PLANNING FOR SCHOOLS AND THE SPREAD OF GLOBAL CULTURE IN SOUTHERN AFRICA'S RURAL COMMUNITIES:
RESEARCH INTO THE PLANNING AND DESIGN OF RURAL SCHOOLS IN THE EASTERN CAPE PROVINCE OF SOUTH AFRICA

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INTRODUCTION:

The School of Architecture at the University of Port Elizabeth has been involved in research into school planning and design in the rural areas of the Eastern Cape Province for some time. In this research it has worked very closely with officials of the Provincial Government and, in some instances, with communities. Our programme of planning, design and research involved the production of three outputs, namely: The production of designs for schools by students working within the constraints of context, the production of a Design Primer handbook for use in the design of rural schools by both officials, communities and consultants, and the completion of research theses by Masters students into aspects of school design. The completion of these undertakings has led to the development of insights into the impact of change brought about by education on previously isolated communities in Southern Africa.

THE CONTEXT FOR THE RESEARCH:

The context for the research was the Eastern Cape Province, one of nine provinces in South Africa. In brief the Eastern Cape Province may characterised as follows:

Capital: Bisho
Other important cities: Port Elizabeth, East London, Grahamstown, Graaff Rienet
Principal languages: Xhosa 83,8%
Afrikaans 9,6%
English 3,7%
Population: 6,8 million
Area (km²): 169 580
Percent of total area of South Africa: 13,9%
GDP at current prices (1994): R29 049 million
Percent of total national GDP: 7,59%
(Department of Internal Affairs, 2001/2002)

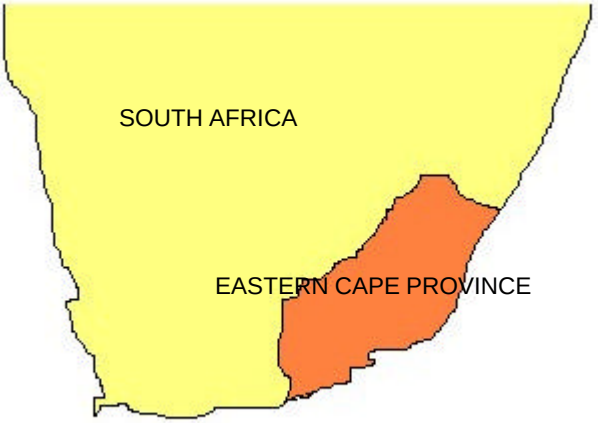

Figure 1: The Eastern Cape Province

The following sections describe the province in more detail:

Physical Environment

Climate

The province varies climatically from mild temperate conditions (14-23 ºC) along the coastal areas to slightly more extreme conditions (5-35ºC) among the inland areas, with the mountain areas experiencing winter snows and summer rain (Stone, Weaver and West, 1998).

The province has four different climatic regions:

Coastal:

The Coastal Region has a warm temperate maritime climate with moderately warm summers and mild winters in the west, ranging to subtropical in the east.

Figure 2: School in coastal area.

Figure 3: School in Transkei midlands.

Midlands:

One can expect moderate temperatures in the Midlands where summer temperatures seldom rise over the 30-degree mark. In the winter months (from June to August) it is dry and pleasantly cool to warm during the day.

Mountainous:

This area experiences extreme temperatures, with warm summers and very cold winters. There is mainly summer rainfall in the form of thunderstorms. There is often snow in winter, especially in the higher regions.

Karoo:

The Karoo is characterised by very hot summers and cold winters and gets as little as 400 mm of rain annually, which falls mainly in summer. The winter months are almost completely dry with cool to cold nights. (ibid).

Figure 4: School in the mountains.

Figure 5: School in the Karoo

Topography and Fauna and Flora

The Eastern Cape is very diverse in terms of topography, geology, soils and associated vegetation. In general, soils are shallow and of low agricultural potential, except along river valleys where deeper alluvial soils are found. The topographically diverse Eastern Cape has resulted in an equally diverse pattern of vegetation. Most of the major South African veldtypes can be found in the Eastern Cape, ranging from coastal forest, thornveld, bushveld and Karoo to grassveld (Lubke and van Wijk, 1998).

