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The Byre: Nguni Cattle Research and Training Institute

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THE BYRE

NGUNI CATTLE RESEARCH AND TRAINING INSTITUTE

BY TONI SERRAO

Marguerite Poland, author of 'The Abundant Herd', in her book speaks about an old cattle byre on the plain below Ubombo , this century old byre was made of twisted branches of trees, the ancient wood, petrified into rock like shapes and the palisade deeply rooted in cow dung laid in layers for generations. This place, she says, has of a reverence, as there is in any other byre, a fragrant silence when the herd is at pasture, a sense of community and ease when it is kraaled . It is here where the ancestral shades gather, where cows are milked, where the herd is brought at night, where the drongo calls, in praise of cattle, from a vantage near the byre as dusk deepens into night.

(Poland, 2003: 10)



This document is submitted in partial fulfilment for the degree:
Master of Architecture (Professional)
at the University of the Witwatersrand, Johannesburg, South Africa, in the year 2012.



Byre *[bahyuhr]* - n :

A building in which cows are kept, a cow shed.

THE BYRE

NGUNI CATTLE RESEARCH AND TRAINING INSTITUTE

All images are by author,
unless otherwise stated.

1. Composition of Mammals.
(Yoshida, W. 2011)

I, Toni Jose Ponte Serrao (student number: 0508828Y) am a student registered for the course Master of Architecture (Professional) in the year 2012. I hereby declare the following:

I am aware that plagiarism [the use of someone else's work without permission and/or without acknowledging the original sources] is wrong. I confirm that the work submitted for assessment for the above course is my own unaided work except where I have stated explicitly otherwise. I have followed the required conventions in referencing thoughts, ideas, and visual materials of others. For this purpose, I have referred to the Graduate School of Engineering and the Built Environment style guide. I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my unaided work or that I have failed to acknowledge the source of the ideas or words in my own work.

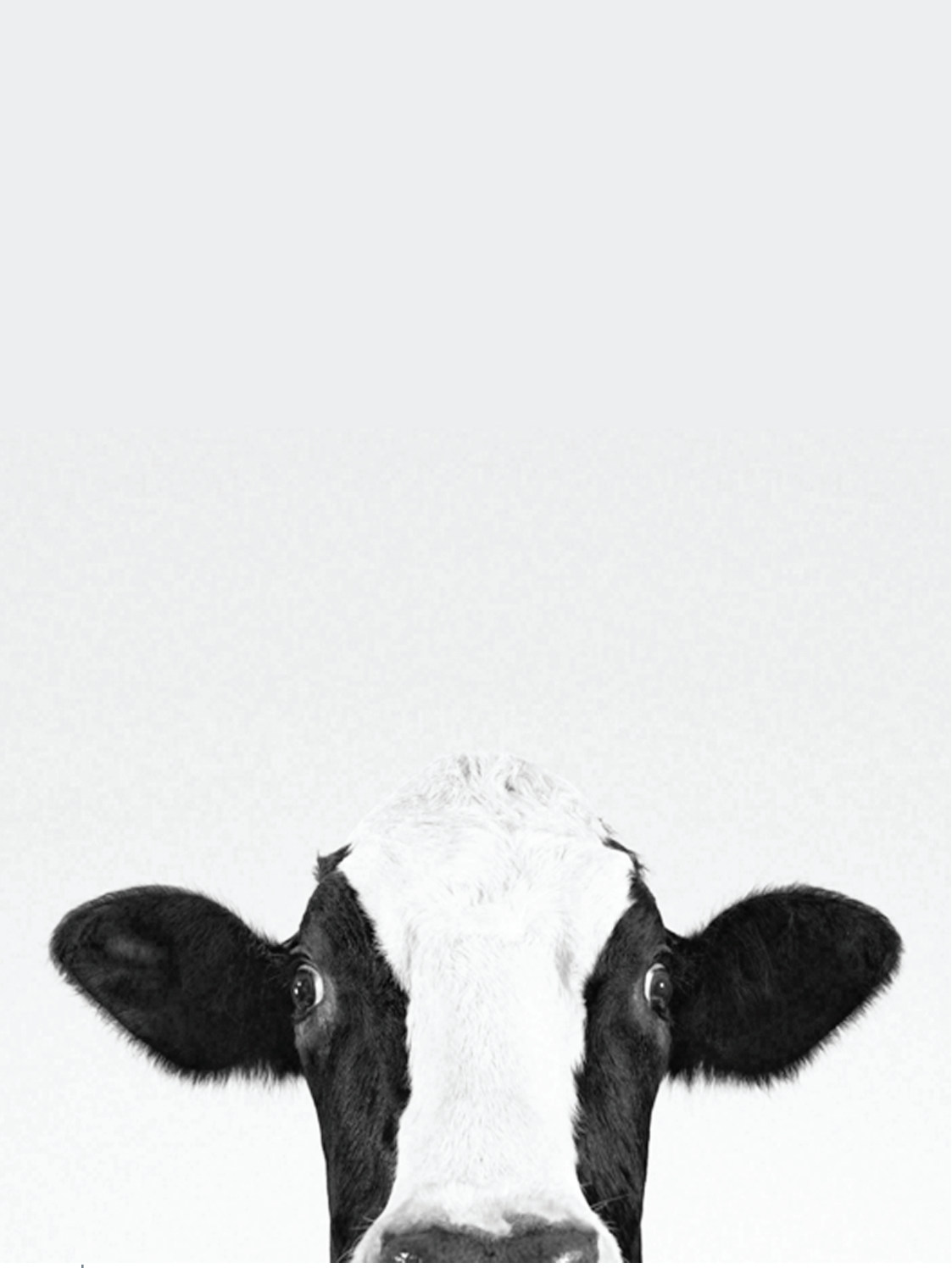
_____

Signed

December 2012

DECLARATION


PRESERVATION - AWARENESS - CELEBRATION
THE BYRE
THE RETURN OF THE FORGOTTEN HERD



2. Cow No. 2. (Montose, S. 2009)

This book is dedicated to my loving and supportive family. To my parents who have sacrificed so much to give me all the opportunities i have received, thank you.

To Kirsten (Kiki) Doermann, my supervisor, thank you so much for all your hard work, patience, support and guidance this year. Thank you for always confidently standing behind me.

To Karan, Nerali, Graham, Monique, Kate, Ryan, Craig, Trusha, Kim, Jennifer and Philippa; and everyone else who have constantly supported me. I truly appreciate your friendship, words of encouragement and help. Lastly to the awesome 'Team Kiki' (Michelle, Alex and S'bu).

A special thanks to Chris Van Blerk (University of Pretoria, Onderstepoort) and Charmaine Nel (Midland Group).

ACKNOWLEDGEMENT

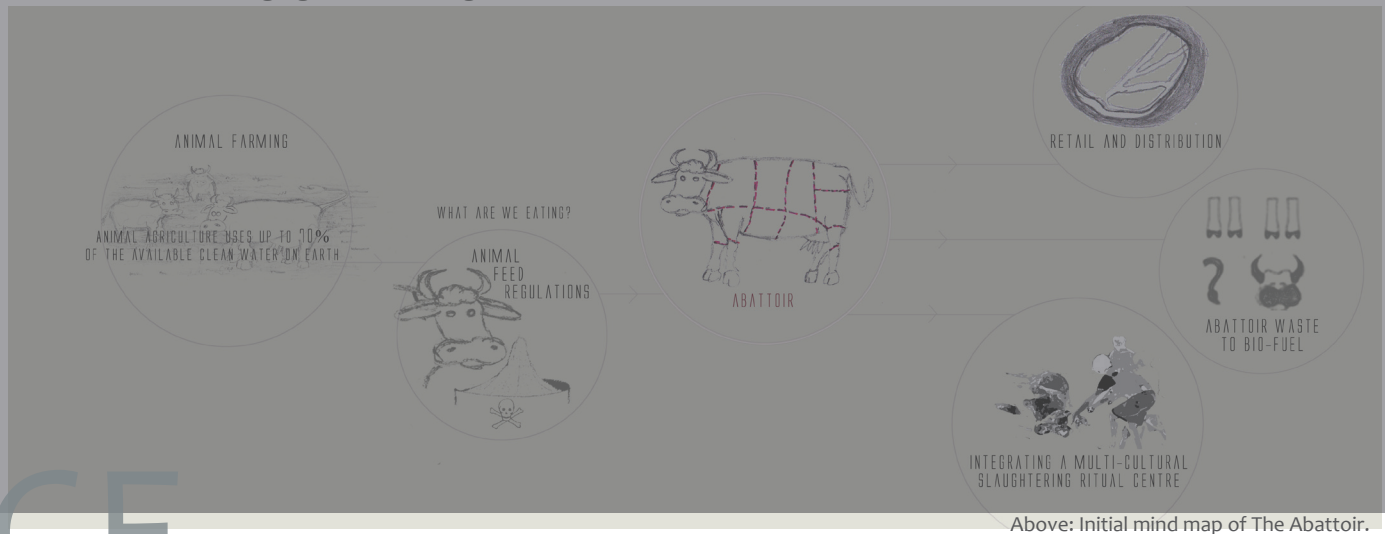
PREFACE

The initial topic of this thesis was an enquiry into the abattoir. As meat is at the heart of the every meal in most South African households, the question of where our meat comes seldom arises. What is the journey that our food takes before reaching it reaches our plates? How is the animal treated before it is slaughtered? Surely ,what the animal is fed, how it is treated and the life it has led affects the meat product which we ultimately ingest.

The initial expected outcome was to design a facility that would expose the process of the abattoir, attaching a public component to allow the public an opportunity to trace their food and potentially view the various processes involved. The key ideas and were to find sensitive points of cruelty in the abattoir and animal farms which address animal-related ethics; to deal with the high rate of meat consumption and production in the global economy; to understanding the relationship between meat and culture ,shedding light on the negative connotations of the abattoir and the celebration associated with ritual slaughtering and lastly, to deal with the environmental impact caused by abattoirs.

The above themes taken on were conflicting with the expected outcome of the abattoir. The abattoir did not provide the optimum solution to these concerns. The cow and other animals in an abattoir face an inevitable end...death. No matter how 'humane' the process of the abattoir could strive to be, death is still the outcome. If members of the public were exposed to the process, would they still want to continue eat meat ? If the answer is no, which would probably be the case in most situations, what would be the point of the abattoir other than to convert meat eaters to a vegetarian lifestyle?

The issues being dealt with were relevant and valid, yet the solution contradictory. Through the process, the focus on the abattoir shifted to trying to find a solution to deal with the issues and not adding to



Above: Initial mind map of The Abattoir.

the existing problems.

After a long journey it became apparent that the crux of the research was not that of meat consumption and animal cruelty but about the animal themselves. It was eliminating the ‘meat’ and ‘death’ we associate with the cow and creating a symbiotic relationship as shared with the Zulu and their herd. The role of the animal and how it has formed part of our lives, culture is unexplored in literature, but plays a huge part for many South Africans. How do we create and develop a relationship with these animal through architecture?

The Nguni, a breed indigenous to South Africa was chosen as the main actors and agents of this thesis.

The document is divided into three main chapters:

Preservation - This section examines the relationship shared between man and cows and focuses on the history of the Nguni cattle and why they are a breed worth preserving.

Awareness - This section covers the theoretical component of the thesis, examining perception, it looks at the cow in terms of production, culture and currency and lastly the associated architecture of abattoirs and farms.

Celebration - The final section of the book addresses at the architectural aspects and design informants that has lead to The Byre.



2. Nguni Cow (Nguni Cattle Breed, n.d)



4. Woman Carry Wood. (Kobus, T. n.d)

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For many years, the authorities in South Africa discouraged the breeding of the indigenous Nguni cattle . Believing them to be an 'inferior' breed, an effort was made to introduce foreign cattle into rural areas. Farmers were encouraged to replace the indigenous animals with the imported breeds with 'improved' genetics. This led to a decline in the indigenous breed. (Poland, Hammond-Tooke, Voigh, 2003: p106)

Before 1850, there were an estimated four to five million Nguni cattle in KwaZulu-Natal. Due to war, disease, political unrest as well as the introduction colonisation and imported of cattle, this led to a decline in the number so much so that about 100 000 Nguni cattle remained till about a decade ago. Some years later, a small herd was purchased in Maputaland and transferred to the Veterinary Research Institute at Onderstepoort. The heard was then sent to several other farms and was closed to outside influence until 1983. (Poland, Hammond-Tooke, Voigh, 2003: p120)
The Zulu have always valued and celebrated Nguni herds. It was only in recent years that the inherent and valuable qualities of the Nguni have been appreciated by authorities, scientists and commercial breeders alike. (Poland, Hammond-Tooke, Voigt, 2003: 106) The Nguni herd has since been identify as a "breed of the national importance".

The Byre is a modern facility for research of genetics and cultural significance of the forgotten herd, the Nguni. It focuses on the preservation, awareness and celebration of the breed, and proposes an experimental exploration between the fields of animal science, agriculture and animal farming. The Byre is also an introduction of a hybrid typology of animal research and community development by reintegrating the Nguni herd back into society.

The Byre is a catalyst in rekindling the spirit of the close relationship shared between the Zulu and their herd through architecture, and as a result addresses the perception of the relationship shared between humans , animals, and consumption.

5. Nguni Study 1. (Philip, B. 2010)



0.0 Abstract

"The cow is ... our great means of support (sondlo). It is our traditional server out of food which we brought with us from the place whence we came as people. The creation by God is a great miracle here on earth. It is said that 'one hand washes the other', so it is with the cow and man."

