltd, 2006

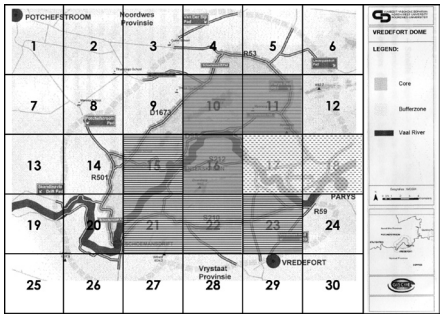

Figure 11: Sense of place map, landowners
Source: Jordaan, 2006e: map adapted from Giscoe (Pty) Ltd base map, 2006

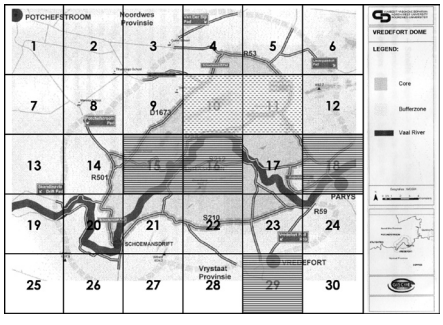

Figure 12: Sense of place maps, non-landowners
Source: Jordaan, 2006f: map adapted from Giscoe (Pty) Ltd base map, 2006

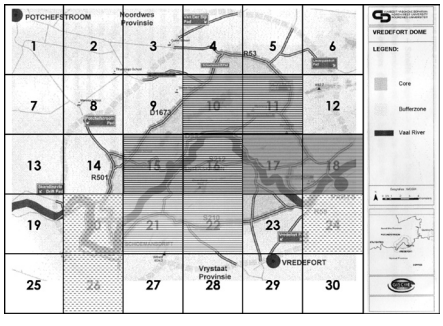

Figure 13: Strength of sense of place in the VDWHS
Source: Jordaan, 2006g: map adapted from Giscoe (Pty) Ltd base map, 2006

In terms of cultural diversity it was found that it was possible to create a sense of place map that represented the collective experience of the inhabitants, regardless of varied backgrounds. This is especially relevant in South Africa with its different cultures and intra-cultural groups. However, despite general consensus on the research topic, slight differences between the groups signalled the need for further research on this issue as this might not be the case in other places. Research could be done on how a sense of place can be preserved while more transport

services are provided to people in the area who do not have the financial means to own private transport.

The sense of place maps revealed that certain areas of the VDWHS had a stronger sense of place than others. This was translated by the researchers into place-making guidelines which, in the first instance, emphasised the natural features (hillocks, ridges and the Vaal River) that partly constituted the sense of place of the area and, secondly, provided for minimum negative human intervention in terms of planning actions (Puren, Drewes & Roos, 2008: 142).

The former type of guideline allows for identifying and managing a system of 'spots of excellence' where the sense of place of the VDWHS is experienced strongly and where people feel closer to and engaged in their relationship with the environment. Spots of excellence should not dominate or damage the natural character of the place, but rather complement the environment to provide people with the opportunity to totally emerge in their experience of the environment. Typically, such spots of excellence would be located near hillocks, ridges and the Vaal River.

The latter type of guideline proposed the development of a hills-and-ridges policy to protect the horizon line against development, as well as a zoning policy to guide development and conservation in the area according to three proposed zones (Figure 14). The first zone (preservation zone), in the core of the VDWHS, was an area in which no further development was allowed in order to preserve the sense of place. The participants regarded this zone as the area with the strongest experience of sense of place. The second zone (enhancement zone) followed the course of the Vaal River and allowed river-front properties to be developed according to strict land use, density, height and architectural guidelines. This zone represented the river as one of the three-dimensional features that gave the Vredefort Dome its visual character. The final zone (supporting zone) was a flat and outstretched surface where the use of place-making guidelines focused specifically on maintaining the visual character of the area. Though the participants did not necessarily demarcate this zone as an area of strong sense of place, this area was necessary to facilitate a gradual 'entrance' between the strong sense of place areas and the remainder of the hinterland not included in the VDWHS.

From the above it is evident that the mixed-method approach provided a more comprehensive understanding of sense of place that inspired the place-making guidelines for the Vredefort Dome area. This mixed-method research approach resulted in a wide range of knowledge. First, a combination of disciplines on place