Infrastructure

Infrastructure as a whole is poor in the rural parts of the Eastern Cape. Important cities are few and far between with the roads linking them often in poor condition. The province's main infrastructure includes:

Two ports: East London and Port Elizabeth,
Three airports: Port Elizabeth, East London and Umtata.
A network of national and other roads

Cultural Environment

History

The Eastern Cape has seen many wars over the past centuries. For years it has been a melting pot of different groups and interests in South Africa. During the Eighteenth and Nineteenth Centuries the Eastern Cape was the site of the first contacts between white and black settlers, with many resultant conflicts. During the twentieth century the policy of Apartheid divided the region into "ethnic", supposedly independent, homelands of Transkei and Ciskei. This lasted until the democratic elections held in 1994.

Population Profile

With its almost 7 million people, the Eastern Cape has the third-largest provincial population, living on about 169 600km² of land. Population growth between 1985 and 1993 was 2,6%, slightly higher than the national average of 2,4%. Half of the population is between 15 and 65 years old. 43% of the province's population is under the age of 15. More than 54% of the adult population is female. 55% of the population is urbanized but only a third live in settlements that are officially categorised as towns. The racial composition of the Province is: 87,8% Black, 6,4% Coloured, 5,6% White, and 0,2% Asian (Premier's Office, 2001).

Age and Gender

One of the reasons for the high growth rate is the young age structure of the population (ibid). Just over 43% of the population are under the age of 15 and another 25,5% are between the ages 15 and 29. This is the highest portion of children in the country. One

reason for the high portion of children is that children are often left with their mothers when fathers migrate to seek work in other provinces. More than 54% of the adult population is female. Most of these women are poor; live in isolated rural areas in the former homelands. In many cases, prevailing social values and conditions favour large families.

Socio-Economic Environment

Economic

The Eastern Cape province is the poorest province in South Africa. 57% of households and 64% of individuals in the Eastern Cape live in poverty. Approximately 2,2 million of these poor people are children (Urban Services Group, 1997). The absence of men in the Eastern Cape rural areas has several implications. The most important of these is that households headed by women tend to be poorer than households headed by men. In addition, women have multiple roles in the household activities, such as cooking and caring for children, as this is time consuming it often prevents women from seeking formal employment. Those who do manage to find employment are formally employed in menial positions, where rates of pay are generally lower. These factors combine to keep many households headed by women in the trap of poverty. Poverty is extremely high in the Eastern Cape rural areas.

Education

Education is not only pivotal to economic prosperity but it also plays a crucial role in enabling South Africans to improve the quality of their lives and contribute to a peaceful, productive and democratic nation. These sentiments are captured in the Vision Statement of the Department of Education (2002), which states: "Our vision is of a South Africa in which all our people have access to lifelong education and training opportunities, which will in turn contribute towards improving the quality of life and building a peaceful, prosperous and democratic society". According to the Bill of Rights contained in the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996), everyone has the right to a basic education, including adult basic education and further education, which the State, through reasonable measures, must make progressively available and accessible.

"Education is one of the most important long-term investments a country can make. There has been a significant increase in education expenditure under the post-apartheid democratic Government, from R31, 8 billion in 1994 to R51, 1 billion in 2000. At almost 6% of the gross domestic product, South Africa has one of the highest rates of government investment in education in the world." (Department of Internal Affairs, 2001/2002)

The South African education system accommodates more than 12, 3 million learners, 300 000 university students and 190 000 technicon students. The system encompasses 29 386 primary and secondary schools, 375 000 educators, 5 000 inspectors and subject advisers, and 68 000 officials, managers and support personnel. There are 156 technical colleges accommodating 125 000 students in the Further Education and Training sector. There are 21 universities and 15 technicons in the Higher Education sector.

The 13 years of formal schooling in South Africa can be broken down as follows:

Receptor School:	Grade 0
Middle School:	Grades 1 – 9
High School:	Grades 10 - 12

20,9% of those aged 20 years or older have never received any schooling, while only 4,7% have completed some form of higher education (Department of Education, 2001). Compared with the rest of South Africa, the literacy rate of the adult population in the

Eastern Cape (72,3%) is well below the official national average of 82,2%. Many of these illiterate people are aged people and women in rural areas.

Only 49% of the learners in the Eastern Cape passed the matriculation examination in 1996, placing the province seventh of the nine provinces in the country. The learner: classroom ratio was very high in the former Transkei and Ciskei areas, exceeding 60:1 in certain districts. The former Transkei was also characterised by a very high learner: educator ratio, with certain areas exceeding 40:1 (ibid). The Eastern Cape also had a high percentage of over-age learners (i.e. three or more years older than the average for the grade, with the average for Grade 1 seven years), and more than 30% of all learners in the secondary grades were found to be too old for the grade they were enrolled in.