By Poet H.I.E Dhlomo. (Stuart, 1983)

PRESERVATION



6. (Des Morgan cattle cc, n.d)



38. Photograph (Wallis, A.D. n.d)

1.1

The Relationship of Man and Animal

This chapter examines the relationship shared between man and cattle

Feeding perception:

"The hand of God and mankind's self-inflicted blows seem equally heavy ... giving a strong cumulative impression of the world as an abattoir" (Manchester Guardian Weekly).

One of the factors that influence our perception of animals, animals as meat and essentially of abattoirs is this relationship we have (or do not have) with animals. Before exploring what we may perceive, created by the different art forms investigated later in the document, it is important to try understand what it is that influences perceptions. The following section of text will examine the relationship shared between animals and humans and why it has such an influence on our perception of animals and of meat.

Humans and Animals

Kenneth Clark, in his book Animals and Men, states that since the time of The Golden Age, the Garden of Eden, even Noah's entry into the Ark, men and animals have lived in harmony. They filled "an imaginative need"; but these 'needs' according to Clark were myths. He continues, throughout recorded history the relationship between man and animal has been complex, changeable and contradictory, and this is made up of fear, admiration, greed, cruelty and love. (Clark, 1977)

The Bushmen in Africa and Australian Aboriginals, from the stone age, left visual evidence in the form of painting on caves. Amongst these were definite likeness of bison and other animals. Clark raises the point that these paintings do beg the question: what made these men, who lived by hunting, cover the walls of their caves with the vivid and accurate depictions of the animals (or antagonists). Some prehistorians say, based on material argument, that these paintings were intended to give the men power over the animals, and so increase their success in hunting. The depictions of the creatures may be treated as a substitute for that creature, and offer "magical powers". Clark says that it could be argued that the paintings are mere representations expressing their envy and admiration. In prehistoric times the relationship between man and animal was closer then we can imagine. Prehistoric man had barely learnt to use tools, and their speech was basic; animals, on the other hand, were stronger and faster than man. Clark believes that the animals illustrated in the caves are records of admiration, what they wanted to be like. (Clark, 1977)

The next stage of man's relationship with the animal is the choice of an animal as the sacred symbol of their group, loosely termed totemism. Man hunting their food, and admiring, to the point of worship, a life-endowment greater than their own. Animals inability to talk made them mysterious and this was another reason that made them sacred. (Clark, 1977)

Hunting, seems to satisfy some deep-rooted human instinct and has continued in various forms till today. Having started as a necessity, the primitive hunted for food, but when man's appetites could be satisfied in a more reliable manner, through animal farming, hunting became and remained a "ritualised display of surplus energy and courage", a form of sport. Arguably hunting has varied through time in a scale of cruelty caused and according to Clark has drastically enhanced the quality of human life. It has always been closely associated with social status. The great-

est hunters having been emperors and kings. Even in the lower levels it remained an excuse to get dressed up and show off, hunting was not a means of survival but a form of luxury, it was considered a festive occasion, in which the hunt and death of a few animals was of little significance compared to the pleasure it gave to the humans who participated. (Clark, 1977)

> Nothing could seem more 'natural' than the boundary between humans and animals.
>
> Jonathan Safran Foer.

Tim Ingold, an Anthropologist, asked a varied group of scholars in the fields of social anthropology, archaeology, biology, psychology, philosophy, and semiotics: "what is an animal?". It proved impossible for them to reach an agreement, however there were two important points of agreement:

> 1. "There is a strong emotional undercurrent to our ideas about animality" and
>
> 2. "to subject these ideas to critical scrutiny is to expose highly sensitive and largely unexplored aspects of the understanding of our own humanity."

To ask "What is an animal?" will inevitably touch on how we understand what it means to be us and not them. We all have our own understanding of what an animal is, and it is possible for us to only really know what this means by asking "what is a human?" (Foer, 2009, p45)

The term 'Animal', according to the dictionary definition is "a living creature that can feel and move about." Jonathan Safran Foer author of Eating Animals, states that in the many cultures, not all have the category 'animal' or any equivalent word for animal in their vocabulary, he continues: the Bible, for example, lacks any word that parallels the English 'animal'. 'Humans' according to the dictionary is "having to do with mankind". So 'humans', as observed by Foer, therefore by definition both 'are animals' and 'are not animals'. In the first sense humans are in fact part of the animal kingdom; we casually refer to all creatures as animals, except humans.

> "Anthropocentrism: The conviction that humans are the pinnacle of evolution, the appropriate yardstick by which to measure the lives of other animals, and the rightful owners of everything that lives."
>
> "Anthropodenial: The refusal to concede significant experiential likeness between humans and the other animals."
>
> "Anthropomorphism: The urge to project human experience onto the other animals."

Emanuela Cenami Spada, Italian philosopher writes:

> Anthropomorphism is a risk we must run, because we must refer to our own human experience in order to formulate questions about animal experience. ... The only available "cure" [for anthropomorphism] is the continuous critique of our own working definitions in order too provide more adequate answers to our questions, and to that embarrassing problem that animals present to us.

It is not clear what Spada is referring to here as "that embarrassing problem", Foer asks whether it is the fact that we do not simply project human experience onto animals, for as he says, we are (and are not) animals. (Foer, 2009, p46)

It is interesting that we seem to have a different type of relationship to animals than we do to meat. Language, according to Foer, can be very misleading, when it comes to eating animals, words are often used to misdirect and disguise as they are to communicate. Some words like veal, help us overlook what we are in fact talking about. (Foer, 2009) Truth is though, whether we wish to admit it or not, meat is animal.

Distance exists between us as humans, the animals we farm and the food (flesh of animals) we eat. It is thought that this relationship has grown further apart. Meals today are bought 'ready made' or microwaveable in a few minutes. For many there is a complete disassociation of what we eat, and where it comes from. It is inherent in our culture to not question where our food (meat in this case) originates from or what it is. For some of us the query to the question "where our food comes from" and "what the food process entails" will be the very reason we stop eating meat, the answer is something we may not want to hear or see. But it is crucial that we asks these questions, we are in essence putting this food into our bodies.

The thesis now hones in on one animal, the Nguni cattle, the thesis tries to explore our relationship with cattle, and looks at the perception and we can address the percpetion through architecture.



39. Painting: Mother Cow. (Nenmann, M. n.d.)



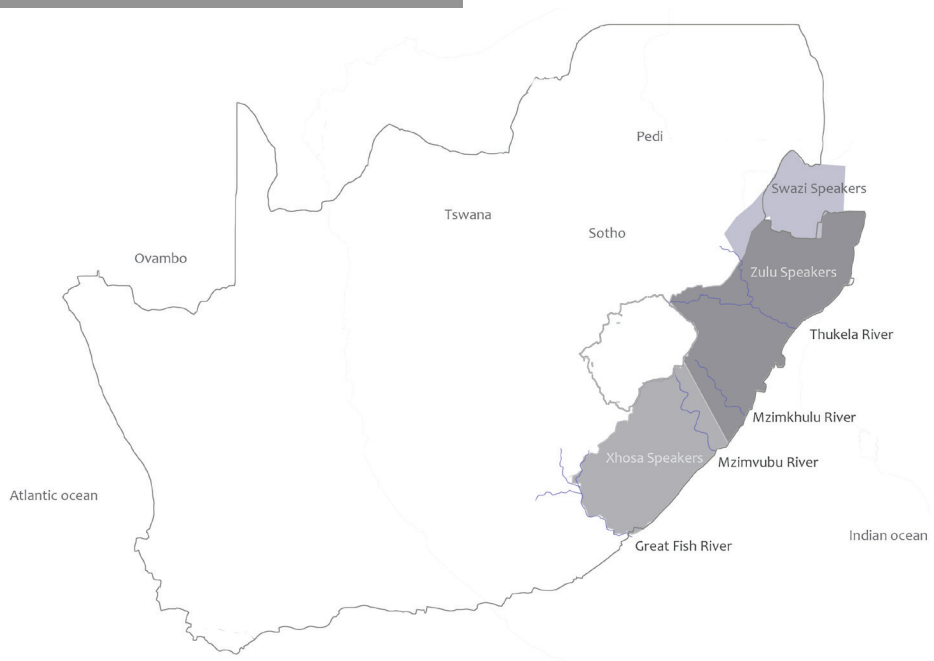
40. Photograph
(Naturalpatriot.org. n.d.)



1.2
The history of the Nguni

This chapter looks at how the Nguni cattle came to be in Southern Africa. A historical background of the Nguni.

Above: Map of South Africa showing distribution of nguni cattle pre 19th century.



The Nguni cattle breed was first introduced by the Iron Age nomads in around 600 AD. For the next millennium, these low maintenance breed were found in communal farming systems of the settlers and remained unaltered until the arrival of the European colonisation in the mid-19th century, as far as can be established. The acceptance of the colonial farmers as a role model, led to the introduction of foreign breeds in southern Africa which resulted in a dilution and depletion of the purebred Nguni gene pool. This change was worsened by the changes in political power, urbanisation, natural disasters and the erosion of cultural beliefs and practices. Before 1970, the demand for 'superior' breeds in rural communities, led to the introduction of exotic breeds into communal areas, but with little success. (Bester, Mtjuda, Rust & Fourie, 2001 :p2)

Southern African is home to many cattle breeds. These breeds can be classified into two major categories, namely humpless and humped.

- Humpless breeds are classified as Bos Taurus, these cattle are foreign to Southern Africa and are therefore not extremely well adapted in our environment. (Mason, 1969 cited in Schoeman, 1988: p55). This humped, short-horned Zebu, was domesticated in the Near East in about 500 BC, and in the Indus River valley. (Poland, Hammond-Tooke, Voigt, 2003, p:15)

- Humped breeds, classified as Bos indicus, can be further classified into two groups, those with thoracic humps (known as Zebu) and those with cervico-thoraic humps (known as

Sanga). (Mason, 1969 cited in Schoeman, 1988: p55) . This humpless, long-horned Bos Taurus is said to have been domesticated in Africa, either in Egypt, or as suggested by genetic research, the original heartland of the Bantu-speakers in West Africa, the Niger-Cameroon region. (Poland, Hammond-Tooke, Voigt, 2003, p:15)

The Zebu cattle are not indigenous to Southern Africa, however all the Sanga types evolved from crosses of Zebu and humpless, Hamitic longhorn cattle found in central and eastern Africa. Sanga cattle were said to have accompanied African indigenous groups in their migrations to southern Africa. In Zululand, the Sanga cattle were known as the Nguni. (Brown, 1959 cited in Schoeman, 1988: p55)

The indigenous Sanga cattle (Nguni) share a common origin but differ from the Zebu cattle in that they have a sub-metacentric Y-chromosome (as in the Bos Taurus), the Bos Indicus or Zebu, however have a acrocentric Y-chromosome. (Meyer, 1981 cited in Schoeman, 1988: p55)

The name 'Sanga' is derived from the Ethiopian Galla name for their former wide-horned Zebu. It is a term used for most African indigenous breeds. Some of the Sanga species are: the 'Nguni', 'Pedi', 'Ovambo' and 'Afrikaner'. These cattle vary in colour, horn and shape (Poland, Hammond-Tooke, Voigt, 2003, p:15)

Records of domesticated cattle found in Africa show that by 400 BC the cattle were present in the Nile Valley. (Epstein, 1971). The cattle then travelled southwards from North Africa accompanying their owners as a result of environmental pressures, war, and trade. By 300 BC cattle were found in Luangawa Valley in Zambia and by 300 AD settlers and cattle were found in communities in southern African, areas in eastern Botswana, Hartebeespoort dam area in Gauteng, the eastern lowveld and the Natal region. (Plug, 1980). (cited in Bester, Mtjuda, Rust & Fourie, 2001 :p3)

During the journey, the cattle were exposed to harsh extremes of climate and African tropical diseases. Two migrations routes occurred in the country, one route taking the cattle into the eastern and western regions respectively. Adaptation to the climate of these respective areas resulted in the development of different ecotypes. The second route into South Africa took place during the 16th and 17th century, when settlers brought their European farm animals into the country. (Bester, Mtjuda, Rust & Fourie, 2001 :p3)

Due to little or no record of performance for the Nguni breed during the colonisation period, they were regarded as being an inferior breed. This perception was also fuelled by the symbiotic living relationship shared between the herd and their caretakers in southern Africa. The cattle were prized as they provided most of their caretakers needs. (Matjuda, 2005 cited in Scholtz, 2006)

The status value associated with the cattle resulted in more animals being kept and herds were overstocked. The cattle's variety of colours and colour patterns was another reason for early ignorance of the indigenous herd, these colours were also in contrast to the Stud Breeding industry general tendency to emphasise uniformity. (Bonsma, 1980). The Stud

7. Map of Africa showing distribution of cattle. (ILRI/ Trinity College Dublin. N.d)



Breeding industry regarded the Nguni as an 'indiscriminate mixture of breeds'. (Scholtz, 1988 cited in Scholtz, 2006)

In 1934, this perception of inferiority, led to the announcement of an Act, whereby indigenous breeds and types were considered as 'scrub' (non descript). Inspectors were sent into communal areas to inspect the bulls and castrate them if they were considered to be inferior. This Act was only implemented and practiced for some years as it was very unpopular. (Hofmeyr, 1994 cited in Scholtz, 2006)

Before 1850, there were an estimated four to five million Nguni cattle in KwaZulu-Natal, but due to the war, disease, political unrest as well as the introduction of foreign cattle, this led to a decline in the number so much so that about 100 000 Nguni cattle remained till about a decade ago. At the end of the Anglo-Zulu War, in 1879, where power and independence of the Zulu Kingdom was revoked, Sir Garnet Wolseley slaughtered the royal Zulu herds and confiscated what remained. (Poland, Hammond-Tooke, Voigt, 2003: p106).

