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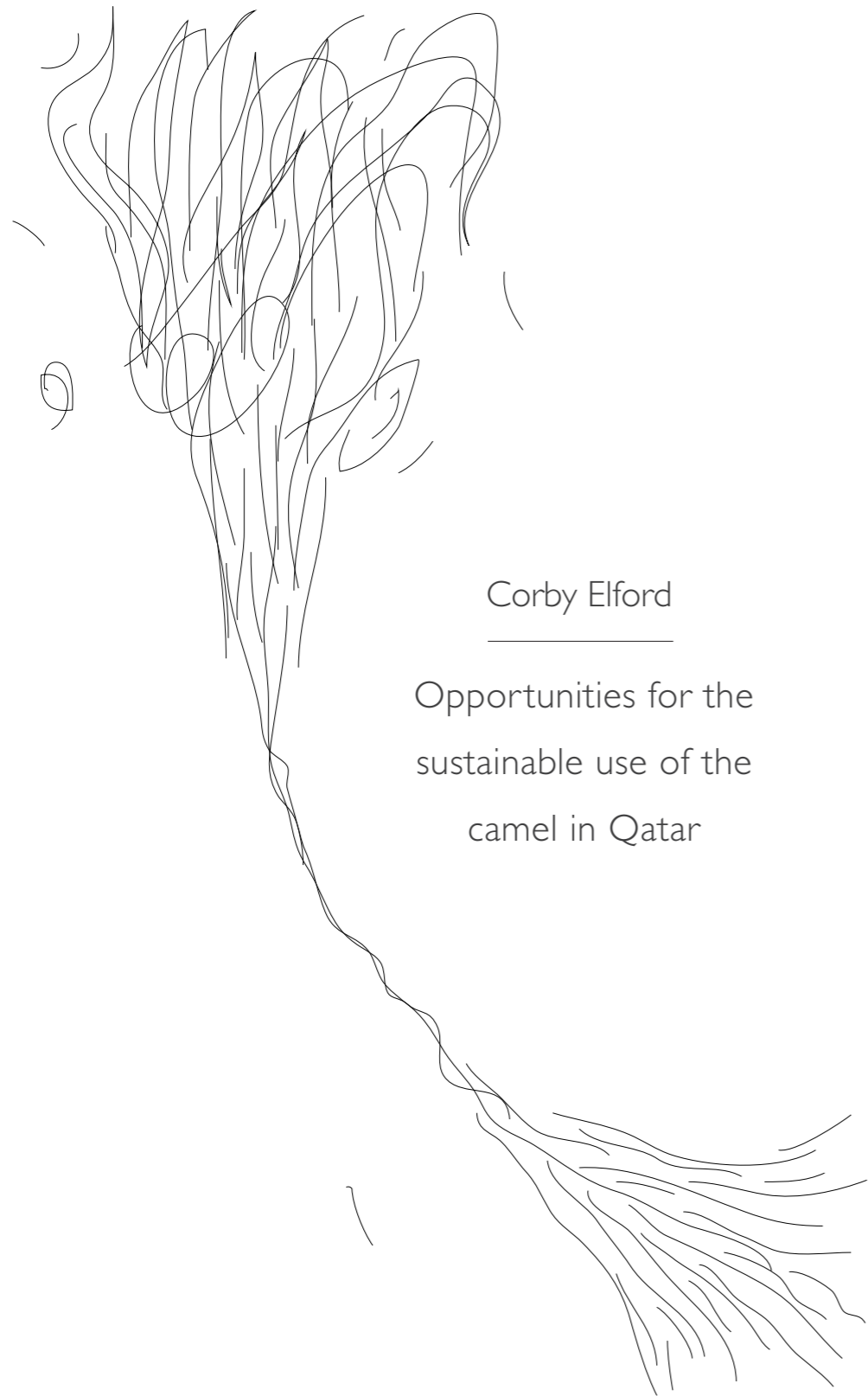
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Corby Elford

Opportunities for the
sustainable use of the
camel in Qatar

Opportunities for the sustainable use of the camel in Qatar

A thesis submitted in partial fulfillment of the requirements for the degree of
Master of Fine Art at Virginia Commonwealth University

by

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i | acronyms and abbreviations

QNV 2030	Qatar National Vision 2030
QNFSP	Qatar National Food Security Program
QNDS	Qatar National Development Strategy
MOE	Ministry of the Environment
FAO	Food and Agriculture Organization of the United Nations
UNESCO	United Nations Educational Scientific and Cultural Organization
FARM-Africa	Food and Agriculture Research Management
MOFA	Ministry of Foreign Affairs
WCED	World Commission on Environment and Development
NFC	The Natural Fiber Company

ii | definition of terms

Camel refers to the native dromedary camel of Qatar, which can be found in small family farms around the interior. It does not refer to the camels which are raised, trained and used for the purpose of racing.

Craft is used in the sense that it relates to traditions of the sixteenth century guild systems of Europe. Admission to the guilds for specialist training depended on high fees and was a prerogative of the relatively wealthy. The guilds saw skills as property. Kim Woods describes the guilds as 'very powerful guardians of collective artistic privilege and technical quality'.¹ To become a master craftsman or guildsman could take decades. In this thesis, the techniques that have been employed, such as hooking and stocking stitch knitting can be learnt in a few hours. Despite the fact that such skills do form the basis of complex craft processes, it is because of the short acquisition time that I deem such techniques remote from craft. The exclusivity of the guilds and the protection of skills and knowledge that take time to perfect mean that craft is not a sustainable activity that can be shared freely but more of an exclusive scheme. It is for this reason that the incorporation of specialist craft techniques has been avoided in the process phase of producing the practical outcomes.

Object, artifact, product are used interchangeably throughout the text and refer to an object of design. Meaning is produced by the context in which the word is used and should be understood as such.

I | Acknowledgements

Shukran to all those who offered support along the way,

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...my friend, Sayer Al Anzi and his family for welcoming me to his farm and helping me carry out so many tasks and without whom, this project may not have been possible.

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...my adviser, Robert Bianchi for the many challenging discussions about my thesis topic and for opening my mind to broader themes. For deepening my understanding of the realm of methodologies, how to keep my discussions relevant and for tonnes of encouragement, empathy and enthusiasm.

... and above all, my primary adviser, Constantin Boym, to whom I am indebted... for his encyclopaedic knowledge of design theory and practice, for teaching me how to edit, how to shift my thinking, for paring away all the rubbish and showing me a clear path, for his dedication to this project and above all for believing in me.

2 | Abstract

In the course of the modernization of Qatar, the need for camels has greatly diminished; herds have reduced in numbers and are now confined to enclosures. Overall, neglect of this valuable resource means that the camel is threatened with extinction. Currently, there is a need to address problems about sustainable development in Qatar by taking actions such as investing in the existing natural heritage to develop the use of indigenous animals like the camel.

Through a review of past and present use of the native dromedary, a new type of sustainable agritourism will be developed that will provide a type of farm where visitors can learn about, and interact with, traditional animals. These farms will create a market for a range of camel products, thereby transforming the national symbol of the past into an icon of a sustainable future.