Outcomes Based Education

Outcomes-based education (Curriculum 2005) is a global trend in education now being implemented in schools throughout South Africa (ibid). The method focuses on the specific outcomes that will be required of the learner, with emphasis on learning as a life long process. This requires the process to be learner centred as opposed to teacher centred, which means that the learner is encouraged to learn through self-discovery and the teacher serves more as a facilitator than as an instructor. Other practical implications are: less emphasis on text books, integration of subjects and more group work.

Social Environment

A large proportion of people in the Eastern Cape live in settlements that are governed by traditional structures of groupings and hierarchies. Within this dispersed subsistence farming structure are more formalized centers.

THE PROGRAMME OF RESEARCH AND DESIGN INTO RURAL SCHOOLS

The programme of research and design into rural schools in the Eastern Cape was aimed at producing real solutions to perceived problems. The programme consisted of three parts, namely: the design of rural schools by various design classes, the production of a Design Primer by senior students and myself, and three focused Masters research topics.

The programme began with an extensive tour of the rural parts of the Province and an in-situ examination of numerous schools. What quickly became apparent was the very low level of design of these schools, their paucity of facilities and lack of a sense of being substantial institutions (McLachlan, Schmidt, Swart and Wintermeyer, 2002, p5).

STUDENT DESIGNS

The Receptor School

The design of Receptor Schools was a project emanating from the Second Year Design Studio. The Receptor School is the preschool for children aged 3 to 6 years and is intended to prepare them for entry into Grade 1. The Receptor School is intended to be located in close proximity to a Primary School. The following examples were designed for 25 to 30 children.

Sammy Chou: Receptor School designed for a mountainous site. This is a simple design based on creating flexible spaces that enjoy a strong relationship to the outside.

Ilsa du Pisanie: Receptor School for a Karoo site. This Receptor School provides a protected courtyard for play and is accessible for community activities. Slides 28 27.

Figure 6: Receptor School for a Mountainous Site by S Chou.

Figure 7: Receptor School for a Karoo Site by I du Pisanie

The design of the large combined Primary and Middle School was undertaken by the Fourth Year Design Studio. This school included Grades 1 to 9 and was seen as the largest and most complex of the school types. The following examples were designed for schools of 400 to 600 pupils.

Grant Bullard: This school was designed for a coastal location. The strong concept is derived from utilizing the idea of the street in order to create a high quality of outdoor space.

Noel Hechter: Also designed for a coastal site, this school uses carefully crafted outdoor spaces in a design in which great attention was paid to the development of the classroom.

Figure 8: Combined School for a Coastal Site by G Bullard.

Figure 9: Combined School for a Coastal Site by N Hechter.

George Kunje: Combined School for a Karoo site. This design is inspired by the architecture of the desert and makes use of innovative brick structures in order to achieve its objectives.

Lisa Cocks: Combined School for a Karoo site. This design is based on the principle of the acacia tree and the shade that it provides in a hot desert climate. The shading device is largely dependant on simple elements that can be changed as the seasons change.

Figure 10: School for the Karoo by G Kunje.

Figure 11: School for the Karoo by L Cocks.

Bobby Thane: Combined School for the Midlands. This school is based on the use of courtyards in order to give each age group a defined outdoor area.

Quinsely Sale: Combined School for the Midlands. This school combines the ideas of the street and the focused courtyard in order to create a strong sense of unity in the design.

Figure 12: school for the Midlands by B Thane.

Figure 13: School for the Midlands by Q Sale.

Bruce MacGillivray: Combined School for a mountainous site. This school is planned along the contours of the sloping site and makes use of thatch as a roofing material.

Maphula Phalatsi: Combined School for a mountainous site. This school is planned around a small stream and the opportunities that this offers for crop growing. Local materials (thatch and stone) are used.

Figure 14: School for a Mountainous Site by B MacGillivray.

Figure 15: School for a Mountainous Site by M Phalatsi.

The design of the High School was undertaken by the Third Year Studio. The High School was designed to cater for Grades 10 to 12, that is a school of around 200 to 300 pupils.

Mimi Sao: High School for a mountainous site. This design uses a strongly defined outdoor space to link the elements in an intriguing arrangement.

Neal Fisher: High School for a midlands site. A strong spatial concept orders this design in which great care was taken with the design of the classrooms.