Some years later, a small herd was purchased in Maputaland and transferred to the Veterinary Research Institute at Onderstepoort, it was then sent to Vuma farm at Eshowe, then to Bartlow Combine in the Hluhluwe district. The herd was closed to any outside influence until 1983. Since then an increase of interest in the Nguni livestock was revolutionised, and finally, ensuring their rightful interest of scientists and commercial stock breeders. (Poland, Hammond-Tooke, Voigt, 2003: p106).

It was in the 20th century when South Africa developed a structure that introduced the Nguni breed into the commercial sector. The extensive recording aided breed development. As the breed was improving in the commercial sector, it was depleting in rural areas. However as the Nguni is an adaptable breed, some survived and so purebred cattle were still found in limited numbers. (Bester, Mtjuda, Rust & Fourie, 2001 :p2)

It is a sad reality, that South African society's deep rooted history of racial prejudices have been the dominant theme in history not only for the country but for the attitude carried through to the livestock of the indigenous population. The hardiness, fertility, and adaptive qualities that government and farmers alike tried so hard to introduce through exotic breeds, in fact already existed in the indigenous herds, acquired through natural selection and adaption through hundreds of years of existence. (Poland, Hammond-Tooke, Voigh, 2003: p106)



8. Photograph (Oosthuizen, E. 2012)

"Tried by nature and tested by circumstance, the Nguni stands proud in a line of survivalists that have built up the strength and reserves to face future challenges, not in a confrontational way, but in harmony with nature, its age old companion."

Chris Van Der Merwe



9. (Nguni Pictures- 3 cows, n.d.)

1.3
Return of the Forgotten Herd

This chapter investigates the characteristics of the Nguni and what make them so unique, it seeks to answer the question ‘Why Nguni?’

There is a notable difference between Africa and Asia compared to the other new world continents, that is that these new world continents had no indigenous livestock at their disposal and relied on imported livestock to establish a livestock industry. Africa (and Asia), was abundantly endowed with a large number of indigenous livestock breeds. (Scholtz, 1988: p55)

The Zulu have always valued and celebrated their herds, it was only on recent years, as mentioned, that the inherent and valuable qualities of the Nguni have been appreciated by authorities, scientists and commercial breeders. (Poland, Hammond-Tooke, Voigt, 2003: p106).

The Nguni is widely acknowledged to be an excellent breed for optimal production under harsh conditions. (The Nguni Cattle Breeders' Society of South Africa, 2008-2011). The Nguni breed have a high fertility rate, with a short calving time, and long reproductive life span. They are resistant to most parasites, and easily adapt to poor grazing conditions, excessive heat and humidity. (The Herald Online, 2007). Unlike ordinary cattle.

In 1950, the Department of Agriculture, had done studies whereby the valuable characteristics of the indigenous breed were outlined and acknowledge that the introduction of the foreign breed had not been successful or practical:

> With the exception to the Afrikaner breed, little to no interest had been shown to the study of the potential the indigenous cattle had... The failure of the foreign breeds brought about an appreciation of the importance of a harmonious relationship between the genetic composite of a breed and the existing environmental conditions of a particular area. It is said that the most key aspect of any livestock improvement strategy is to ensure a type of breed which by virtue of its hereditary structure, will thrive, and successfully reproduce and produce in a given area.
>
> (Bonsma et al, 1950: p1)

However it was only in 1983 that the Nguni was first registered as an official breed and the unique characteristic and worth, acknowledged and appreciated, despite all the new recommendations by the authors that published the Nguni Cattle Report by the Department of Agriculture. (Poland, Hammond-Tooke, Voigh, 2003: p106)

An article written by Chris van der Merwe, ZZZ Nguni Stud, in 2007, states that the Nguni breed of cattle were given the title "Breed of National Importance" by the South African Department of Agriculture Registrar for Animal Improvement. This shows that the Nguni breed plays a unique role in the history and culture of Southern Africa in their long and difficult journey through Africa, some 2000 years ago. (Van der Merwe, 2007 :21)

According to Van der Merwe, the United Nations Food and Agriculture Organisation (FAO) and the International Livestock Research Institute (ILRI) reports that the reality is that there is a worldwide trend towards the replacement of indigenous livestock with commercial breeds. Breed of national importance carries a great deal of worth, and the loss

of these indigenous breeds would mean the loss of genetic resources that help animals overcome diseases and drought, particularly in developing countries. This genetic depletion would lead to losses in food resources the world over. (Van der Merwe, 2007 :21). The UN FAO reports that farmers are opting for exotic breeds over indigenous breeds for short-term benefits of higher yield of milk and meat. An over reliance on just a few breeds of species is causing the loss of an average of one livestock breed every month (Van der Merwe, 2007: 21)

As the Nguni developed under a process of natural selection in challenging environments, it has genetic potential to perform better. The medium framed animal has a tick tolerance and disease resistance. (Frisch, 1973). The tick tolerance quality of the Nguni, is not clearly understood, but what is clear is the evidence of adaptation. (Spickett et el., 1989). Brown et al, 1956, noted that Nguni moved their ears vigorously when flies irritated them, it may be the movement of ears and tails that get rid of insects. In the same publication, Brown et al., examined the thickness of skin and hair concentration, and its effect on tick infestation, however, he had inconclusive results. (Cited in Bester, Mtjuda, Rust & Fourie, 2001 :p5)

Some other characteristics of Nguni cattle:

1. Mass ratio of calf to mass of mother is 45 % or better. The maintenance levels and costs of Nguni cattle are low in relation to the mass calf produced, when compared with other breeds under the same conditions.

2. Nguni cattle are relatively fertile under extensive conditions when compared to other breeds. On average an Nguni cattle herd will produce more calves than a herd of equal numbers of another breed kept in the same conditions.

3. Nguni heifers conceive earlier than other breeds. Well-grown heifers should all have conceived by two years and three months. Making breeding a sensible practice.

4. Nguni cattle age really well and regularly produce excellent well-grown calves when they are more than twelve years old. This reduces the rate at which cattle need to be replaced in a herd.

5. Nguni heifers give birth easily to strong calves. Birthing complications such as dystocia and problems with uterine bruising, infection, retained placenta and reduced post calving fertility are minimal. This is because of the conformation of the heifers and their calves that predispose to easy calving.

6. Nguni cows handle easily if handled regularly, their temperaments can aid management.

7. All Nguni cattle are tolerant to heat and sunlight. They do not need to lie in shaded areas during hot temperature's. Libido and semen quality of bulls is not reduced in the hot summer as is the case with many other breeds.

8. Nguni are considerably tick tolerant. This tolerance is inherited and can be enhanced in the herd selection. The need for dipping Nguni cattle (cattle's needs to be dipped into dipping tanks at least once a week to rid the cattle of ticks) and cost of dipping

is reduced. Nguni therefore play an important role in reducing tick numbers and tick challenges faced on farms where they are kept.

9. Nguni are also tolerant of important tickbone diseases especially heartwater. Nguni are able to develop excellent tolerances to the disease, making them the best breed if not the only breed to that can be run on farms in heartwater regions.

10. Nguni kept under extensive conditions are very resilient. This trait is difficult to measure or quantify. However, what is quantifiable is the mortality rate. The mortalities are comparatively low and feeding and supplementary costs are also comparatively lower than other cattle kept in the similar conditions.

11. Nguni bulls maintain great state of health while with the herds and do not require expensive feeding and supplements during the off season. Nguni bulls are strong, agile, and reliable for many years.

12. Nguni grow well on good veld. Bulls, calves and oxen on the veld with phosphate supplements will increase in mass by about 800 grams daily up to weaning (a 180 kg calf), 700 grams daily from weaning to twelve months (280 kg yearling) and 500 grams from twelve to eighteen months (350 kg young cow) . This cow will amount to a 200kg carcase (approximately 400 kg cow).

13. In a feeding lot, calves gain up to 1.2 to 1.35 kg per day. The average feed conversion is seven kg of feed for 1 kg gain.

14. Nguni cattle fatten well on veld alone, resulting in good prices for the cattle at the end of their producing lives without spending much on them.
(Bachman, undated)

Dr Max Bachman, well known for his knowledge and experience with regards to cattle states:

> The breed is old, going back thousands of years and many hundreds of generations in eastern, central and southern Africa. Different types have evolve in different regions of Africa by natural selection within those different regions. The Nguni as we know, has evolved in Zululand, Natal, Swaziland, Mozambique and parts of the Eastern Transvaal - in an era that is arguable the most cattle-disease affected in the world.
>
> (Bachman, 1984: p11 cited in Poland, Hammond-Tooke and Voigh, 2003: p106)

Indigenous cattle are valuable reservoirs of genes for adaptive and economic traits, this could help in meeting future challenges resulting from changes in production sources and market requirements. (FAO, 2007 cited in Musemwa, Mushunje, Chimonyo, Fraser, Mapiye and Muchenje, 2008: p240)

The breeders and other influential role players in the industry, therefore, play a significant role in the preservation of the indigenous breeds, in our uncertain environmental and economic future. It is equally important that the governmental Department of Agriculture encourage breeding of the indigenous breeds and provide initiatives and ventures like the The Byre.



10. Nguni Catlle, South Africa. (Eljaypea. 2006)

AWARENESS





11. (Discofricso. 2011)

2.1

Raw perception

This chapter probes the perception created by abattoirs, animals and meat. Through studying several forms of perception.

Raw Perceptions

Below: 12. Figure with Meat.
(Bacon, F. 1954)

Far right: 13. Carcass of Beef.
(Soutine, C. 1924)



In the beginning, the garden of Eden was vegetarian. Men and animals ate only plant food. It was only in a second era, following the Flood, that God decided to let men eat the flesh of animals. However, such meat must be bloodless (the sacrificial blood was God's alone) and it must be taken only from vegetarian animals, the prototype being the ruminant. In this way meat may be seen as the ultimate transmutation of vegetable matter (grass), once the animal has lost at man's hand what distinguishes it from the plants that fed it, namely warm blood and mobility - a necessary effusion if we accept the correlations that exist between the different bodily secretions and consequently between blood and the physical aspects of sexuality, which no one would ever dream of saying belonged to the vegetable kingdom. In a way, de-animated, de-animalised, and even de-sexualised, butcher's 'meat' can no longer be anything but the quintessence of the vegetable.

Françoise Héritier-Augé

An abattoir, portrayed in film, is usually depicted as the place where gruesome murders are committed, a place where victims are tortured before their inevitable death. The perception set here about abattoirs is justified. An abattoir, as we know, is essentially where a farm animal is sent before it is packaged, distributed and cooked for our eating pleasure, however the exact process is somewhat of a grey area. It is not a place that is likely to delight the senses, but rather offend our sensibilities.

The abattoir can be defined as a place set aside for the slaughter of animals that are used for human consumption. (Farm animals such as cows, sheep, pigs, etc.). Abattoirs are (usually) located outside the surrounding walls of town. Therefore, the abattoir is essentially defined by its process and location. (Vialles, 1987, p 15).

Is our perception of meat, animals or the abattoir related to our meat consumption? Is this perception based on the relationship (or lack of) that we share with the animals. This essay wishes to examine several sources of perceptions and their effects on us and our meat eating habits.

Perception is defined as an ability to notice and/or understand. The abattoir is not a topic usually discussed around the dinner table, a disturbing and odd subject matter given that they conjure up bloody images and a repulsive impression. The abattoir is a place not regularly (if at all) visited by the general public, a place often situated out of residential and urban areas, a place everyone would prefer to not have to think about. This distance between the abattoir and where we conveniently buy our meat is an another influencing factor on our consumption of meat, out of sight, out of mind.

"The area of obscurity, that modern standards of slaughtering draw out indefinitely and highlight to a much greater degree than when slaughtering was performed in familiar surroundings. This process has become very industrialised and cold, like a conveyor belt system. " (Vialles, 1994, p27). This has redefined the relationship between us humans and animals. While slaughtering rituals in some cultures still take

place as a form of celebration. To the many of us in society who do not part take in these ritual ceremonies, we have been sensitised to the slaughtering of our meat and remain unaware (whether consciously or unconsciously) of precisely what goes on before our meat arrives at the convenient store or on our plate.

Before the Industrialisation era, families lived on farms, cared for and raised their own farm animals and vegetables, and when needed, slaughtered one of their own animals to feed their families. Western culture has changed this entirely. Butchers, since this time, have been detached from the slaughterhouse, to in-a-way make butcheries more "innocent".

If we had to slaughter animals ourselves for our meat, would we still be eating meat?

Animal in art

Jonathon Burt, in the article Antenna, raises two conditions of response to animal in art:

> The first: "sometimes there is nothing to say about a line, but there's always something to say about an elephant." by art reviewer, Martin Herbert.
>
> The next, by Marc Chagall, says: "And so if in a painting I cut off the head of a cow, if I put the head upside down, if I have sometimes worked my paintings the wrong way up, it is not to make literature. It is to give my picture a psychic shock that is always motivated by plastic reasons ... If finally, one nevertheless discovers a symbol in my picture, it was strictly unintentional on my part."