Elijah Walton, *Head of a Camel*, 1864. Pencil on paper, 1832-1880. Victoria and Albert Museum.

3 | Justification

3.1 Introduction

From the seventh until the mid-twentieth century, the domesticated camel has been the mainstay of human life on the Arabian Peninsula providing transportation, meat, milk and clothing.¹ Today, the camel is absent from the landscape and kept in enclosures. It is the only species that is perfectly designed to withstand arid desert conditions where rainfall averages less than 400mm per year; Qatar averages less than half that figure with an annual average of 75.5mm.² Deserts account for approximately one third of the earth's total land mass and the environment of Qatar is part of this third.³ Despite the ability to survive extreme conditions, camels continue to yield high returns in terms of by-products even when water is scarce and there are few desert shrubs to feed on.⁴ This super-adaptation of the camel has possible important implications for future land use over a large proportion of the desertifying earth. One implication of (re)using camels in particular is to embrace

non-intensive farming methods based on ancient desert-based survival skills and knowledge. Already, schemes are underway in less developed countries that are successfully producing food based on methods of farming that work with, rather than against the local natural environment. FARM-Africa (Food and Agricultural Research Management), a British non-governmental organization developed The Camel Improvement Project using twelve year's worth of UNESCO (United Nations Educational and Cultural Organization) research to promote camel husbandry and production. They viewed the camel as 'environmentally friendly [however it] had been neglected and the thought was that with a relatively small input',⁵ the returns for Kenyan pastoralists would be worth the effort. Interestingly, and in relation to this research, they also believed that improving camel production would simultaneously solve 'broader issues'.⁶



Edward Topsell, *Dromedary Camel*, 1658. Woodcut. Special Collections, University of Houston Libraries.

3.2 Context

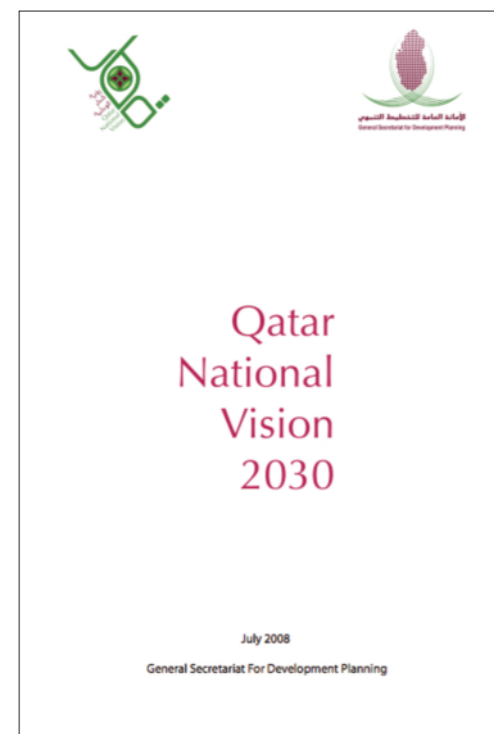
In Qatar, the harsh environment can sustain only limited life such as that of the camel. The Bedouin depended for their whole survival on this animal which has become a burden in some Arab states and is seen less and less as Qatar's built environment encroaches on the desert. Other problems include the overgrazing of animals which have led to the desertification of Qatar's natural habitat. Tourists associate the camel with the Arab states. It serves as a visible connection to a past culture. Using the camel as a provider of renewable resources and as part of Qatar's vision for a sustainable future would accord the animal a reason to become once again conspicuous and revered.

This thesis investigates how the camel could be used as a renewable resource rather than become more endangered. There is a need to look for solutions such as developing sustainable forms of agriculture that rear native animals which are able to survive the extreme temperatures as well as yield high returns in terms of food and in the case of this thesis, by-products. The worth of the domestic camel in the context of Qatar's new policies on green production and food security is potentially as vital as it was back in the days before oil and gas. I intend to examine how a range of innovative designs can be developed based on the properties of camel-sourced materials.

This is an opportunity to design materials and products that answer Michael Braungart's 'cradle to cradle' philosophy of design.¹

Opposite
View of the camel market area in Doha.





Qatar National Vision 2030 document was published in 2008. It sets out the four pillars for areas of development.



3.3 Qatar's National Vision 2030

'The state of Qatar is enjoying a period of unparalleled prosperity, with exceptional economic progress being evident in the increasing standard of living of its people.'¹

Since the beginning of the exploitation of oil and gas during the 1940s and the transformation of Qatar into a modern urban state, camel husbandry has diminished with only 21% of farms keeping camels and with it, a way of life traditionally associated with the desert.² Eventual and inevitable sedentarization of Bedouins has meant that the burdens of desert living could be alleviated by the convenience of motorized transport and readily available food stuffs.

The procurement of all necessary and desirable commodities was made possible due to the transformation of locally available and abundant fossil fuel resources into usable energy. There was no longer the dependency on the camel for transportation or food. Another factor that have contributed to the decline in the camel population include the preference for goats and sheep due to them having a shorter gestation period.³ Finally, the development of a city-based society and economy has meant that camels play an insignificant role in contemporary Qatari life. The encroachment of the city on natural spaces has meant that land is perceived almost exclusively in terms of development, albeit at the expense of the natural environment, its damage to fertile soil and the destruction of precious ecological systems which are now recognized as 'Environmental points of stress' in the QNDS, (Qatar National Development Strategy).⁴ The rapid expansion of Qatar could mean the final phase in the forfeiture of the camel and the traditional knowledge associated with it.

'Despite [such] rapid economic and social gains', as stated in the QNV 2030 document (Qatar National Vision) there is clear acknowledgement that the result of progress has provided many new opportunities but at a cost.⁵ In the section on "Defining Characteristics of Qatar's Future", there is major concern that modern conditions 'have created intense strains between the old and new in almost every aspect of life' [and that the] 'preservation of cultural traditions is a major challenge... Qatar's National Vision [aims to respond] to this challenge and seeks to connect and balance the old and the new.'⁶ The aims of the QNV document provide clear validation of this thesis and its application in providing a solution to many of the issues presented here. The objectives of the thesis in developing a product or service that proves to be environmentally sustainable in its acquisition of materials, production processes and distribution 'must also be economically and culturally sustainable.'⁷ In this way, the thesis proposition speaks directly to QNV and has something to offer each of the four pillars of development, human, social, economic and environmental, in its bid to reinstate the camel.

A proposal to reinstate the camel, whilst not aiming to revive or replicate traditional camel culture, aims to design a situation where the camel will become visible once more and serve as a reminder of the past in a performative as well as a functional role.

3.4 Desertification



1

1. Mohammed Al Jaidah leading a discussion on desertification



2

2-3. Camels grazing freely in the Qatar desert and stripping off the tree bark, 2012, courtesy of Mohammed Al Jaidah, MOE.