Figure 16: High School for a Mountainous Site by M Sao.

Figure 17: High School for a Midlands Site by N Fisher.

These designs were documented and handed over to the Provincial Government for use by their officials in briefing consultants and communities (McLachlan, et al, 2002).

THE DESIGN PRIMER

The next stage of the programme involved the production of a Design Primer. This document is intended to provide stimulating guidance in the design of schools and is intended to be used as such by officials, communities and consultants. The Primer adopts a design specific approach and covers a wide range of topics including the following brief extracts from the document.

Design Considerations

When an architect undertakes a design project, whether it is a house or a hospital or a school, there are various criteria that he takes into account in order to see that the building functions properly and is architecturally sound. Some of these criteria are functional in nature, i.e. the size of the required spaces and their relationship to each other, the appropriate materials and methods of construction, etc. Others are as a result of human needs, i.e. the quality of space required for the activity planned for a specific space, and others are purely architectural, i.e. the form of the building and what this form represents. These criteria are largely site specific. They are dependant on the unique context of each building. The correct and complete understanding of all these criteria in the process of design ultimately determines the success of the final built school environment (McLachlan, Schmidt, Swart and Wintermeyer, 2003).

Choice Of Site

In choosing a site for the school it is important to remember the following eight guidelines:

Location
Access
Where do the learners live
Other Schools
Ownership
Community Use
Suitability of the land
Special Features (ibid)

Response To Climate

- In coastal climates:

Where it rains often it is important to have places that are out of the rain. This means that the classrooms and other places such as walkways and entrances need to be undercover. If it is hot and humid then there needs to be lots of ventilation so that the school building and the people using it can be kept cool.

- In midland climates

This region is situated between the coastal and mountainous regions. In hot summers times the school building needs to be cool inside, if it is hot outside. The building needs to create as much shade as possible. In winter when it is cold outside it needs to be warm inside. This area also has quite a lot of rain that needs to be dealt with. In some places closer to the coast it can also become humid.

✍ In mountain climates

Here it is important for the building to make the inside spaces as warm as possible, especially if it is very cold outside. The heat that is generated needs to be kept in the building. In the summer the temperature outside can be quite high and so protection from the sun needs to be considered.

✍ In Karoo climates

In this region, where it is very windy and dusty the school building needs to make places that are protected. This region is very dry, with little rain. When it is hot, the school building wants to be to be cool inside, if it is hot outside. The building needs to create as much shade as possible. In winter it may be cold outside so the school buildings need to warm inside. (ibid)

Response To Topography

Steep Slope

If the site that has been chosen is on a steep slope, relate the building to the slope. This can be done in a few ways. For example, break the building into smaller pieces and build each building on a small terrace. Try to use existing terraces and level areas. Shape the buildings to fit these level areas. Or build the buildings on one level along the contours of the slope. Try to use a north-facing slope. If it is not, check to see if it gets enough direct sunlight, especially in winter.

Soil conditions

It is important that the building is built on stable ground that is good for building on. This can be checked by a professional such as an engineer. If the ground is poor and not good for building on (for example if it is too clayey), then the design of certain parts of the building will need to change. Usually this will mean that the foundations of the building will need to be stronger. This usually means that they will cost more money to build. If a building is built on poor soil and precautions are not taken in the beginning then the building might have serious difficulties in the future. There might be serious cracking that will make the building unsafe.

Flooding

The building needs to be built on a part of the site that does not get flooded. Flooding usually happens close to rivers and on slopes where water collects and runs off to rivers. If there is little vegetation in an area the water usually runs off faster and forms dongas. It can be dangerous to build the school building in these areas and so these areas must be avoided.

Special features

Sometimes there are parts of the site that are special and you should want to keep. For example, if there are trees that provide shade for people to sit under, don't build the building there. Rather build the building on the worst part of the site and keep the special parts as they are.

Vegetation

If there is too much thick vegetation on a site it may be difficult and costly to clear the site. It is possible to think of alternatives to clearing bush such as building over the bush. If there is too little vegetation on a site that is quite steep the running water may make dongas that will make that area a poor area to build on. (ibid).

Response To Cultural Context

Our buildings are naturally a reflection of our culture and the society we live in. Just as we can tell the kind of bird by looking at its nest, our buildings tell us a lot about ourselves.

We can look back in history and just by looking at the buildings of a particular group of people at a point in time we are able to gather a lot of information about the people who lived in them.