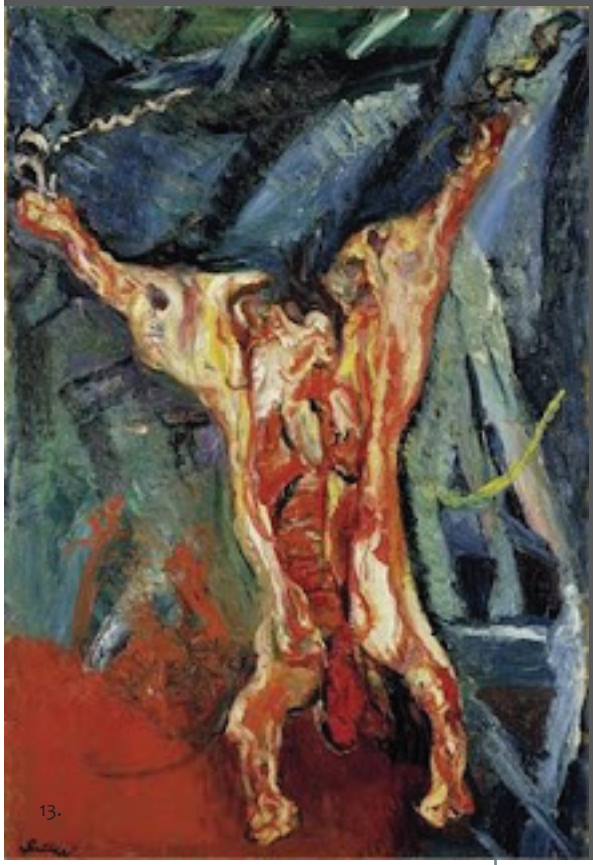
These two conditions speak of having something to say and having nothing to say. Burt starts by questioning how we address the animal figure, how we speak to it, from it and of it, he parallels the question of how we speak of the art. (Burt, 2008)

Apollinaire states: "artists are above all men who want to become inhuman", according to Burt, this statement seems appropriate when looking at animal and art. However, the fact that the word 'inhuman' is used instead of 'animal' raises some issues for debate in the field of art, language and identity. He says that it is important, when looking at animal art, to consider the "problematic relationship" between animal, art and language, "the awkward and unstable triad" created by the entanglement of animal and the aesthetic. (Burt, 2008)

Animals portrayed in art, lack identity, they are merely just an animal. They are for the most part unidentifiable. According to Burt, "animal art based on this view is an inventory of artistic genres in which the animal is merely one malleable object amongst many." (Burt, 2008)

This gives us humans an element of power, the animal is just another animal, nameless and unidentified. Art is completely a human activity that freely turns to selected objects and media as it chooses. Art here, exemplifies what it means to be human.

Burt states that there is a fine line between the phrases the animal in art, the animal of art, and the animal



13.

Right page:

14. In the Name of the Father.
(Hirst, D. 2005)

15. The Golden Calf.
(Hirst, D. 2008)

16. Mother and Child Divided.
(Hirst, D. 1993)

17. Mother and Child Divided.
(Hirst, D. 1993)

as art. He continues, from the 1960's onwards, things like performance art and environmental art inevitably transformed the animal from art object to living artwork. As an example he mentions the artwork of Mark Wallimger's, A real work of art (1993). It is a painting of a racehorse, but the racehorse, a thorough breed, itself is a work of art. The animal here has the potential to do the work of the art before it is ever an object for art; it is always an inhabitant within the domain of aesthetics. (Burt, 2008)

Unfortunately, apart from the ones mentioned above, very little studies on animal art have been done on twentieth century art. According to Burt, author Steve Baker in his book The Postmodern Animal, dismisses the significance of pre-postmodern animal art, possibly because it marks the absence of the animal or, when the animal does appear, it is not really addressed as such. In other words, what baker is suggesting is that the agenda of the artwork has nothing to do with the animals , but uses the animal to point towards something else. Burt disagrees, he explains that this statement is not justified, especially for some of the artists mentioned later in this text. (Burt, 2008)

The information on animal art history for the most part has been scattered, fragmented and for the majority of it under-theorised. The marginalisation of animals in academic study according to Burt has been a longstanding difficulty, he suggests that one of the problems that can be easily identifiable arises from the way the theoretical frameworks of the animal studies has been derived. It has not been from the considerations of the specifics of human-animal relations, from where one could work outwards in both a theoretical and historical manner, but its derived its views from the domain of human - human relations, these conceived at quite an abstract level. (Burt, 2008) I understand where Burt is coming from in his argument, but I think it is very difficult, if possible at all to try understand the point of view from an animals perspective, as we are not 'animals', in the sense that we are unable to get into the mind of animals, figuratively of course.

What we can take from some of the things mentioned above is that despite what is projected in art, in whatever medium, the artist may or may not have any specific intention or agenda with their artwork. What we read into art, is essentially our interpretation of the art piece. There is a definite link between our Culture, and upbringing. Our interpretation all stems for our individual relationship (or lack of) we have with animals, and essentially how much we really care for these animals. All these influences and experiences feed our perception.

The next section will look at different forms of art in multiple genres, try to investigate whether in fact they had any specific intentions and, more importantly, what perception is portrayed to the viewer.

Forms of perception:

Art: Damien Hirst

> "Every single artwork ever made is a celebration of something. You've got to find a reason to live against adversity in the world. As a species, we need to find hope wherever we can."
>
> Damien Hirst

The work of British sculptor, Damien Hirst, has become famous for his series of artwork of dead animals in tanks of formaldehyde and some may find it unpleasant. For me it epitomises the argument that animals in art are mere objects in art, unidentifiable, just another animal. His work, representing the death of the animal, seems to be done in a manner of pleasure and horror, the animals in his art are completely exposed, some dissected revealing all the animal's internal organs.

> "In a world where you are so bombarded by imagery," he says, "you have to make art that gets people's attention. But it's no more than a flower getting the attention of a bee — something visually stunning."
>
> Damien Hirst

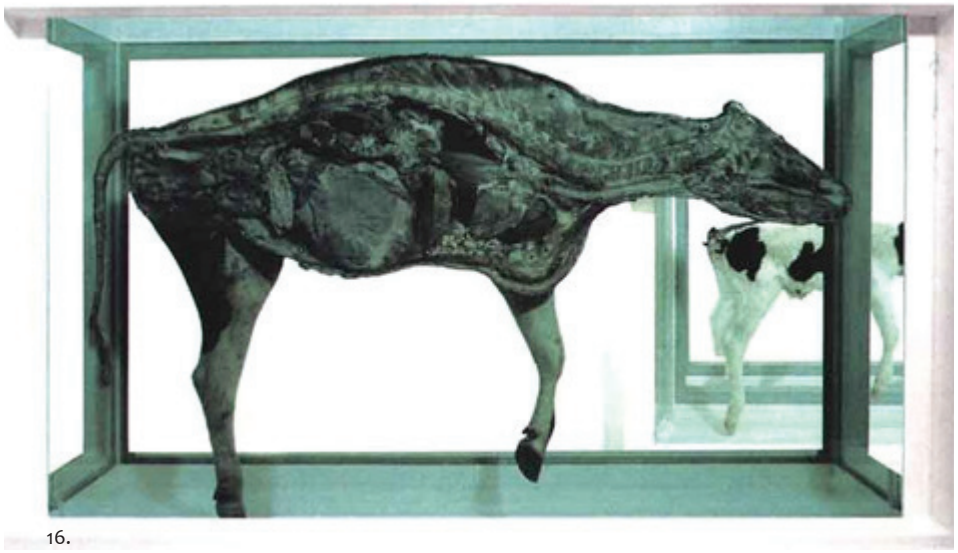
Hirst has been criticised by some (mainly animal rights activists) for having gone too far by killing animals for art sake. An online article by Brian Howard, in 2009 entitled: Is it wrong to kill animals for art?", it speaks about the moral issue and ethics of animal art and he raises an interesting point: he says that drawing the public attention to "the nasty underbelly of society" has often yielded a positive result and change in society. It is provocative art that whether intentional or not creates awareness, but it is just as important as how this art is made. Society does need to be more informed of some of the social and moral issues regarding animals and their rights or lack of. (Howard, 2009)



14.



15.



16.



17.



18.



19.

Images (left page):
18, 19, 20, 21. Photographs: Aux abattoirs de la Villette. (Lotar, E)

In an interview with Alastair Sooke from The Telegraph, Hirst says: "But sculpture breaks every boundary. I have always been aware that you have to get people listening before you can change their minds. Any artist's big fear is being ignored, so if you get debate, that's great. And I've definitely made some sort of impact and touched some nerves — though a lot of people who get angry about my work haven't actually seen it. That's mad." (The Telegraph, online: 2011)

Photography: Eli Lotar

A French photographer born in 1905, full name Eliazar Lotar Teodoresco, photographed the Parisian La VIllette's slaughterhouses in 1929. The photographer's work accompanied the writings of Georges Battaile's and related to his interests in sacrificial rituals, the images became one of Lotars' best works.

The images considered the taboo reality of the slaughterhouse to be a trace of "the scared in a secularised world", due to the earlier temple being a public place of both ritual slaughter and sacrifice. Lotar's photographs show a disturbing combination of orderly arrangements and "bloody chaos" that are nevertheless framed so as to suggest poetic and mysterious qualities. Conventional beauty is not a sought-after quality. (Allan, 2008)

His photographs graphically depict the abattoir process, raising the curtains and revealing the truth.



20.



21.



22.



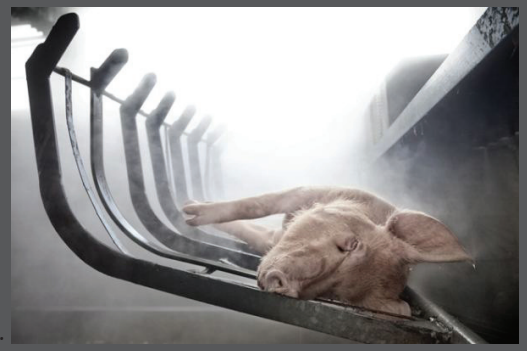
23.

Images (right page):
22, 23, 24, 25, 26, 27, 28. Photograghs:
The Hidden Death. (Ausili, T. 2010)

Selected works by Italian photographer, Tommaso Ausilli of his "The Hidden Death". A series of photographs taken in a slaughter house in Umbria, Italy. Ausilli captures the gruesome experiences endured by the animals at the abattoir. These images capture scenes that some people may never get to experience, for obvious reasons. His intentions were to expose the pain, these images speak volumes, without needing to hear the sounds associated with the images. (Vallas, 2012)



26.



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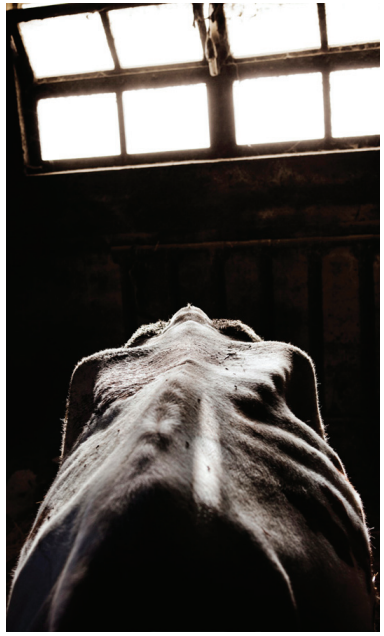


25.



28.



29.



30.



31.

Meat fashion

In recent trends meat has been used as a source of inspiration for some fashion and jewellery designers. Some have used the image of meat as a source of their inspiration for their clothing, others have used actual meat flesh for their clothing. This may seem bazaar, wearing meat as an item of clothing. I however think it is a great tongue in cheek element to wear your food. We find the process of turning animals into meat disturbing, but we do not think twice about consuming the animal product, wearing meat is a very interesting way to create awareness, if that was in fact their goal in the first place. Maybe it is having to imagine wearing something that we would eat, that we find a little unsettling.

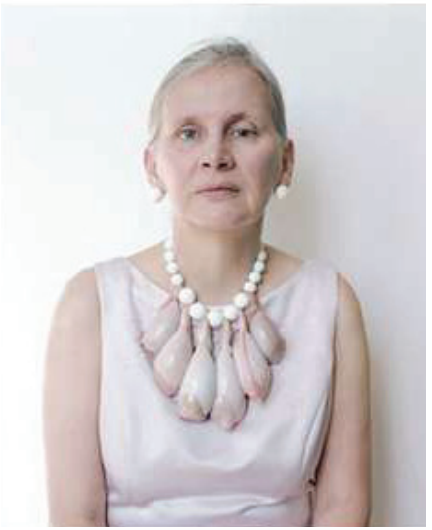
Pop icon Lady Gaga and her infamous meat dress incident caused vast unhappiness with animal rights organisation PeTA and many others, when she appeared on stage and presented an award wearing a dress made entirely of raw meat. Gaga has now launched a PeTA approved line of meat-based clothing, What exactly motivated the clothing line is unclear, but Treehugger suspects that it is Gaga's form of activism against food wastage. Americans waste over 40% of the food produced, and food wastage in America has increased by 50% since 1974, which is responsible for a quarter of all water consumption. (treehugger, online: 2011)



32.



33.



34.

Georges Bataille

Georges Bataille, "abattoir" is accompanied by Eli Lotar's photograph's of La Villette. He reminds his readers that not so long ago, there was "some bloody meat against itself." (Hollier, 1989)

Batailles' writings, French theorist and author, introduces the ideas of transgression, of violence, the breaking of taboos and speaking about the unspoken. His writings are usually graphic and based on eroticism. However when he speaks of the abattoir the element of shock is still very much there.

Bataille had his own published magazine entitled Documents in 1929 and 1930. In the magazine, a section called 'critical dictionary' where Bataille writes about 'Man'. His first entry is a text chosen by Bataille:

An eminent English chemist, Dr Charles Henry Maye, set out to establish in a precise manner what man is made of and what is its chemical value. This is the result of his learned researches:

> "The bodily fat of a normally constituted man would suffice to make seven cakes of toilet soap. Enough iron is found in the organism to make a medium sized nail. And sugar to sweeten a cup of coffee. The phosphorus would provide 2,200 matches. The magnesium would furnish the light needed to take a photograph. In addition, a little potassium and sulphur, but in an unusable quantity… These different raw materials, costed at current prices, represent an approximate sum of 25 francs"

Journal des Débats, 13 August, 1929 (Baker, 2012, p5)

In context, this quote is of interest because it suggests the idea of breaking down the body into several individual parts, and in so doing breaking down the integrity of the human body but representing them in a different way. (Baker, 2012). The process of the slaughterhouse could be said to do the same thing, but to animals instead. The carcass of the animal is divided up into several parts: loin, ribs, shank, sirloin, etc.