3

The desertification of Qatar's interior has become an environmental problem due to the over-importation of camels from the Sudan.¹ Fifty years ago according to Mohammad Al Jaidah, Environmental Expert at the Minister's Office, MOE (Ministry of the Environment), the camel population of Qatar was around 500 to 600, which meant that free grazing and roaming herds played a part in naturally pruning wild shrubs and fertilizing the soil thus maintaining equilibrium of the ecological system. The importation of camels from Pakistan, Oman and Sudan for breeding racing camels has led to overpopulation and overgrazing.² Estimates of camel numbers were recorded at 50,000 and 34,000 in 2001 and 2005 respectively.³ Locals believe that the Sudanese camels, which are larger and harder than the indigenous Qatari camel are mostly to blame for the devastation of wild shrubs, however Wilson states that its 'fine muzzle, [and] small lips... may in fact be deleterious to feeding'.⁴ The structure of the Sudanese camel's mouth is formed with a deeper cleft in the upper lip and a hard palette which means it can eat any type of plant or harsh tree in the desert.⁵ Herders allowed the new camels to roam freely and cause damage to the desert ecosystem rather than practising traditional husbandry by supplementing the camels' diet with buffle and Rhodes grass.⁷

Al Jaidah explains that it is for this reason the MOE has introduced legislation stipulating that all camels be confined to enclosed farm units. Since November 2011, the disappearance of the national icon of Qatar has meant a radical transformation of the natural landscape. Camels are no longer to be seen grazing freely on desert shrubs but rely on fodder which 'comes directly from the farm' or is brought in from the animal souq in Doha.⁸ Today, camels are kept alongside sheep and goats in small family farms. Consumption is for domestic use only and only '43% of camel owners collect milk from their animals'.⁹ There is no current need for their milk or their meat and the fibers, up to 5 kilograms, depending on the size of the animal, are allowed to fall and waste.¹⁰ Still, the camel continues to persist as a symbol of a socio-cultural connection to the past as in the case of Sayer Al Anzi who keeps camels in memory of his father. Sayer owns the farm where most of the research for this thesis was carried out. During one of our early conversations, he told me that the family has no need for their camels, but because his father herded camels as a boy in Saudi Arabia, 'he depended on them and loved them', the family feel they are honoring his memory by keeping a small number of camels today.¹¹

Overleaf
Indigenous wild plants are starting to grow in the desert again, since the enclosure of camels.



3.5 National Products



1. An offshore platform in the Arabian Gulf.
2. Naturally occurring gypsum is abundant in Qatar.
3. Steel worker in Qatar Steel Company's fabrication plant.

Currently, Qatar's economy 'is mainly dependent upon... the revenues created by Qatar's hydrocarbon wealth and related industry'.¹ Apart from oil and gas, Qatar's industrial sector includes Qatar Steel Company, Qatar National Cement Company and subsidiaries which produce gypsum, metal coatings, detergents, paper, paints and plastics. Despite the development of QIM, (Qatar Industrial Manufacturing) and private sector initiatives, there is no product that can be classified as unique to Qatar and which could speak about the tradition and history of a nation on which its success is built. *Al Sadu* House in Kuwait provides an example of how the production of representative cultural commodities can be successfully used to symbolize cultural heritage, preserve traditional skills and knowledge whilst providing an alternative means of developing small scale business that responds to problems associated with social, economic and environmental issues both now and in the future. *Al Sadu* House employs local craftspeople to produce traditional objects made out of locally sourced materials. The following words of patron and honorary president of the organization, Altaf Salem A. Al-Sabeh are stated on the welcome page of the website, 'we aim to promote and to celebrate Kuwait's cultural heritage... tell the story of the land... speak the languages of the soul'

They make reference to the three non-material elements that are significant for the *Al Sadu* shareholders. The words point to the fact that the products have an inherent performative role that goes beyond commoditization; their symbolic significance serves as a reminder of Kuwaiti values, functioning to keep alive memories of a past time whilst continuing to confer value on a modern and future cultural heritage.

Qatar is well informed regarding initiatives that encourage the development of sustainable practices, currently hosting COP-18, and the recent International Conference on Food Security in Dry Lands among others. Additionally, the environmental trade fair, ecoQ 'addressing advancements in environment protection technologies, sustainable energy and green business practices', is now an annual event.² Ironically such initiatives are modeled on business output and remain rooted in and continue to perpetuate high levels of the consumption and creation of waste where the product 'becomes simply a means to economic growth and shareholder profit'³ Conducting business under the pretext of saving the planet is not only 'superficial and damaging' but it perpetuates consumerism... with insufficient regard for the consequences'.⁴

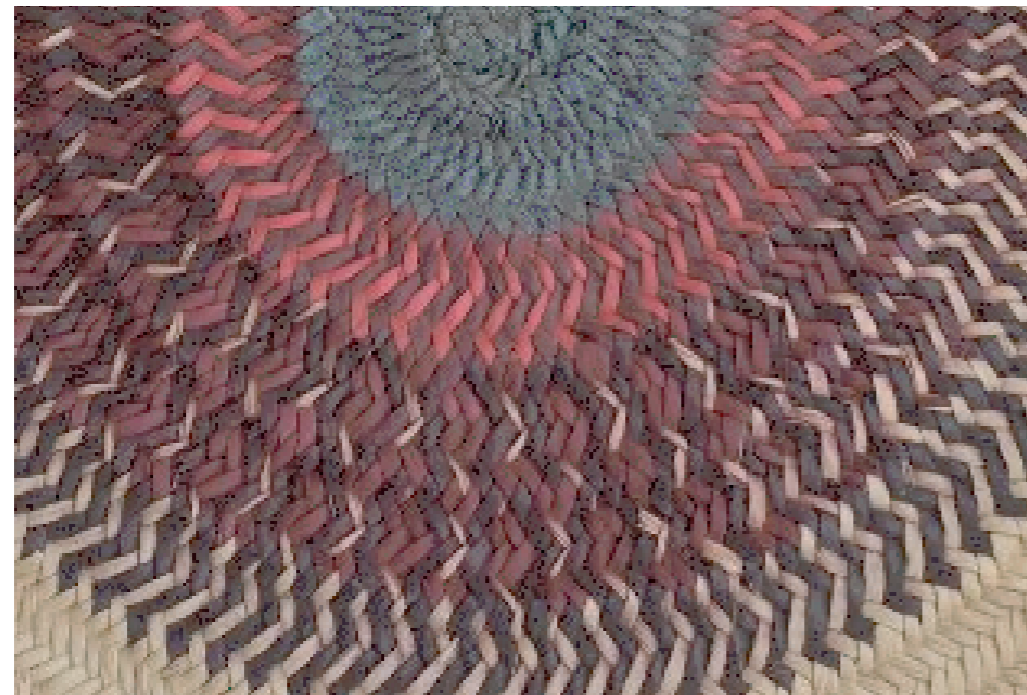
Over leaf
1. Handmade paper

2. Plaited mat by Zeri Craft at *Al Sadu* House.
Source: www.facebook.com/ZeriCrafts

3.6 Natural Heritage and Cultural Identity



1



2

The fact that there are several designated areas of protected land, coast and sea demonstrates that Qatar values its natural heritage and is implementing conservation strategies. However, the problem lies in the management of such schemes because government led initiatives can often result in these areas becoming exclusive. Contemporary writing on 'ecocultural revitalization' states that such projects should be operated as 'community conservation' schemes to allow 'urban populations the opportunity to engage with each other and their homelands'.² Jules Pretty cites 'the most valuable assets of any traditional community are its land and its culture.'³ This previously tacit link between culture and environment is now being explicated as evident in the QNV, the Al Sadu house mission statement and current writing in the natural and social sciences.