Global culture

Today a lot of people around the world have access to the same technology. In big cities around the world a lot of people have more or less the same needs and a similar way of doing certain things. Therefore a lot of these cities look similar, even though they might be on different continents. One is no longer able to recognise their individual cultural origins by looking at their buildings. They have become part of a global culture.

Use of standard designs

Through the need to produce many buildings at once, designers and planners have come with standard designs for some building types, like schools, hospitals, houses, etc. People (often living in cities of global culture) produced theses standard designs and their aim was to simplify the design process and to speed up the overall process. Unfortunately these standard designs usually do not take account of the local culture and traditions of the individual places where these buildings are intended to be built.

Vernacular architecture

People living in rural areas all over the world have developed a traditional way of building over centuries, passed on from one generation to another and many still build like that today. People have learnt which materials are best suited for their buildings, which sites are more favourable for building and how to construct the building to make sure it performs well in their specific climate. People often decorate these buildings in their own individual way to show who lives in a certain house and to tell outsiders form which tradition they are. Traditionally, people are very proud of buildings they have built themselves and they are wonderful testimonies of the local culture and traditions.

Technical performance of vernacular buildings

The builders of vernacular architecture have the great advantage of the past experiences of the builders before them. This building knowledge is past on from one generation to the next and mistakes can be avoided in future. These builders have an intimate knowledge of the locally available building materials, the climate all year round and the various sites used for building. Therefore these vernacular buildings are often of good construction, well maintained (because the builders know how to maintain these buildings) and perform better.

The school as a reflection of the local culture and traditions

The school building is often the biggest building in the rural landscape and therefore has an automatic importance by virtue of its scale. These buildings have the opportunity of being a symbol of people’s culture and traditions. Just like we can see our reflection in a mirror, the school building is a reflection of the local community. If the community is proud of their school and want to teach their children that education is important for their future, the school building will be well looked after.

It is the architect's responsibility to engage with the local community to gain insight into the vernacular architecture of the area and to consult with them as to what would be an appropriate way to reflect their individuality in the final building. It is the community's responsibility to engage with the architect and share with him / her their rich cultural heritage and how they would like the school to be a reflection of their beliefs and traditions. The community's commitment to the building will extend past the initial construction, but will be their responsibility for the life of the building.

Advantages to the community

One of the many advantages of a locally relevant building that takes into account local traditions is that during the construction phase the community can benefit from:

Employment opportunities that utilize local construction skills
New skills training during construction
Utilization of local material suppliers. (ibid).

Creation Of Spaces

✍ Planning in stages

History has shown that a venture of the scale and magnitude of a school's construction is seldom a single enterprise. Many of the largest schools in South Africa have, in many cases, evolved over a period of hundreds of years. Very often, being initially developed by the local community. In planning new schools we can learn from such cases by viewing the current infrastructural needs for a new school as only the first stage of construction, and provide allowance for future developments in the initial design.

✍ School as a learning environment

Research has indicated that the architectural environment can affect behaviour. It can stimulate or subdue, aid creativity or slow mental perception, cause fear or joy. In fact, it can affect a whole range of psychological phenomena. This fact is of particular importance to school design. The spaces in and around school buildings should be spaces in which children are comfortable and desire to be in.

✍ The space between buildings

The external spaces between the classroom units should be designed positively, i.e. they must be designed with as much care as the adjacent interior spaces. These spaces can serve as outdoor classrooms for art projects, building things, gardening, botany, etc, and should be designed as such. They may be surrounded by buildings, trees, hedges, fences, or walkways or may be in the form of a natural amphitheatre.

✍ Natural lighting and climate control

It is important to utilise natural lighting as much as possible in the school building. This is energy conscience decision. Natural light is the most comfortable kind of light to work by. Generally, direct light should be avoided inside classrooms. Large south facing windows are in most cases an appropriate way of supplying non-direct south light to a classroom.

✍ Safety and security

A school is a place of refuge for its learners, a place where they can feel safe and out of harms way. Also, the building itself, and its contents inside need to be secured and protected. (ibid).

Materials And Methods

Each area and site will have materials that are specific to it. In some places the soil is good enough to be used as a building material. In other areas thatching grass is available for roofing. It is important that the design considers local materials and technologies.

The use of local materials and methods is linked to several other issues raised in this design primer, such as:

Local materials are usually more cost effective.
Local skills are usually available to use these materials.
Local materials are usually sensitive to climatic issues discussed under
Local materials and methods reflect local traditions and identity.