Batailles second entry where he makes the link between man and meat consumption:

> not one of the millions of animals man massacres every year is necessary for his nourishment… A calculation based on very modest figures shows the quantity of blood shed each year in the slaughterhouses of Chicago is more than sufficient to float five transatlantic liners…. .
>
> Georges Bataille. (Baker, 2012, p5)

Denis Hollier, in Against Architecture: The writings of George Bataille, speaks about L Villete, the abattoir that was converted into a museum. Marcel Mauss's theory of sacrifice as a basis for slaughtering, says: "Whereas the killing of the Minotaur is usually presented as a humanising exploit by means of which a hero frees the city from whatever archaic and monstrous, brings society out of the labyrinth age", this gives the slaughterhouse a religious viewpoint. For Bataille, sacrifice functions in an opposite a manner, it strikes a blow at the organic image and reopens the labyrinth. Bataille continues:

29. Lady Gaga, meat dress. (Meat dress, 2010)

30. (Quirky Sneaket style shoes, n.d.)

31. (Meat pants, 2009)

32. Meat Fashion Accessories. (Jaschke, P. 2009)

33. Meat Fashion Accessories. ("The Meat Lace", n.d.)

34. Meat Fashion Accessories. ("The Meat Lace", n.d.)

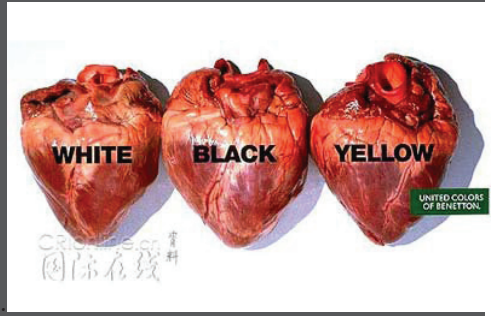
‘Shockvertsing’

35. Axe Deodrant animal cruelty advert. (Peta, 2008)



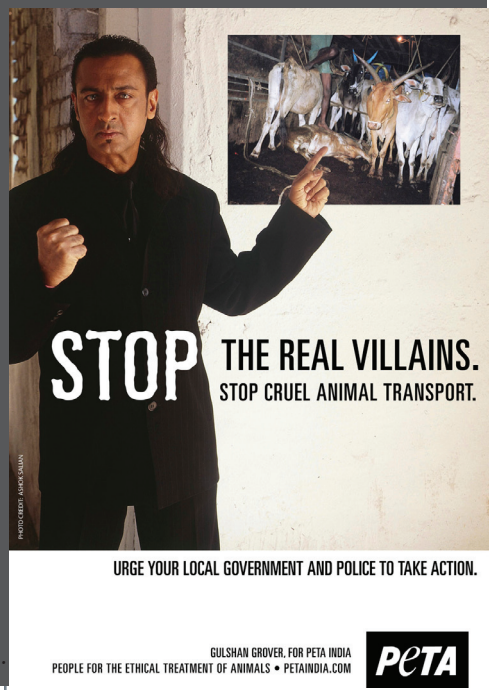
35.

36. White Black Yellow. United Colours of Benetton advert. (Toscani, O. 1989)



36.

37. Bollywood actor anti animal cruelty advert. (Peta India, n.d.)



37.

> “The slaughterhouse relates to religion on the sense that the temple of times past ... had two purposes, serving simultaneously for prayers and for slaughter ... Nowadays the slaughterhouse is cursed and quarantined like a boat with cholera abroad ... The victims of this curse are neither the butchers nor the animals, but those fine folk who have reached the point of not being able to stand their own unseemliness, an unseemliness corresponding in fact to a pathological need for cleanliness.”

In slaughterhouses, no one (except the butchers) attend the sacrifice. Hollier says that what we have here is a deserted and unconscious religion. “Abattoir”, therefore, describes a movement of sacred horror, of religious disgust before the animals are killed. (Hollier, 1989, p xii)

In Batailles article, Musée, the opposite movement is described: attraction follows repulsion. Those who shy away when faced with the a sacrificial butchering and “opposed their own proper ugliness of slaughterhouses for the beauty of museums to compose themselves again.” Bataille writes:

> “On Sundays at five o’clock, at the exit to the Louvre, it is interesting to admire the stream of visitors still delighting their eyes.” “A museum is like the lungs of a great city: the crowd floods into the museum every Sunday like blood and it leaves purified and fresh.”
>
> (Hollier, 1989, p xii)

According to Bataille slaughterhouses, like museums, make up a system “in which the ambivalence defining the sacred nucleus is at work”: he describes the slaughterhouse as the negative pole, the generator of repulsion. Pulling away from the centre of where man resides. Museums, on the other hand, he describes as the pole of attraction, located at the heart of many cities. Batailles says that within the heart of one, the other is hidden, “at the heart of beauty lies a murder, a sacrifice, a killing (no beauty without blood).” (Hollier, 1989, p xiii)

The important thing about these two poles, according to Hollier, is not the juxtaposition of the two poles but the space between them. He says the one does not exist without the other, but at the same time, does exist with the other. (Hollier, 1989, p x iii)

Hollier interprets this with the theory of déspense. He says it is primarily a theory of the need for loss rather than a theory of a loss. The museum, set in a public space, fits right at home with everyone looking.

Value of perception

Burt, when speaking about Picaso’s Guernica, another example of animal art, which I feel can speak to most (if not all) animal art forms. He suggests that dealing with animals and aesthetics is more than just a simple problem “of transparency or address, or for that matter opacity and muteness.” Sometimes, and to whatever degree of seriousness an object in art symbolises something, this according to Burt indicates that we are not asking the correct sort of question of an artwork. We should accept that there is maybe more then one answer, and for that reason we find the “over determination of the significance” what makes some of the artwork so unfathomable

and what drives us to continually re-view it in order to understand something of its dimensions as an image. (Burt, 2008)

The presence of death, killing, and sacrifice is unavoidable at all levels of enquiry into the representation of animals. In this context, the animal symbol or image, according to Burt, is not a sign of absence, or nonpresence, but as a symptom of a deeper and more permanent loss. This has famously been demonstrated by John Berger in his account of "the disappearance or radical alienation of animals under capitalism, and later these were explored in the writings of Akira Lippit, Randy Malamud, Steve Baker, and Cary Wolfe, amongst others. The structuring triad is: Animal - sign - death. This is strengthened by the fact that the symbolic networks that determine the relative status of living beings find their key dividing lines created and reinforced by the act of sacrifice: killing as the ground of difference. Culture and law is understood to be essential to the structure of subjectivity, sacrifice is defining the 'us' and the 'them', it offers us a norm for 'noncriminal putting to death', making it justified. (Burt, 2008)

Perception is a result of our experience. Our experience, upbringing, and culture have a great influence on our perception. Some of the images studied for the essay had an effect on me personally, and has influenced how I now see meat and animals. And as determined through the readings, our relationship with animals is at the core of our perception.

Animal in art, as seen in some of these images, seem to break down the integrity of the animal, rendering them as just another animal, lacking identity, mere objects on canvas. The value of a cow (and animal), in many cultures play a different valuable roles, we need to examine these cultures and re-evaluate our perceived value of these animals, beyond the meat.

As distance has been said to be responsible for our high meat consumption, we need to bring together man and animal. Through architecture this may mean designing a building for both humans and animals, a place that would allow the animals and humans to interact daily creating a deeper relationship.

Below A collage of words evoked by the images studied for this text.





41. Photograph (Cartwright, R. 2012)

2.2

Production - Culture - Currency

This chapter evaluates the value of a cow. It looks at meat production, the cow in culture and cow as currency.

Production



Meat eaters

Clark rightfully points out that in the history of "animals (being) destroyed", the act of violence is also committed by one animal to another. Animals eat each other and we eat animals. It seems to be a law of nature, part of the food chain. A large majority of the population eat meat, with very little thought of where and how animals are kept or about the slaughter-houses themselves, it is kept out of sight. (Clark, 1977)

For many South Africans meat is the centre of each meal, we consider this to be normal and part of a healthy diet. According to ChartsBin, in 2007, South Africans consumed approximately 48.87 kg of meat per person (about 135gr a day), as a nation we consume 2 443 074 831 kg of meat a year which equates to about 12 million animals.

"What is meat?" To ask this question may seem senseless, we all know that meat is what we eat, it is food. We speak of 'red', 'white', or 'dark' or 'light', etc. We seem to attribute different qualities to them. Vialles points out that meat is "an edible product of animal origin", it is the product of a slaughtered animal (although this aspect is often not mentioned). Slaughtering is done 'invisibly', unless done as a ritual, we know it goes on obviously, but it is a kind of "abstract knowledge". Slaughtering the animal needs to be done as we do not wish to eat animal corpse (we are carnivores not carrion eaters). (Vialles, 1994, p4)

In earlier times, meat eating, according to Haraway, was about politics as well as nutrition (the same could be said in today's society as meat is seen as a commodity). The control of a valued resource is power, a social currency in ancient human societies. Men would devout hours to hunt for meat while the women "gather the protein and calories", the men's effort received much attention, they were able to use meat to enhance their status in their social groups. Haraway mentions that the nutrition meat supplies is not irrelevant but what makes it worth "bragging about, begging for, and manipulating with", but meat has gone beyond this. The value of meat is an question of perception by its society, It does not matter that plant foods (gathered by the woman) is just as valuable as a resource. Meat is considered more valuable as it is more difficult to obtain (in current day situations more expensive to obtain). (Haraway, 1989, p202)

> "Consuming the muscle flesh of other highly evolved animals is a potent statement of our supreme power. Incorporating their flesh, we consume their power."
>
> (Delaney, 2004, p 292)

Meat is also seen as a symbol of masculinity, for many of us subconsciously or not, it seems hard to imagine a vegan/vegetarian as a boxer or weight lifter, this is evident that the value of meat is ingrained in our western culture. This can also be seen in the common everyday phrases used like "bring home the bacon", possibly relating back to men as hunters and providers.

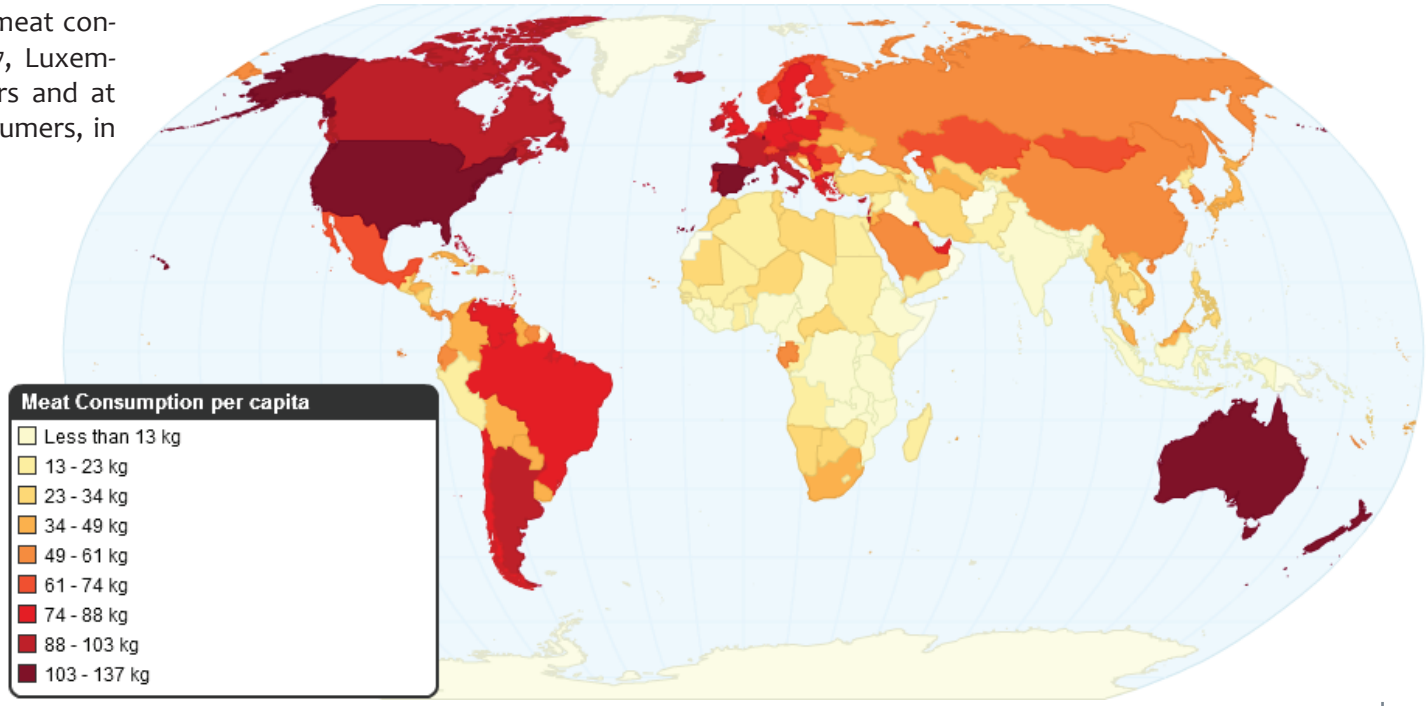
It is not necessarily proven that if we share a closer relationship with (production) animals, we would eat less of their meat. It certainly introducers a new

topic of debate and a new way of thinking, a new appreciation for the cattle not only as a source of meat but as a commodity. Cattle is the main source of our meat consumption and The Byre is trying to promote a re-evaluation of how we value cattle. If we aim to reduce the factory farming of cattle an alternative source of meat is needed. The Byre aims to explore and further research these alternative means of meat sources.