Sarah Pilgrim and Jules Pretty underline the 'importance of understanding the multiple connections between nature and culture'.⁴ They argue that the key to 'addressing the many global economic, ecological, social and cultural challenges' that we face today is through reconnection with the environment. In these terms then, the disappearance of the camel represents a broken connection between nature and culture. On a simple level, according to Pilgrim and Pretty, reinstatement of the camel would lead to ways of beginning to restore cultural identity as well as offering

new insights into ecological, economic and social challenges. In these terms, the camel could be seen as the link between man and culture.

A proposal for the development of agritourism then, might serve to demonstrate how such a claim might be vindicated.



Map showing the five designated areas of protected land and coast in Qatar

3.7 Agritourism, ecotourism and ecocultural revitalization

Emily Biuso describes the term agritourism as a 'form of niche tourism that is considered a growth industry'.¹ Although thriving in many parts of the world, such as the United States, Canada, Australia and Romania, its main aim is to increase economic viability for small farm holders and similar agricultural based businesses. Agritourism is designed to attract visitors to a farm where there are activities on offer such as tasting and buying local traditional food products made on-site, petting animals, learning about local production methods, participating in craft or cuisine workshops, etc. Agritourism supports the 'incomes and potential economic viability of small farms' such as those that exist all around Qatar.² Agritouristic centers are constructed to promote the rural history of farming and food production and provide opportunities for urbanites to learn about and experience traditional agrarian practices. Richard Bulliet uses the term 'post-domesticity' to refer to the disconnection, 'both physically and psychologically from the animals that produce the food, fiber and hides [that we] depend on' and access to agritouristic sites function to remind and educate us on

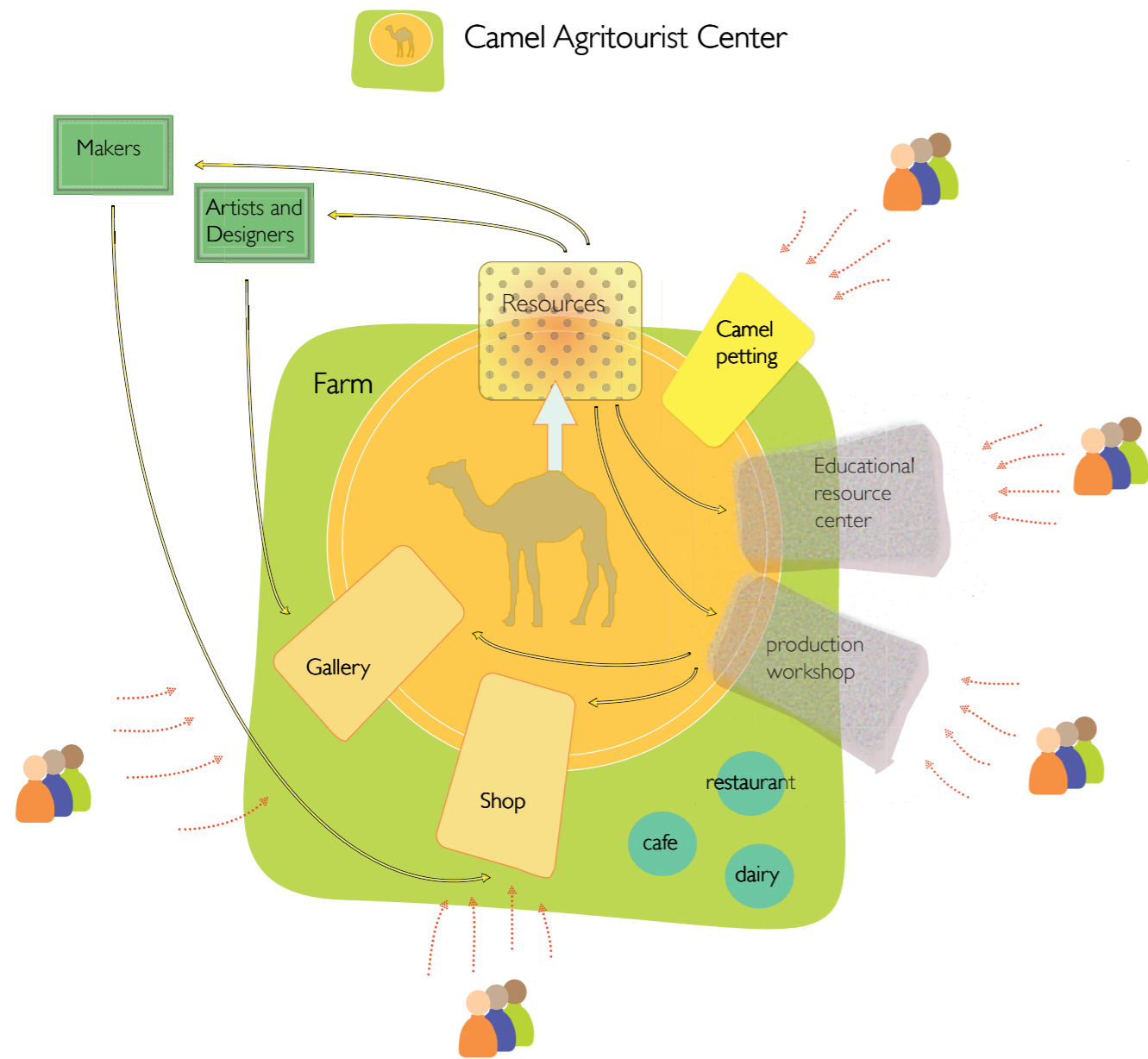
where food actually originates.³ Given the extent of small scale husbandry prevalent in Qatar, where camels can be found on 21% of farms, the type of infrastructure already exists that would lend itself to the transformation or adaptation of some of those small farms into sites of agritourism.⁴

A sketch proposal for agritouristic development based in Qatar could include various enclosures where animals would be kept for breeding, milk production and harvesting their fibers, (see page 22). Visitors may choose to sample fresh milk or milk products, handle animal by-products or adopt a camel. Items made from camel by-products including milk and hair could be produced for sale. Visitors should be able to experience the animals in close proximity in a conventional husbandry setting rather than a scenario constructed to isolate the animals, which has the unwanted effect of alienating rather than involving the viewer. Visitors should be able to hear, smell, touch and see the animals as well as taste freshly made produce created on-site.