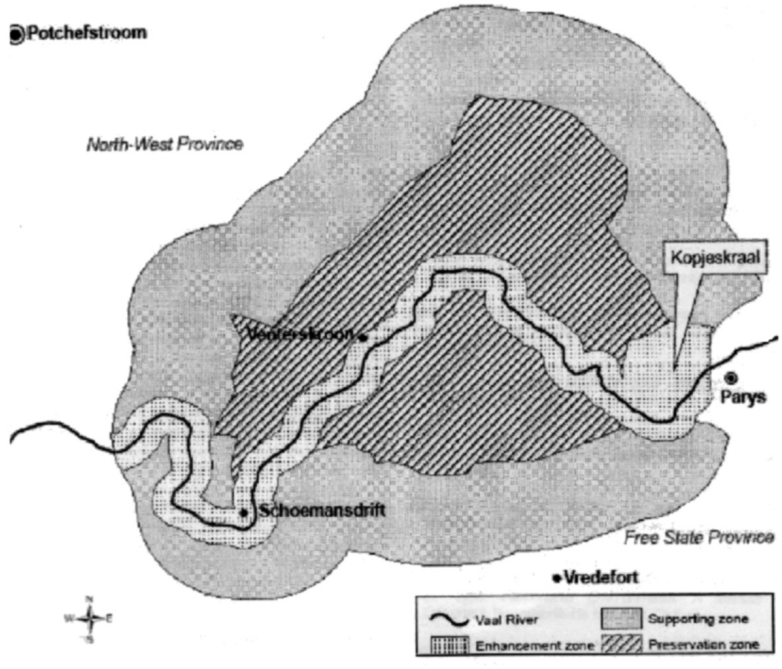

Figure 14: Proposed zoning policy for place-making in the VDWHS
Source: Puren, Drewes & Roos, 2008: 143

research may prove to be rewarding for planners in general. In the South African context (where this research is new), it can expand the planner's knowledge of sense of place in order to practise place-making. Interdisciplinary methods enabled researchers to study phenomena where too little was known about the phenomena to formulate proper hypotheses (Sumner, 2003). Furthermore, interdisciplinary research may have added value because this type of research is more creative and more likely to lead to applicable results due to the fact that it was more oriented towards problem-solving approaches (Carayol & Nguyen Thi, 2005). Research on sense of place was therefore regarded as more appropriate when informed by multiple research traditions.

Secondly, the research broadened the scope of urban and regional planning to include not only elements from the material aspect of the environment, but also symbolic environmental elements in the planning process. This process, better known as place-making, is fast becoming an important topic in the environmental disciplines at an international level, and South African planners and planning authorities ought to take heed of this new approach to planning for places. It was obvious to the researchers that the inclusion of symbolic environmental elements is not currently a priority in South African planning circles, nor do many of the development legislation or guiding documents of the country make mentionable references to this important aspect. These documents focus mostly on socio-economic goals and take very little heed of a more well-rounded approach to development issues in the country.

As such, research on the symbolic nature of environments ought to focus on the sense of place of different landscapes (rural and urban) and on the differences, similarities, or both between the experience of sense of place.

6. CONCLUSION

Planners cannot separate themselves from the community for which they plan. This research provided new insights into what constitutes place within a specific geographical space. As such, the qualitative findings concerning place and place elements make

important contributions to a better understanding of human-environment relationship that extends beyond the physical or tangible: Place is more than physical form.

In addition, disruption to place attachment is not only detrimental to the psychological well-being of people, but has the potential to disrupt the process of planning interventions. The findings of the research indicated that the intrapersonal aspects could not be isolated from the physical aspects of the environment, as there was a continuous interplay between them. Therefore, the value of understanding the meanings attached to a place might enrich planners' understanding of people's behaviour in specific geographical areas. This insight could be used for the general sustainable management of the area.

This type of research was probably a first step towards uncovering and addressing latent place attachment that influences place-making. Place-making is proposed as a sort of mediation between internal and external values by means of institutional arrangements such as spatial planning, land-use guidelines, and building codes.

Another important implication of this research was to recognise the uniqueness of physical settings in which planning and development took place. Physical phenomena such as rivers, hillocks, and ridges (as in the VDWHS) occur in many settings, but the distribution, arrangement, and collective atmosphere of a place, intertwined with unique symbolic meanings, distinguish it from other places. Spatial planning should recognise these unique identities and seek innovative ways to treat and protect these identities. The findings of this research are valuable in compiling documents such as Integrated Development Plans, Spatial Development Frameworks, and Management Plans. Examples include:

- Planners' awareness of the personal meanings inhabitants attach to a specific place;
- Development guidelines and building codes that embrace the uniqueness of an area.
- Methods and instruments used for public participation that capture the essence of place. Particularly important is that the symbolic meanings should be unravelled to improve or protect the quality of life of local inhabitants.
- Economic growth and development that is redirected to neighbouring towns such as Parys and Vredefort, while strictly controlled development is allowed inside the VDWHS. This can address the basic needs in the area (for example transport) and exposure to tourists (such as certain public spaces where numbers are kept low, while the intensity of the experience is maximised).

Place, sense of place, and place attachment are concepts which have - although theoretically discussed - until now played a marginal role in planning practice, development and policy-making. This may partially be attributed to planners not readily knowing how to deal with abstract concepts. Interdisciplinary collaboration, in this instance, illustrated a rewarding and enriching research journey, and a renewed insight into the value of the human experience within the sphere of urban planning.

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