COUNTRY NAME	2007	2006	2005	2004	2003	2002
1. LUXEMBOURG	136.13	138.4	137.84	134.91	145.97	145.91
2. UNITED STATES	122.79	123.9	123.64	124.05	121.45	122.16
3. AUSTRALIA	122.70	110.55	115.6	105.8	115.52	107.98
4. NEW ZEALAND	116.81	109.79	103.96	109.37	107.52	104.65
5. SPAIN	111.56	107.5	108.08	108.58	118.89	119.75
6. FRENCH POLYNESIA	108.61	98.38	101.92	106.08	102.16	102.99
7. AUSTRIA	103.18	100.63	109.88	113.04	111.75	111.59
8. CYPRUS	102.18	100.05	104.37	100.41	99.68	106.3
9. ISRAEL	98.89	102.13	99.65	99.23	98.19	97.62
10. CANADA	98.83	95.46	95.23	99.5	99.01	100.66
76. SOUTH AFRICA	48.87	49.77	46.06	43.46	42.02	40.01
168. GUINEA	8.27	7.98	7.47	7.23	6.92	6.5

45. The map above shows the meat consumed in the world, Australia and the United States with the most consumption. (Chartsbin, 2007)

The table on the right shows the top ten meat consumers in the world, dating back to 2007, Luxembourg ranked the biggest meat consumers and at 168, Guinea, ranked the lowest meat consumers, in this year, South Africa was ranked 76th.



"Fifty years hence we shall escape the absurdity of growing a whole chicken in order to eat the breast or wing by growing these parts separately under a suitable medium."

Winston Churchill (1932)



46. Photograph [Invitro meat in glass jars] 2010

In Vitro Meat

With the global meat consumption estimated to be 270 million tons per annum, growing at the rate of 4.7 million tons a year. The process of In Vitro offers to produce a cruelty-free meat alternative, this would allow a down size of the livestock production system and relieve the demand for breeding many cattle to try meet the meat consumption.

Meat production has the one of largest carbon footprint. It is estimated that every 100 gr of beef consumed, has the carbon footprint equivalent of a car having travelled for approximately 11km. (CHC Database, online).

The In Vitro Meat process is a relatively new development in terms of meat production. It arose out of experiments conducted by NASA in an attempt to find improved forms of long term food for astronauts in space. The technique was approved in 1995 by the U.S Food and Drug Administration (FDA). (eNotes, 2012: online)

In Vitro Meat should not be confused with imitated meat, it does not necessarily involve genetic engineering. The cells involved are natural which are grown in a normal method.

The meat we consume is essentially animal muscle tissue. The In Vitro Meat process involves taking muscle cells from the animal, known as myosatellite cells. These cells are then applied to a protein that helps the cells grow into large portions of muscle (meat). One animal is capable of providing more then a 2.5

billion kilograms of In Vitro Meat to feed the world for at least several hundreds of years. Once the initial cells have been acquired, additional animals would not be needed. (eNotes, 2012: online)

Scaffold-based techniques and self-organising techniques have been identified as two promising techniques for the production of In Vitro Meat or cultured meat. (eNotes, 2012: online)

Environmental impact

In Vitro meat will have a significantly less carbon footprint compared to an abattoir. It has been proposed as a humane, safe and environmentally friendly alternative to slaughterhouses. A recent study showed that Livestock accounts for 51% of man-made greenhouses gas emissions. (Wordpress, 2009: oline)

In Vitro meat will also require a significantly less amount of water, the production will produce considerably less waste as there is no solid waste or methane gas as a product of the meat production, except for the farming component.

Social impact

The world is slowly exhausting all our natural resources, and meat is a product that will not be around for too much longer. We share the earth with farm animals, these animals are currently overpopulated in order to meet the demand of societies rate of meat consumption. It is therefore imperative that an alternative to meat production without necessarily enforcing society to become vegetarian. (eNotes, 2012: online)

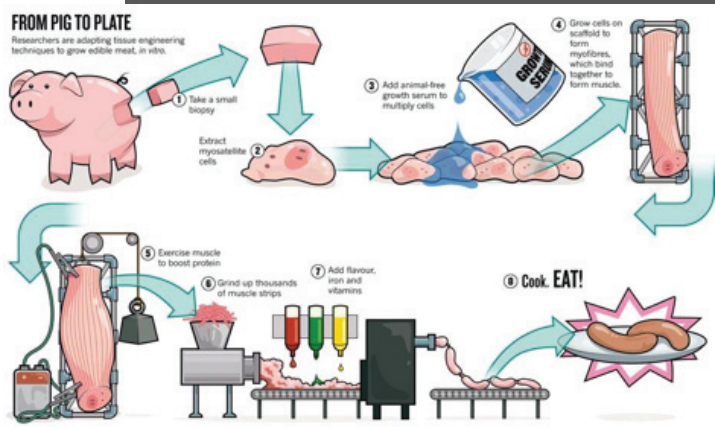
Currently the In Vitro process is only able to produce ground meat as it is very difficult to reproduce steak or a drumstick. Lab grown meat, will initially be taken with criticism and society will be reluctant to convert from real meat to Lab grown meat. It is therefore necessary to promote the In Vitro Meat and inform society as to why In Vitro Meat is a great alternative. This meat produced can potentially be much healthier for us as scientists can have full control of the fat content and nutritional content of the cultured meat.

The Byre proposes to continue to the research and testing of In Vitro meat (schmeat, as it has been nick named). In Vitro Labs have been provided for in the Meat Science Faculty.

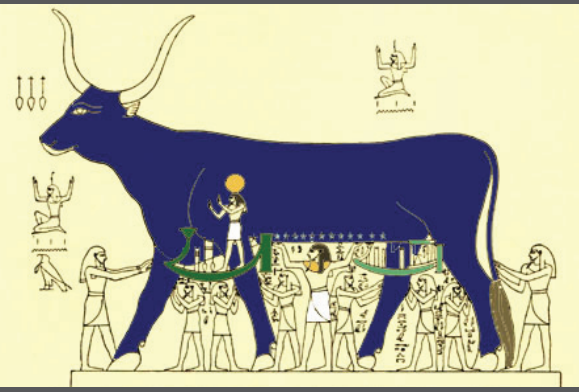


Above (47): Petri dish. (Greenall,T. 2009)

Below (48): Diagrammatic process of In Vitro Meat. (Macmillan Publishers Ltd. 2010)



Culture



Above: (42) Egyptian painting of cow Depiction of Goddess Hathor. (Online image, n.d.)

Below: (43) Image depecting the cow as the Mother Earth, the ultimate mother, as revered in the Hindu religion.



India accounts for 30% of the cattle population in the world. A cow, in India, is considered a symbol of the earth as this animal provides so much, and asks for nothing in return. In India, the cows are respected sacred animals, allowed to roam freely. (Das, 2012: online)

The cow, in ancient Egypt, was a symbol of fertility, wealth and renewal. The cow was 'the mother of Sun'. The Egyptian Goddess, Ahet, was represented by a head of a sacred cow with a solar disc between her horns. Goddess Hathor, in the Egyptian pantheon, was said to possess different aspects of a cow, the hope of survival, ruler of the body of the sky and the living soul of trees. The cow is also featured in many of the Ancient Egyptian paintings as key characters. (Symbols, 2012: online)

Cattle to many South African cultures mean different things, wealth, bridewealth, status, power, et. It is not only in traditional South African cultures that the cow is highly valued. The Zulu was studied and their relationship with their herd was examined in an attempt to address the issue of perception.

Learning from the Zulu:

Marguerite Poland, author of 'The Abundant Herd', in her book speaks about an old cattle byre on the plain below Ubombo (a small town in northern KwaZulu-Natal), this century old byre was made of twisted branches of trees, the ancient wood, petrified into rock like shapes and the palisade deeply rooted in cow dung laid in layers for generations. This place, she says, has of a reverence, as there is in any other byre, a fragrant silence when the herd is at pasture, a sense of community and ease when it is kraaled. It is here where the ancestral shades gather, where cows are milked, where the herd is brought at night, where the drongo calls, in praise of cattle, from a vantage near the byre as dusk deepens into night. It is in the shadow of such a byre that something spiritual and aesthetic significance of the cattle of the Zulu people becomes evident. And talk amongst the men is of pride when discussing their animals, pride of their strength, virility, productivity, calving ability, quirks, humours and dispositions, she says there is a subject of never-ending nuance and meaning. Here tradition still reins, cattle are companions in every aspect of daily life; patient intermediaries between the world of living and the dead. The symbiotic relationship between man and beast is that of intimacy, affection and reverence. (Poland, 2003: p10)

There is a close association between cattle and men. Author Axel Berglund speaks to the diviner at eThelenzini about this relationship, he says: "The thing is this. A woman conceives and calves in the tenth month. So does a cow. It conceives and calves in the tenth month. So a cow is like a human." He describes how cattle live "in the same way as humans", referring to the fact that both cattle and human beings live in "imizi" (homesteads) which are places of cattle and humans". The diviner was referring to the fact that both have their night-quarters in the same homestead. (Berglund, 1976: p110)

Cattle remain central in traditional Zulu life, even though The Zulu's customs, traditions, myths and beliefs may have changed over the past 100 years. Cattle are the value of labola, the gift from a grooms family to the his bride, labola is a means of cementing

a bond between the two families, it is not so much a currency but rather a signifying gesture marking the relationship. The cattle form part of the negotiations and the ceremony of the marriage. (Entabi communications cc, 2010: online)

> The cattle were always there, in the midst, not in some far-off cattle-post. Interaction between man and beast was close - and closeness bred both pride of possession and love.
> (Poland, Hammond-Tooke, Voigh, 2003: p14)

The great reputation of owning cattle was supported by the fact that all animal farming duties including milking, was done solely by males. It was believed that women (from child bearing age) were characterised by a ritual impurity (umlaza) that was a threat to the health of both man and beast. This opposition between woman and cattle was further supported by the wider symbolic association between sour milk and kinship. Sour milk (amasi) could only be shared among kinsmen, to share sour milk was to make a statement that one was related to the members of the homestead. To drink sour milk with a woman, acknowledged her as a relative and, therefore ruling her out as a possible sexual partner. (Poland, Hammond-Tooke, Voigh, 2003: 19)

Cattle were killed for food with great reluctance, other small stock such as goats were less valued, and were therefore more common as a source of meat. Oxen and cattle were slaughtered mainly on special occasions and sacrifices to the ancestors. (Poland, Hammond-Tooke, Voigh, 2003: 19)

Cited in Wives for Cattle. A witness was asked, during the Commission of Enquiry in 1883: "Do you prefer sons or daughters?" the witness replied: "Both are good, girls bring cattle and boys look after them" (vol II, part 1: p98, cited in Kuper, 1982: p11)

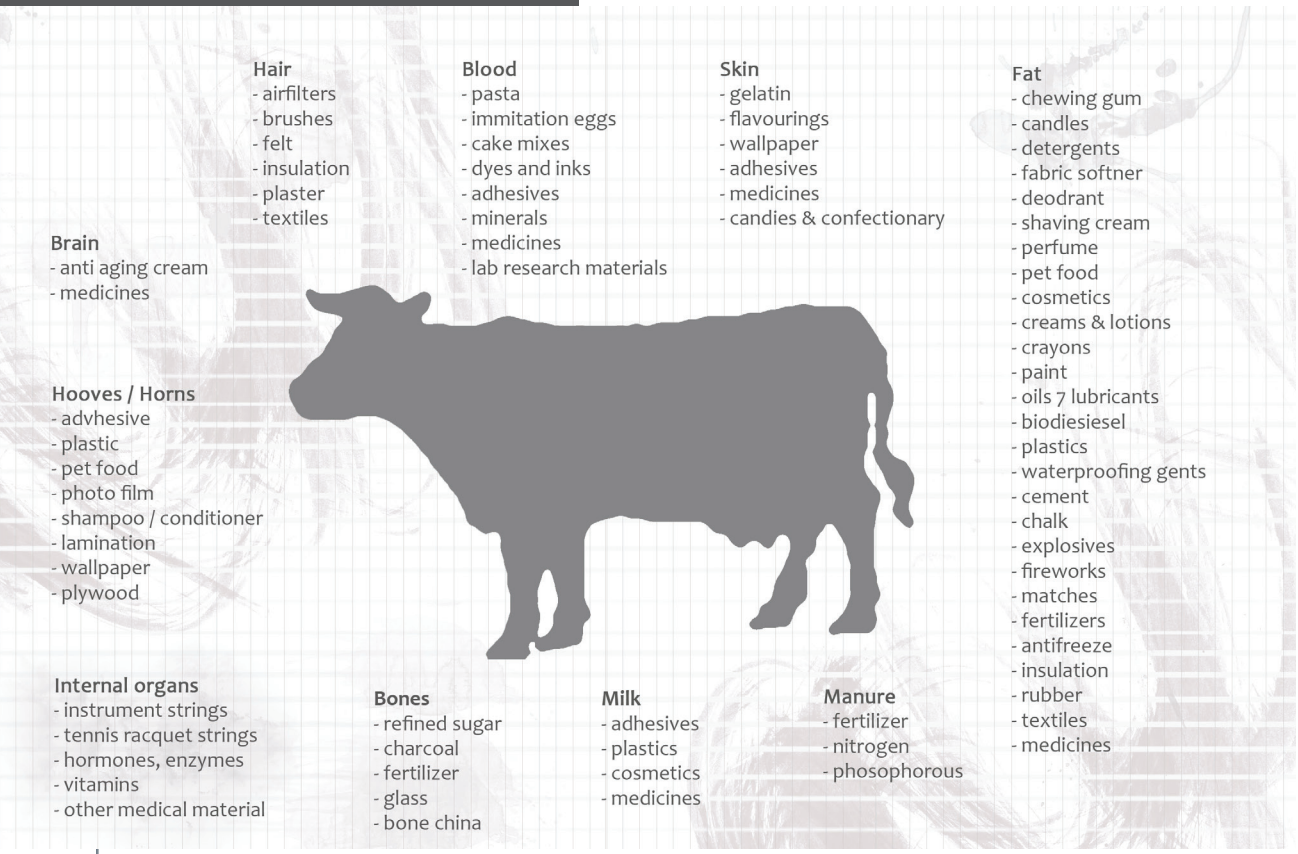
In the Zulu household and herd are one, they constitute a single community. This analogy between homestead and herd was stated to an ethnographer by a Zulu man (cited in Poland, Hammond-Tooke, Voigh, 2003):