3.8 Positioning Agritourism

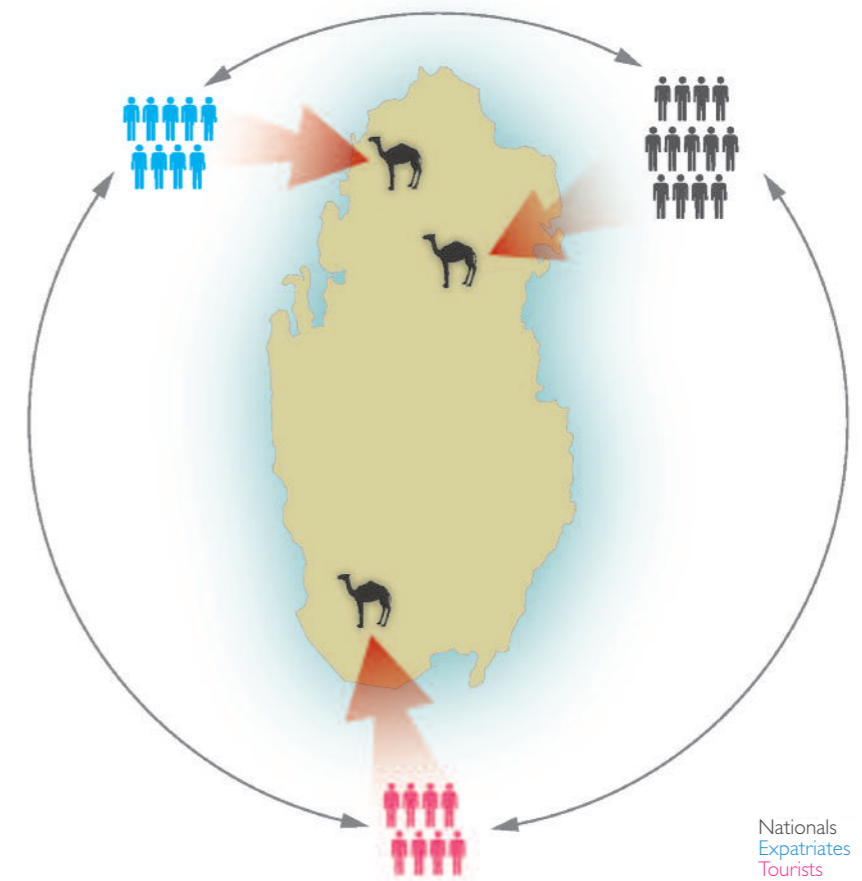
The discussion on agritourism in the context of the thesis is relevant as it forms the proposal for the creation of a system in which camels can be reared to affect a range of far-reaching purposes. The system contains the knowledge and means of acquiring raw materials for the manufacture of goods and produce. It is organized so that the camel is at its core and thus serves to create opportunities for the sustainable use of the camel. This in turn leads to the preservation and development of the natural environment, the preservation of traditional knowledge and skills, the protection of links between past and present social and cultural heritage for the future. All the above points address issues raised by QNV 2030. The role of agritourism is viewed as a way of stimulating camel production for purposes other than simply acting as a reminder of

the past or for small scale domestic milk production. In theory, agritourism would operate within the suggested 'framework for sustainable whole systems design' as defined by Blizzard and Klotz.¹ They argue for consideration of 'the interrelatedness of systems [because] the problems we face are intertwined...'.² They draw attention to a key discussion at The Rocky Mountain Institute in 2010 in favor of an 'integrative' rather than reductionist approach to design which 'can solve many problems at once, create multiple benefits from single expenditures, and yield more diverse and widely distributed benefits'.³ Within this structure, camel wisdom is preserved and disseminated, camels are made visible, materials can be sourced, processed and made into products which form the basis of the practical outcomes of the thesis.



Map showing an agritourist center with the camel at its heart. The animal byproducts circulate either within the confines of the farm or are processed and used by outside agents. The products are sold or exhibited and the proceeds remain within the operation for the upkeep of the animals and the center.

Camel connections



Map showing how the camel could become the link between man and culture.

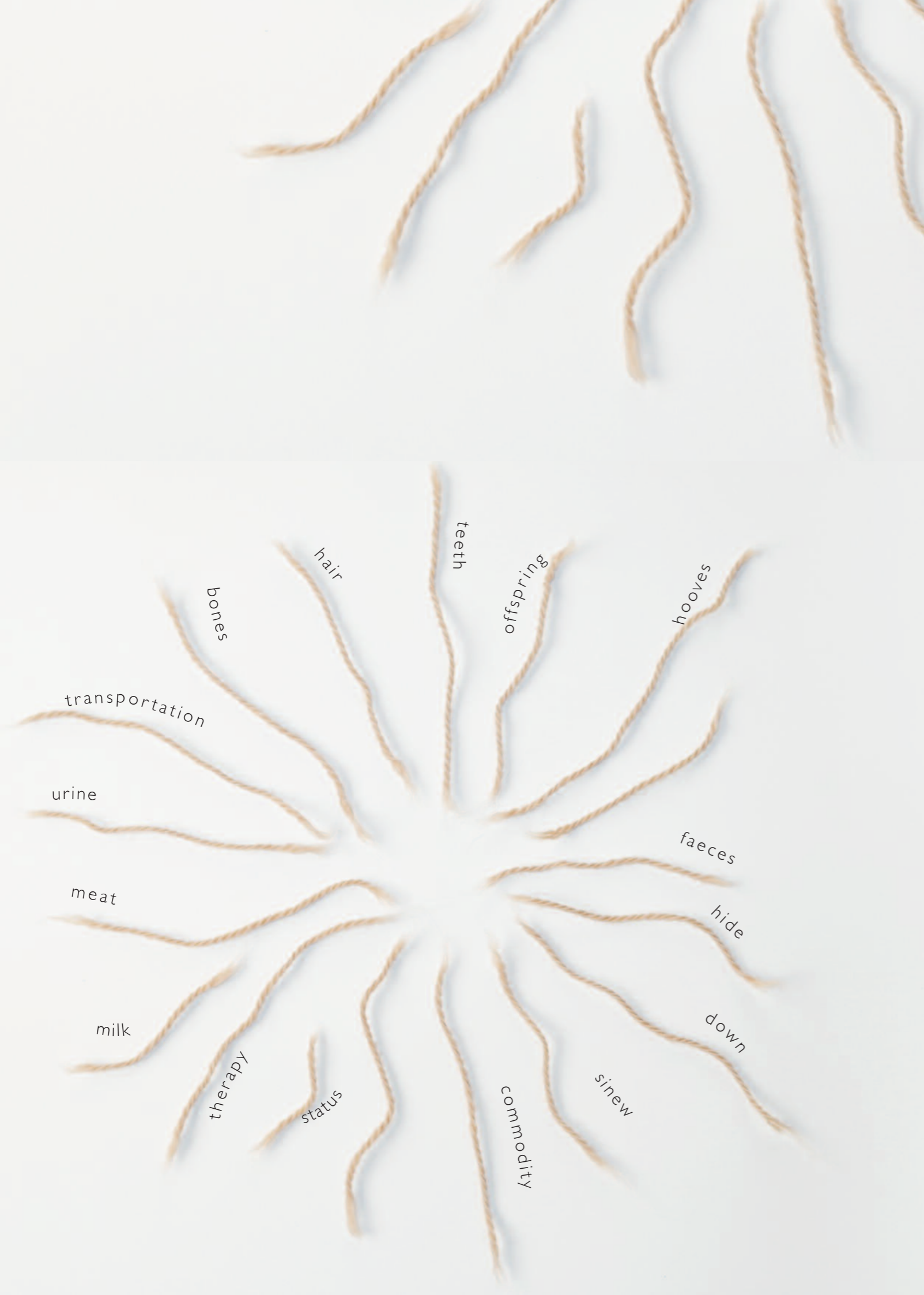
The map presents possible sites for the development of agritourism in Qatar and how, according to Jules Pretty (2011), visitors connect with the land and each other through their visits to such sites.