There is a common misconception amongst professionals, officials and some communities that local materials are inferior to imported materials. This has resulted in schools in the past and presently being built of expensive imported materials that are not very appropriate to their site and is a major reason why so many schools in the rural Eastern Cape look the same and have no relation to their specific context. (ibid).

Maintenance

Once a building is completed and occupied, regular maintenance is vital for the building to function properly. The maintenance of school buildings is the responsibility of the School Governing Body (SGB) and must begin immediately on occupation of the building. Maintenance entails regular chores such as cleaning toilets and sweeping floors, to cleaning gutters and painting. The school governing body is advised to anticipate and budget in advance for regular maintenance, as well providing for unexpected maintenance such as broken windows and leaking roofs, etc. A clean, well-maintained and properly functioning school building is an indication of the pride that the learners, teachers and the community have in their school and themselves, and contributes to the quality of education offered to the learner. (ibid).

Design Primer Summary

This document is a collection of a wide range of information. What this suggests is that designing schools in the rural Eastern Cape is complex. The author's believe that in order for school buildings to become more than containers to house learners, a concerted effort is required from all involved in the process so that the design skill of the architect can be put to full use. There are several fundamental issues that need urgent attention if rural schools in the Eastern Cape are to become well designed, appropriate, well used centres of education and valuable contributors to the life that surrounds them. Some of those are:

School buildings need to be built for a specific site. The use of standard plans should be discontinued.

The design process is an important and lengthy process. It should not be rushed because this will have a negative effect on the design of the building.

It is important that schools are built in important and proper places.

School buildings need to be designed with a specific community in mind. School buildings that all look the same belong to no one and don't represent any specific group of people.

MASTERS STUDENTS RESEARCH

Three M. Arch students are currently busy with focused research topics into aspects of school design in the rural Eastern Cape. Their research topics include the following.

An evaluation of the impact of the architecture of the standard Public Works school on the attitudes and educational performance of rural scholars who have grown up in an environment dominated by traditional, vernacular structures such as the wattle and daub rondawel with its thatch roof. This project is progressing with some difficulty. The student is currently busy with data collection by means of questionnaires and interviews in the rural areas.

An investigation of the perceptions of the community of architects into the shortcomings of the procurement and school provision process. This project involves interviews with officials and consultants and the collection of data by means of questionnaires.

Finally, an evaluation of the locational implications of schools in the rural landscape. This project is trying to establish the ideal locational criteria as well as to evaluate the settlement forming strengths of schools in rural areas.

These three Masters projects should be finished early next year.

REFLECTIONS ON THE IMPACT AND SPREAD OF GLOBALIZATION

This programme of design and research into rural schools in the Eastern Cape Province of South Africa has exposed myself and my students extensively to the world of the traditional, rural Xhosa people who are the inhabitants of this realm. What one experiences is not a static traditional African environment either physically or culturally. Rather it is an environment in rapid transition. The spread of the money economy and the materialistic values of the capitalist world have had a profound effect on the world of the rural Xhosa. School education, however rudimentary, has played a substantial part in this process. Formal education, first introduced two hundred years ago by the missionaries, has brought with it the cultural messages of the global economy. Schooling is both a key to an empowered future as well as a vehicle of permanent cultural change.

Specific observations based on the experience of the past two years of work in the area include:

- People in rural communities want school buildings that in their view resemble what they perceive to be the norm in the developed world, even if this means sacrificing regional architectural flavour. This seems to be rooted in their desire to have access to and participate in global culture.
- People in rural communities want their school buildings to be built with facebrick and sheetmetal roofs even if their functional performance is worse and their costs are higher than traditional materials because these are seen to be modern and sophisticated, while wattle-and-daub and thatch roofs (the traditional vernacular materials that are very cost effective and highly functional) are seen to be unacceptable and backward.
- The use of standard plans is much favoured by the officials, and by communities, that is until communities are exposed to real design. The response of communities to designed school campuses is very positive once they engage with an architect.
- The locational implications of a school complex in a dispersed rural community, and its potential to generate settlement is not well appreciated by either the officials or the communities.

Rural people in the Eastern Cape are proud of their identity and heritage and are enthusiastic in embracing school education for their children, there seems to be an acceptance of the need for change and development that is encouraging. There is a

dichotomy in this relationship in which people cling to their ethnicity but want access to global knowledge and values.

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