> (He) drew with his fingers an incomplete oval in the sand, which stood for the trunk of the cow. Above, at the neck, he indicated the place of the homestead ... At shoulder height, on the right side, he placed the heir, and on the right flank the junior right-hand son. The left-hand and junior left-hand sons were indicated on the left shoulder. According to them, the homestead presents itself, structurally like a cow.
> (Holleman 1940, 31-75)

The social group of the Zulu household in the homestead can be related to, and identified with, its herd in its 'homestead'. The health of one depends on the other, a symbiotic relationship. Just as family members are named and valued individually, so are their cattle. (Poland, Hammond-Tooke, Voigh, 2003: 25)

Each Nguni in a herd is individual in the combination of its colour pattern, shape of its horn, gender, status and history. Each member of the herd have their story, as do the members of the household. They carry their complex identity in their names and the terms that describe their attributes, they are not just a commodity. (Poland, Hammond-Tooke, Voigh, 2003: 34)

Below: a mind map of all the products that are produced from cows.
(Data source: Holy kaw, 2010: online)



Adam kuper, author of Wives for cattle, says that it is possible to sum up endless examples of the central importance cattle have seen in ritual, sacrifice and bridewealth, status of cattle-ownership and the celebration of cattle in traditional idioms and songs. (Kuper, 1982: p10)

It is clear that there is no part of the Zulu life that does not involve the presence of cattle. The Nguni's pleasing variations of hide and horn has formed a colourful background to every social event. (Poland, Hammond-Tooke, Voigh, 2003: 33)

There is a great deal to learn from the Zulu, cattle are not just a 'piece of meat', as they have become in western culture. They are a valuable commodity and an intrinsic part of their daily life. A shift in mind set, in western culture, is necessary if we are to fully realise the value of cattle not only as a source of sustenance but as a means of income, wealth, longevity. It is hoped that there is a return (of interest) of the abundant herd, by both society and commercial sectors, so that their economic, cultural and spiritual value is re-established.

In southern Africa, communal farmers keep cattle for numerous purposes. In rural homes, the family depends on cattle for, milk, meat, hides, horns and income. (Chimonyo et al., 1999; Dovie et al., 2006; Simela et al., 2006) Their dung are used for fuel and floor polish / seal, etc.

> "Cattle are an inflation-free form of banking for resource-poor people and can be sold to meet family financial needs such as school fees, medical bills, village taxes and household expenses." (Dovie et al., 2006, Simela et al., 2006). Cattle are a source of employment, collateral and insurance against natural disaster. Some farmers keep cattle for prestige and pleasure (Shackleton et al., 1999). (Cited in Musemwa, Mushunje, Chimonyo, Fraser, Mapiye and Muchenje, 2008: p240)

Cattle in a sociocultural aspect, function as bride price and settling of disputes (as fine) in communal areas. (Chimonyo et al., 1999). Cattle are reserved for special ceremonial occasions such as wedding feasts, funerals and circumcision ceremonies. (Bayer et al., 2004). They are offered as gifts to friends and family, and also help as starting capital for young and newly wedded men. Cattle are used to cement bonds (as in the case of Labola), strengthen relationships with in-laws and are used to maintain family contacts by entrusting them to other family members. (Dovie et al., 2006). They are also play an important role in the installation and exorcism of spirits. They are given as sacrificial offerings to settle avenging spirits. (Bayer et al., 2004). (Cited in Musemwa, Mushunje, Chimonyo, Fraser, Mapiye and Muchenje, 2008: p240)

An article was published in Stockfarm magazine, August 2012, titled 'Financing should make economic sense'. In this article Izak Hofmeyr speaks about banking , agriculture and livestock financing. Livestock as collateral, is a topic he discusses in this article. The commercial banks all differ when it comes to the details of livestock financing and agreement of the purpose of using cattle as collateral. Hofmeyr says that according to Phakamisa Ndzamela, in his article on www.moneyweb.co.za (29 August 2011), 'cattle can be used as collateral', for the purpose of expanding a farmer's herd. Ndzamela quotes a Standard Bank representative, Lumé Kleynhans who said, "Standard bank uses the asset which is being financed as collateral and provides 50% of the financing against the total value of the cattle to be purchased. This is provided that the farmer meets the bank's normal credit and repayment criteria. This type of financing is targeted at primary producers and feedlots". According to Absa, input costs are increasing at a faster rate than the value of land. As a result farmers are unable to offer sufficient collateral for loans based on their farm value. If commercial farms with a good record has the option of using cattle as collateral. However, at the moment, according to Absa, this transaction is only available for the expansion of breeding herds or ensuring throughput in feedlots. (Hofmeyr, 2012: p7)

It is clear that cattle hold far more value than just a piece of meat, they are a source of livelihood, a social status symbol, a means of cementing a bond between two families. This animal has been featured in our everyday life for centuries offering man so much more than just sustenance. A cow is most certainly more than just a cow. The Byre hopes to create this awareness.



“Outside the town...
But there are special places outside the town where all blood and dirt are first washed off in running water. The slaughtering of livestock and cleaning of carcasses is done by slaves (condemned criminals sentenced to hard labour). They don't let ordinary people get used to cutting up animals, because they think it tends to destroy one's natural feelings of humanity. It's also forbidden to bring anything dirty or unhygienic inside the town, for fear of polluting the atmosphere and so causing disease.”

Sir Thomas More, Utopia (1516)

2.3

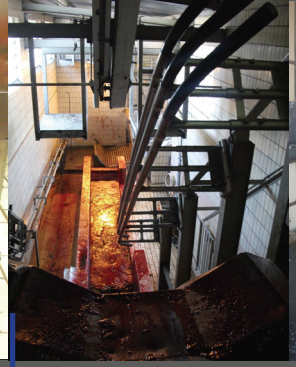
The Abattoir and Architectural Spatial Types

The initial topic and direction of this thesis was the enquiry into the abattoir, work was conducted in an attempt to understand the abattoir process and its associated architectural spaces, which help lead to decisions made in the design process.

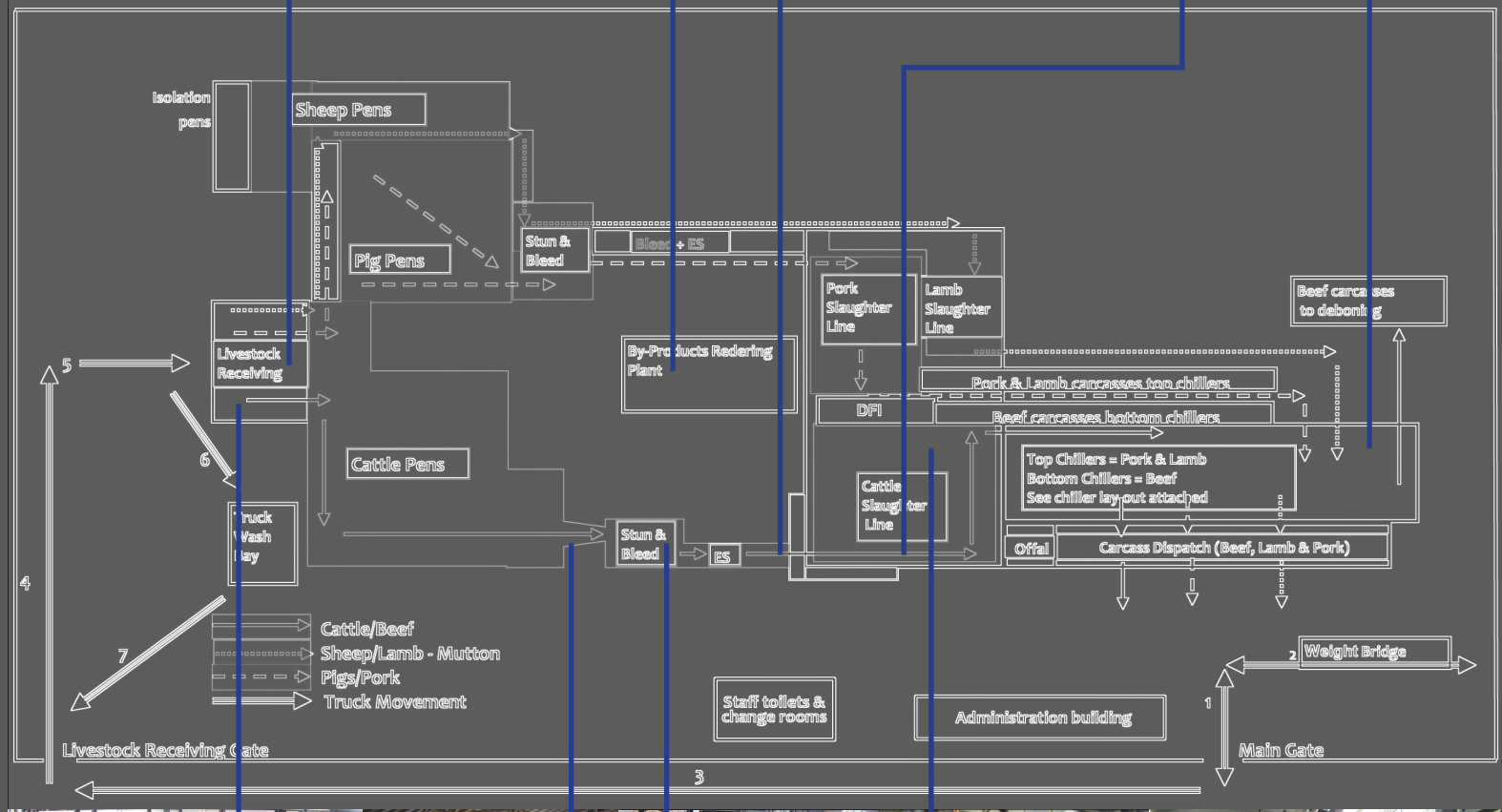
Visual diary:

Top (from left to right):
1st- Livestock receiving area.
2nd- Hooves in by product receiving room
3rd- View looking down at stunning and bleeding area
4th - Workers cleaning area, before entering slaughtering floor
5th - Cold room storage















Bottom (from left to right):
1st- Livestock receiving area. Concrete floor punctured to prevent cows slipping
2nd- Pre stunning race
3rd- Stunning box
4th - Tray for head and hooves
5th - carcass dissecting area

"My visit to an abattoir"

On Thursday, the 5th of July 2012, I visited the Vereeniging Abattoir. This abattoir is located along the R59 highway between Vereeniging and the Vanderbijl Park, in an industrial section of the town. I was meeting Charmaine Nell, a QA Manager at the abattoir, to discuss my reason for visiting and my intentions which was to understand the abattoir process, its associated architectural spaces and general regulations needed to be adhered to when it came to designing an abattoir.

The first gate i approached was the highly guarded animal drop off gate. Through these gates, the lairages are visible (the time was 10:00am). They were empty. I continued driving to the next visible entrance. Several cars were parked on the side of the road. The second entrance was a pedestrian entrance with a crowd of people standing outside, some holding packages of what I assumed was recently purchased meat. Just ahead, stood a third entrance with a "visitors" sign fixed to it. I immediately notice the admin building on the left, and straight ahead a large face brick factory-like building. The building was not very people friendly or inviting in any way. There was a definite strange smell in the air, although, it was not as overpowering as I had expected.

In my meeting with Charmaine, she informs me of all the regulations pertaining to their abattoir and she explains the process and workings of the abattoir as well as many other interesting facts. During our meeting I notice a particularly bad smell, it smelt like some sort of chemical. Charmaine says that the smell I'm smelling is the FFA (Free Fatty Acid), used to prevent bacteria growth on the carcase. After my hour and half meeting with Charmaine, she hands me a disposable overall, hair net and size 8 boots that I needed to put on before we were allowed to enter to the abattoir. She leads me out the administration building at the opposite end of the entrance. Looking at the abattoir building about 20 meters away from the admin building, I noticed the workers in white overalls, and boots with splatters of blood on them, leaving the building from a covered steel staircase on the first level. Its lunch time. More people are gathered outside, eating, in a building next to the administration building, which I was told was the staff toilets and change rooms.

Charmaine leads me to a fenced off area, "You very lucky", she says pointing to a truck loaded with black bulls entering the first entrance. "They are about to off load some cattle". We walk up several steps onto an off loading platform, with steel holding pen fencing around, the floor slab of the platform is punched in some places and covered in steel wire fencing in order to prevent the cows from slipping on the concrete floor. The truck at this point was parked up against the loading platform. An abattoir employer opened the truck gate and began whistling and smack the sides of the truck, a few of the cows hurried out and bottle necked at the truck gate unsure of where to go. The cattle on the truck were separated by fence dividers, travelling in groups of about 5 cattle per section on the truck. They then ran down the ramped path to the second set of lairages. More dividers were opened, releasing more of the cattle from the truck. Once the trunk had been emptied we then made our way onto the path the cows had just taken to the second lot of lairages. The pathway was about 1 000mm wide, black painted steel bars make up the pen fenc-

ing and comes up to a height of 1500mm from the ground. We swiftly made a detour as one of the cattle had come running back towards us.