The sites on the map are approximate but they relate to the north/south division of territories. The intended locations would correspond to the original sites where the Al Naimi (north) and Al Murra (south) traditionally pitched camp. It is the intention that the sites would then be significant for their historical and heritage value as much as from an agritourist viewpoint. From a practical angle, these sites are near wells which could provide some of the water needed for the animals or to grow fodder on-site.

4 | Proposal

This thesis proposes a range of innovative products for home, car, and office, made of native camel hair, wool and skin. These products will be produced locally by international craftsmen, living and working in Qatar and will be available for sale at agritouristic farm sites. In line with Qatar National Vision 2030, this proposal offers sustainable manufacturing, enables the preservation of resources and the natural environment, advances education and tourism and provides commercial opportunities.

The role of practice in this context is to ascertain whether the dromedary camel in Qatar could indeed provide the type of resources preferred for processing into a range of products. The scope of the project lies within the product design boundary as a manifestation of the concept of agritourism in Qatar. The research boundaries are established within the topics of sustainability, sustainable design, camel husbandry and traditional uses of the camel.



Opposite
Infographic illustrating the material and symbolic products of the camel



5 | Contexts and Precedents

5.1 Introduction

The review is organized in three sections which reflect the chronological undertaking of the research. Part I discusses precedents from other times and cultures including research of historical artifacts made from the camel. This includes examples of types of agritourist centers from Italy and Wales and how cooperatives which use natural animal by-products are revitalizing land and communities. Part II focuses on relevant literature in the fields of sustainability and sustainable design with a view to making sense of the many meanings of each of the terms for the purpose of positioning this thesis in the field. Finally, Part III, centers around designers and their work in the field of expository design objects made of locally sourced natural materials using simple tools and processes. It explicates their design philosophies and serves to align the work of this thesis in the current field of design studies.

Opposite
Strands of yarn representing strands of research. Each has to be carefully prepared and processed before the creation of the final product.

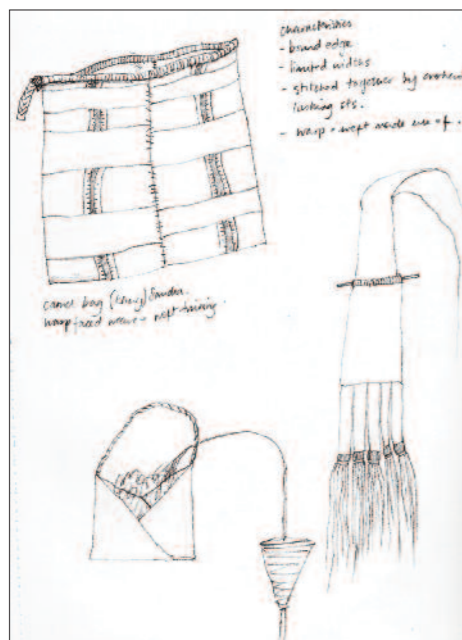
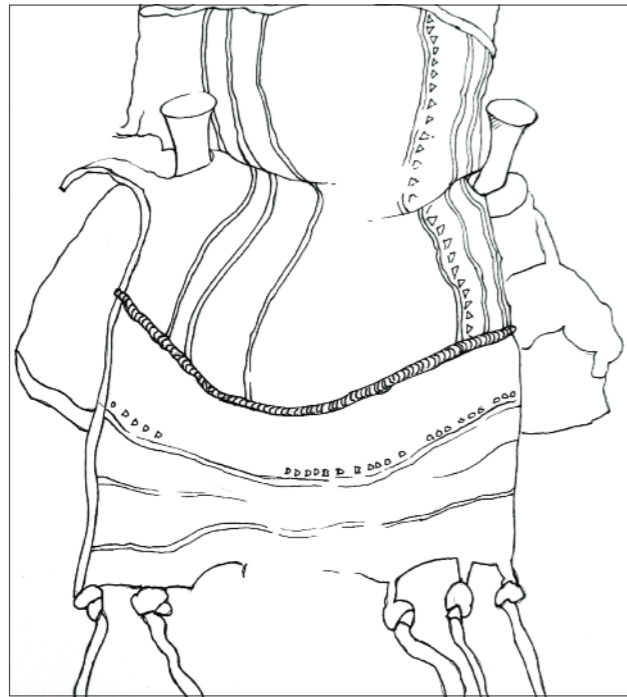
5.2 Part I: Historical Precedents

Bedouins of Qatar, Klaus Ferdinand

The fieldwork of anthropologist Klaus Ferdinand, which was carried out between January and April in 1959 is a comprehensive monograph documenting daily life and material culture of the last of the Qatari Nomads. Ferdinand describes the daily life of the Bedouin in Qatar and the interrelatedness of man and beast and their dependence on each other. He reported that the camel was the 'beast of transport, and... the universal animal of the Bedouins'.² He perceived the southern Bedouin to be 'much more traditional in their way of life' as opposed to the northern groups and seems to draw this conclusion from the fact that 'the camel dominated their lives' therefore linking the camel to ideas of tradition. In chapter 4 of the book, there is a section devoted to the camel which reveals that the main topic of conversation at the camp was always the camels and where to find good grazing and

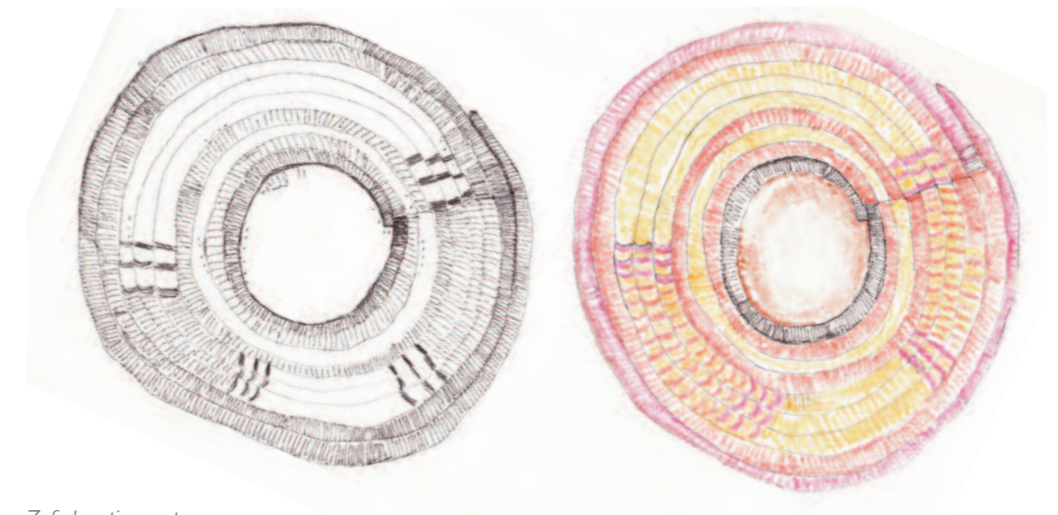
'that whenever the herdsmen worked with the camels... they stroked them, talked or sang to them constantly'.³ Such a report provides evidence of the way camels were revered by both the herdsmen and the owners which is immediately clear from the following recount,

'The camel was their beast of burden, their riding animal, and their milch animal, and in addition practically everything from it was used: its urine was used for washing hair and for tanning, its dried manure was excellent fuel and - if crumbled - a fine absorbent inlay in the "nappy", its meat, ... was food of esteem... its wool was spun and twined for weaving... the skin was used... for large transport bags and in earlier years for water-containers. The spectrum of the use of the camels resulted in everyone, men, women, and children, having their roles to play in relation to and working with them'.⁴



2

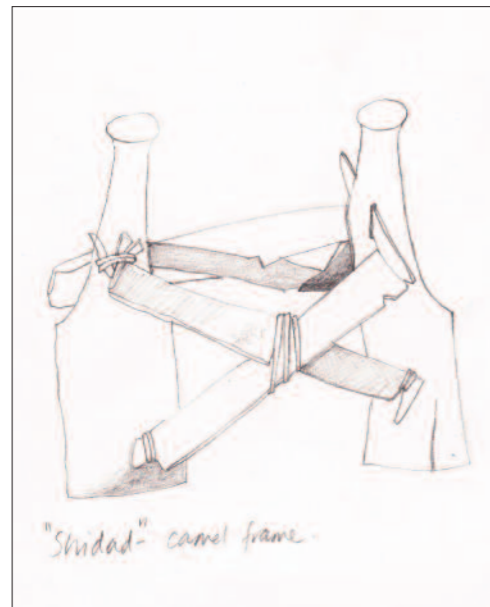
1. Study of camel saddle with saddle bags over the top.
2. Studies of camel trappings in order to examine the construction methods.
Illustrations by the author.



Zufrah eating mats

As well as illustrating the past significance of the camel, Ferdinand's accounts of Bedouin daily life inadvertently points to the way the camps operated as sustainable systems. Along with sheep and goats, plentiful local grazing and desert wells, the Bedouins survived on meat and milk for food. The fibers were harvested for producing clothing and tents. They traded what they produced at local souqs for metal ware and cooking pots and utensils. A detailed study of the organizational structure of camps could provide a blueprint for agritouristic activity where methods and skills from the past are modified to answer the needs of the modern phenomenon, tourism.

Illustrations throughout *Bedouins of Qatar* document much of the material culture of the last remaining Qatari Bedouin. Chapter 9 is arranged as a catalogue of approximately 150 items divided into



sections such as kitchenware, tools, animal husbandry, milk processing, saddles, crafts, textiles etc.. At least thirty items are related to camels either as having been made from the animal or as an item of equipment for use with camels, such as rope hobbles, sticks, camel skin watering troughs, pack and riding saddles, litters, headstalls, neck girths and socks. The variety and extent of material culture clearly underlines the critical and indispensable role of the camel as a source of raw material and sustenance in the lives of the last few Bedouin of Qatar. The inventory confirms the wide range of now obsolete camel products.

In a little over fifty years, the camel, once so valued and evidently the center of social life in Qatar has been relegated to enclosures on the outskirts of the city in a total disconnect from contemporary life.

Shidad, the basic wooden frame of the camel saddle.

Camel, Robert Irwin

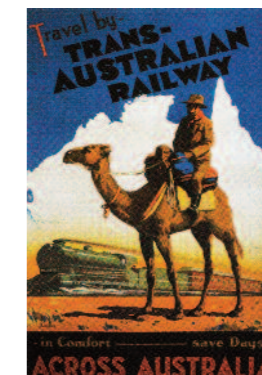
Compared to other species of large mammals, publications on the camel are generally lacking. Robert Irwin draws attention to the 'contention, vagueness and sheer lack of research' available on the species and gives examples of differing opinions and guesswork with which he has had to contend in carrying out research for writing his book.¹ This fact is a reminder that camel lore, evidently lacking at the outset, is in danger of being completely lost as camel husbandry declines.

The opening paragraph of chapter 1 of *Camel* begins with the well-known but unattributed comment made by Sir Alec Issigonis (1900-1988) that 'a camel is a horse designed by a committee', a relevant but misguided metaphor.² Irwin derides such a committee and Issigonis' obvious camel ignorance as this animal is superbly designed for the desert with inbuilt temperature control, economical fuel consumption and high output. 'The camel is

perfectly adapted' to the 'fourteen percent of the world's surface', the desert.³ *Camel* provides a global history of the animal and its role in society from being the pack animal of the massive caravan cities in the second century to the 22,812 military camels that were killed in the First World War. Irwin presents an objective account including many lesser known, and surprising facts. This small book is an extensive reference text which includes a list of current websites devoted to research associated with the camel including scientific and 'sustainable use of camels'.⁴ This may suggest that a few organizations are now beginning to realize the value of the camel as a source of food and fiber, not just in arid regions but as a low input/high output and therefore highly sustainable animal for feeding the world's growing population. by-products and poses the question as to whether the worthy and versatile raw materials could persist to form the basis of a range of products designed for modern living.



1



2

1. Trans-Australian Railway Poster

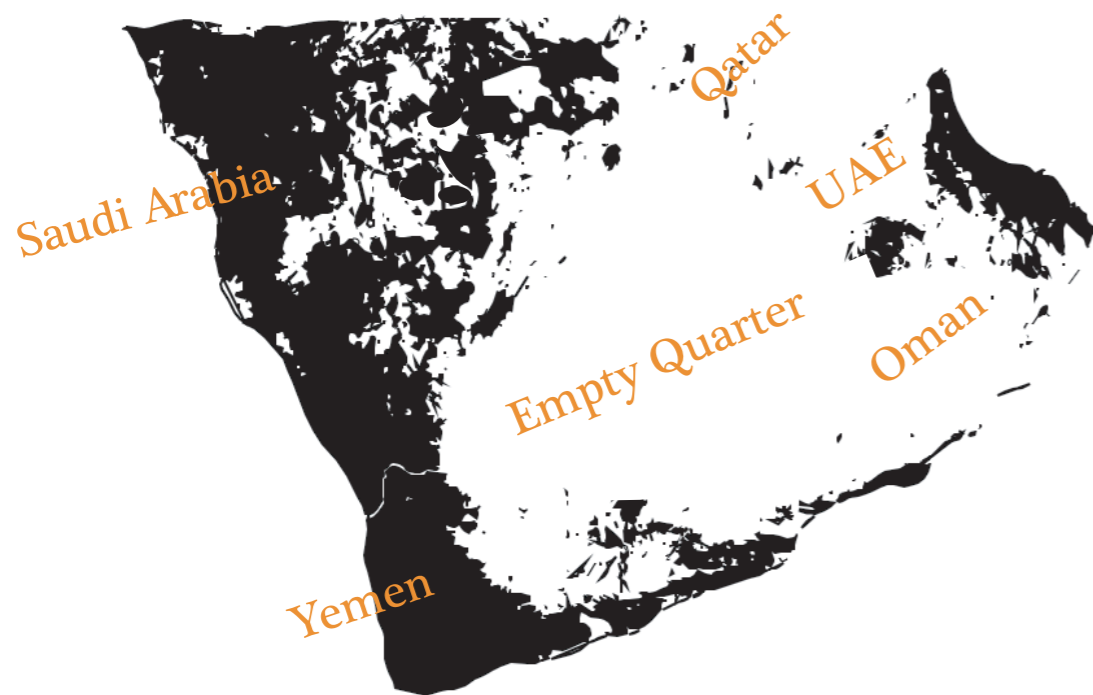
2. A 19th century calligraphy print, India, courtesy of Robert Irwin, 2010.