As the cattle move from the drop off area to the holding pens, another employer stands waiting and washes down the cattle with a hose pipe. The lairage, now at natural ground level, is laid out in a way that allows different passages and fenced off areas to be opened and closed and adjust the flow and use. The cattle that had just arrived had been routed to the end of the passage, near the abattoir. We continued, walking around the holding pens to where the cattle where now standing, waiting. And once again, divided into approximately 5 cows per closed off section of the passage way.

The pre-stunning race, the next stage of the process, takes place on a ramped concrete floor. The steel fencing is now clad in a solid sheet of steel and narrows towards the bottom in a v-shape. Here, a cow is guided up the pre-stunning race, then a steel bar is set up to separate and stop the next cow from walking into the cow in the pre-stunning race. The cows here are controlled by an electric shocking device, used if and when necessary.

I was then taken around into the Stunning and Bleeding area. As it was lunch-time, there were no employees in the abattoir. A herd of cattle had just been slaughtered and the evidence was yet to be cleaned up. The entrance to the Stunning and Bleeding room had clear plastic blinds at the entrance door, to keep flies out. The walls and floor of the room is tiled in cream white 100 mm x 100 mm ceramic tiles that are painted with splatters of blood everywhere.

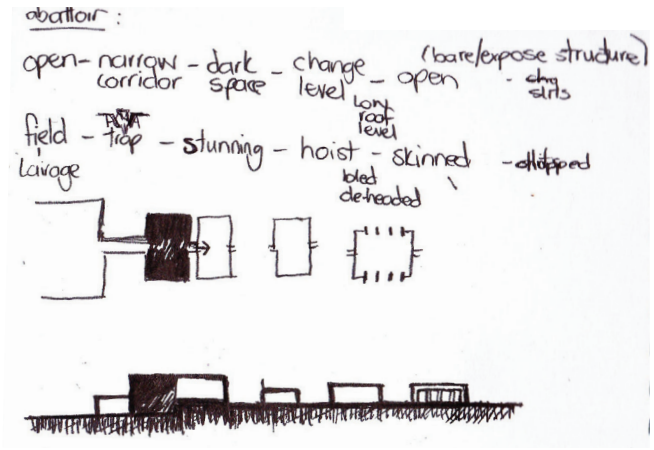
The strong stench of warm blood was overwhelming. On the right is a steel staircase that leads up to the stunning box and a v-shaped white steel encasement is where the cow is stunned. To one side of the stunning box lay the mechanised stun gun. The cow is stunned, released from the stunning box and falls onto its side onto a catchment area on the right. The cows leg is fastened to a latch of sort which is attached to the railings on the ceiling. The stunned cow is hoisted, upside down, it's throat is slit and is bleed, the carcase travels up the rails to the first floor level, while the blood is collected in a trough on the ground and is drained to an adjacent building, where all the by-products are sorted. The trough at this point was over spilling with blood.

I was then taken up the steel covered staircase, where I had seen the employees leave earlier into what was obviously a cleaning area. The passage is lined with wall mounted taps and low steel troughs with rubber brushes and soap to clean the gum boots and a second row of taps follows for hand washing. An opening on the right at the end passage leads you into the Dressing floor. The Dressing floor is a large room also tiled floor and walls in the ceramic cream white tiles. The smell in this room is remotely reminiscent of the smell in a butchery, within a few minutes I no longer noticed the smell. The roof mounted rails from the Stunning and Bleeding room leads into the Dressing floor and travels the length of the room in a s-shape, this allows the production line of activity at the different stages to take place, like in a car manufacturing factory manner. Large steel bucket-like trays hang alongside the rails at the start of the dressing floor, this is where the head and hooves of the carcass is placed once it is de-headed and de-footed. The hide

of the carcass is manually (in the case of this abattoir, alternative means are by machine where the hide is mechanically ripped off the carcase) removed and placed in a shoot down into the level below where all carcass parts, apart from the meat, is sorted. The carcass is then cut open, and the internal organs (offal) are removed. At several stages of the production line, the head, feet, offal, tail are removed and inspected, if it is approved, the carcass continues through the abattoir. If something unusual is identified, the entire carcass and its contents are removed and inspected by a vet on site. In the case that the carcass is declared unsafe for consumption for whatever reason, it is then disposed of.

Each carcass is stamped and given a unique code which is recorded, this allows for tracking and all relevant details to be recorded (from the farm it came from, to the date and time it was slaughtered, dietary history). If the carcass is found to be satisfactory , the meat is immediately cooled in the chillers and then frozen.

The abattoir I visited also slaughtered pigs and sheep, which takes place in another section of the building which can be accessed through the cattle abattoir. I had the opportunity to see the inside of this section too. The smell of the sheep and pig abattoir was drastically worse than the cattle abattoir. The sheep and pig abattoir rooms are alongside each other. Like the cattle the abattoir, the sheep and pig abattoir works with the carcase running on rails attached to the ceiling. The process of sheep and pig is similar to that of the cattle, a production line method. Instead of being de-hided , the pigs are soaked in boiling water to get rid it's hair on the pig, this lent to the bad smell. Once the sheep and pigs are slaughtered and de-hided they are then separated into different dressing floors and taken to their respective chillers. As in the case of the cattle abattoir, there were no employers in this abattoir, however there were sheep hanging from the ceiling on the rails, and at various stages. Some of the sheep that had just several minutes ago, been killed. There were more sheep further along the production line, half de-hided, their skins were hanging off the carcase, and some completely de-hided. I had not thought it would have been pleasant to see, but I was surprise just how difficult it was for me to see, I at this stage wanted to leave. All throughout the tour of the cattle abattoir, I had not seen any hanging carcase, apart from the carcasses in the chillers. The only evidence of there being a carcasses is the blood, bits of hide and other pieces of offal. I had before my visit, witnessed on-line (Youtube) videos of the entire slaughtering process, so the remains was not as disturbing as I had imagined it to be. My visit to the abattoir was truly fascinating and informative, a tremendous eye opening experience.



Left: A study of abattoir process and how the process can be represented architecturally.

Shed Architecture

Abattoir as an architectural typology:

As discussed, abattoirs, are generally placed outside the bounds of the general public, outside the confines of a city. The architecture of an abattoir is usually based on efficiency and practicality. As it is not a place for the public, its architecture reflects this, the standard material and portal frame construction is used. The architectural typology of an abattoir as we know it, is that of an industrial typology. An industrial type building usually houses factories or industrial companies, The Shed was therefore explored as an architectural solution to house The Byre.

Shed buildings.

In the book, Form and Fancy: Factories and Factory Buildings by Wallis, Gilbert and Partners, 1916-1939, by author Joan Skinner, talks of a successful philosophy that Wallis, Gilbert and Partners employed that contributed to their reputation as designers of factories and factory buildings through the years between 1916 and 1939. (Skinner, 1997: p 261)

By the later 1920's, Wallis, Gilbert & Partners were regarded experts in factory design. Awareness of W,G & P's planning talents and judgment of far-sighted economies favoured their services. The firms manner of operation suggested greater understanding of the manufacturing industry than elsewhere. Their main attributes seem to have been to react to market signals, organise and control, to take on risk and uncertainty, to initiate and therefore be able to move forward, creating change, and re-establishing the existing values of the industry. W, G & P's upheld high quality of materials, craftsmanship and performance with strict overall control. (Skinner, 1997: p262)

What first encouraged architect Thomas Wallis to enter the field of is possible have been contributed by Truscon's notion of producing The Model Factory. Not, a stand ardised model into which any manufacturers could fit their operation into but rather a model where the method of construction allowed for flexibility of planning to suit particular manufacturing requirements. Wallis' ambitions as a designer and pioneer, challenged his artistic creativity and his planning skills, a marriage of art and engineering. (Skinner, 1997: p 261)

An abattoir and many other factory buildings are usually shed structures. sheds, are designed for strictly utilitarian purposes, meaning internal and physical operations are the primary influence of the design. (Skinner, 1997: p241)

Wallis' 'Transgressional' The Fancy factories coincided with a philosophy that was more daring, brighter, more colourful and looking for beauty. The introduction of exotic forms and colour made the buildings more romantic, exciting, fashionable and glamorous. Among Wallis' 'improvement' objectives asked, why should the manufacturing industry hide under its mass, why should it be unobtrusive or anonymous, just another shed? (Skinner, 1997: p 264)

Public Buildings, as Skinner states, always exhibits its prominent role, why should industrial buildings not? Seeing that many of these industrial buildings are responsible for the nations well-being and prosperity. Industry buildings should be

bold, proud, vital and stand out from the rest. W, G & P were said to have characteristics of disturbing the peace and attacking existing values. (Skinner, 1997: p 264)

The Kahn Daylight unit system already offered most of the fundamental requirements, speed of design and construction of a fire-resistant building with large, uncluttered floor space, improved natural lighting conditions and ventilation, and better working conditions for the occupants. There was potential for alteration, addition and different uses, this extended the building's lifespan and maintained its value. These criteria's formed the basis of W, G & P design philosophy and approach to factory design. It can be said that their commitment to change, in itself, was considered a driving force for change. It is never static, it responds to external change and influence. (Skinner, 1997: p 262)

There is clearly no consensus of opinion as to how concrete should be handled, how factories should be expressed, or how they should be judged. A writer made these comments on a W, G & P building, the Wrigley factory, the attraction of this factory building is contributed by fine proportions, its suitability to purpose and extreme reverence in ornament. Other comments spoke of function and construction, a fine example of a factory building allows the function and construction to be understood by the viewer. (Skinner, 1997: p 267)

A beautiful building is ultimately in the eye of the beholder, there does seem to be some differences how factory buildings should be judged - the planning, construction, appearance as an industrial building and its context. Dixon-Spain said:

> No first-rate architect claims to specialise.
> The quality which go to make a fine
> design are identical, be it a factory or a church.

Dixon-Spain believed that factories should be 'unobtrusive', it should emphasise a difference in status. Factories are usually regarded exclusively as production units. Dixon-Spain believes in order to plan competently, the architect should 'soak himself in the processes of the particular manufacture or industry', but warned clients are likely to have little practical knowledge and little appreciation for the aesthetics of the building. (Skinner, 1997: p 267)

Wallis' naming of his Fancy factories as 'Trangressional' suggests that he expected criticism. The planning was admired. The facades were criticised, the fact that the facades were noticeable, his peers considered a sin. His facades were considered commercial, advertising, novelty-seeking, following fashion and vulgar. Although, the criticism on the Fancy factories did not affect the commissions. (Skinner, 1997: p 268)

Fancy factories, collectively as a group, is more appropriate. Wallis' aimed to demonstrate the status of industry and the users of the buildings was considered more important than the opinions it provoked. Fancy, as in fanciful, meant "dressed out in glorious colour, catching the eye and the imagination, romantic, lifting the spirit, freeing the mind from toil and grind. Making the goods, attracting the buyers, improving the lot of the nation - and celebrating it." (Skinner, 1997: p 270)

In an architectural debate for the twentieth century, opposing views were reconciled conceptually rather than stylistically with regards to 'form follows function'. A model factory requires an efficiently planned production layout but this is not necessarily a sufficient definition of its function. A wider syntax of the word would lead to a form more compatible understanding of the industry and the design approach by the architect when it comes to designing a

factory. The manufacturing industry, at that time, had to inspire confidence, it could not afford to be modest or abstractly disconnected. (Skinner, 1997: p 273)

In 1982, industrial consultants, Jolyon Drury and Francis Duffy, advised architects that in order to 'invent better industrial buildings' they should:

> ...understand what goes on inside factories; which is far more varied than you might think. Different industries vary in size, in pat terns of growth, in dirt, noise and messiness, in loadings, and in many ways in which relate directly to building design.
>
> (Skinner, 1997: p 29)

The Byre is required to serve the public, private residents and students of the university, it also needs to provide shelter for the cattle on site. As we know, shed and factory buildings are not usually public buildings, they have a generic and standardised look about them. Understanding the process and function of the building will help inform the design decisions. The building is a utilitarian building, it is therefore important that the building is fully function and serves its purpose. So studying design principles for cows and looking at the requirements for labs, essentially understanding 'what is (will be) going on' in the building is important to understand.

As argued above, shed buildings do not necessarily need to look like any other shed building. This thesis aims to use a shed structure as it is most apt for its function, however methods will be implemented to make The Byre more identifiable and public friendly.

Framed Structures:

Farm buildings are usually factory made. Use of traditional construction and local materials was said to be uneconomic for all but the smallest buildings. Factory-made buildings can be divided into two groups:

- The first, the intensive livestock building: This usually consists of a timber-frame, clad with timber, steel or fibre cement. These buildings are relatively small in size, lightweight and usually only requires a simple concrete base as a foundation for the floor.

- The second group consists of framed buildings, portal frame, as it is more economic in terms of labour and materials in its construction. Portal frames are available in both timber (up to 15m span), concrete (up to 25m span) and steel (up to 45m span). Advantages of portal frame structures are the internal clearances and their ready adaption for use anywhere, for anything.

(Mander & Maurice, 1986: p 62)

Another reasons portal frames are so popular on farms, are their flexibility, ability to be converted to other users later. The bigger the building the lower its unit cost. Since portal frame structures consist of two gable walls, either with doors, walls or cladding (Mander & Maurice, 1986, p: 62)

The Byre will consist of a portal frame structure, then elements (in the form of smaller truss systems) will be added in order to create a changing facade and a facade that is expressed.



Lairages of the Abattoir visited, showing shed structure over out-building and lairages.



49. Photograph (Ernst,S. n.d.)