Our water was already dangerously short and even more urgent than our own needs were those of the camels...¹

Arabian Sands, Wilfred Thesiger

The words above were written by Wilfred Thesiger, during his travels with the Bedouins of the Rashid and the Bait Kathir across the Empty Quarter in 1946-7. The writings from Thesiger's journal make continual reference to the welfare of the party's camels on this particular journey and their critical role in ensuring life over death. They epitomize the necessary and vital dependence on the camel to sustain their harsh lives in the desert. That was not so long ago. Current writers and thinkers on science, design and technology have naturalized the idea of the last century as pivotal in terms of change. This is the Western colonial standpoint, but the last 65 years in the Middle East has undergone more drastic change than the West can conceive of and in almost half the time.

This volume served as a primary source of information on man's relationship with the camel.



Map showing relationship between location of Qatar and the Empty Quarter:

Local precedents

There are no 'official' camel farms in existence in the state of Qatar at the current time. Plans were underway in December 2007 when an article in the Peninsula newspaper entitled 'Qatar plans first camel farm' stated that UNESCO Doha were to support this venture. Desertification due to the 'over population of grazing camels' had become an environmental issue. ¹To counter this, the authorities have restricted the free roaming and grazing of camels. Sayer Al Anzi, a Qatari farm owner, who has allowed me open access to his farm, informs me that all camels must be kept in enclosures for the next two years to allow the ecosystem to recover. ²

Overleaf;
Camels at Al Anzi farm showing wasm on the neck area. The camels have a winter coat.

Local precedents

Three tame female camels at Al Anzi farm. Note the wasm, the traditional Bedouin branding on the neck of the camel in the foreground.



Regional Precedents

Al Ain, Al Rawabi and Camelicious

Camels produce eight liters of milk per day which seems a small amount when compared to cows which produce around forty.¹

Camel milk is not present in the outer udders, but is stored inside the body. The herder must encourage the camel to let down her milk and any changes of routine or a strange herder might mean refusal to give milk. Al Ain Dairy and Camelicious in Dubai produce camel milk for domestic demand and struggle to meet the needs of the local population. Both dairies would like to produce camel milk for export to Europe but there are restrictions related to health and safety, which will need to be reviewed. Al Rawabi farm in Dubai, which herds around 10,000 camels, says that the market is too small to meet their costs. Camels are not bred until they are five years old and they only produce milk when

calves are suckling. The mother feeds the calf for around eighteen months.

Al Ain dairy, UAE's largest camel farm has recently introduced automated camel-milking equipment, which has increased milk production 'from a million to 1.2 million liters a year'.² The herd at Al Ain stands at 1,200 camels but only around eighteen camels are milked each day. Despite the new milking machines, which have increased output by 5%, the article in The National newspaper reveals how 'camels are very temperamental' and need humans around them to keep them calm during the milking process.² The fact that camels seem to bond with their human carers suggests that open farms where people could interact with camels in natural surroundings would be beneficial for the temperament of the animal. It would also offer opportunities to connect with animals in a way that may have a therapeutic effect on the visitor.



Camel milking facility at Al Rawabi Farm, courtesy of UAE Interact, 2012



Camels at Al Rawabi Farm looking for some attention, courtesy of NBC News, 2012.

International precedents

Tenuta Vannulo

One successful example of an agritourist center includes the Tenuta Vannulo organic water buffalo farm in Tuscany, Italy. On the website homepage, <http://www.vannulo.it>, there is a description of the Vannulo location in 1787 by Wolfgang Goethe,

'the area was covered by swamps and muddy ground [and] the uncontested reign of the buffalo... this mysterious beast lived majestically in the still waters.'¹

Tenuta Vannulo demonstrates how the use of already existing resources, such as the water buffalo, are perfectly adapted to the local climate and geography, can create perfect synergies between man and land. The 200 hectare area has been in the Palmieri family since the eighteenth century. A cheese factory was set up in 1988. Later in 1996, the decision to transform the production methods from intensive to organic agricultural practices led to the renovation of the estate with a view to opening its doors to the public. All building is carried out using local materials that are readily available with the minimum of

transport costs. The grounds are planted with local herbs and flowers from the Mediterranean. The use of indigenous species, which will survive the climate and require little water demonstrate a sustainable solution to landscaping and which is in line with the philosophy of the Tenuta Vannulo organization.

The closing paragraph of the history webpage sums up and makes reference to ideas associated with the preservation of cultural heritage, ancient animal lore, the value in rarity of a species and the convergence of such qualities in creating a unique symbol of 'the culture of [a] country'.² Agritourist sites in Qatar could function in a similar role.

The Palmieri Farm which houses the Vannulo Dairy offer 'the possibility to discover in person both the ancient and modern science of breeding these animals... a visit to the Vannulo Dairy enables one to discover too the art, so refined in its simplicity, of transforming milk into a tasty food, one of the symbols of Italy abroad and a precious item of the culture of this Country.'³



Map of Italy showing location of Tenuta Vannulo agritourist center.



2

1. Buffalos at Tenuta Vannolo
 2. Hand making buffalo mozzarella cheese.
 Both photographs by Constantin Boym, 2012.

The Vannulo complex comprises an agricultural museum, a leather handcraft workshop, cheese and yoghurt making facilities, accommodation and estate.

Guests are welcome to visit all facilities and are offered the opportunity to learn cheese making processes as well as sample the fresh produce. Lectures and presentations are held at the manor house. Mozzarella is made on site and the 'use of machines is out of the question – these southern Italian delicacies are made by the experienced hands of the qualified *casari* only'.⁴ The vision of Antonio Palmieri, who owns and

manages the farm and dairy, is to preserve the quality of mozzarella in its traditional form and to 'keep [it] from degenerating into a mass product'.⁵ Despite what might seem to be a romanticized notion of producing a pure artisanal product, Palmieri is known to be an expert in 'combining modern methods, with tradition and without sacrificing 'the gentle treatment of nature and the animals'.⁶ Tenuta Vannulo provides evidence to support the proposal for a similar agritourist center based on empathy for the environment and respect for indigenous animals.

Ffynnon Watty, Wales - Blueberry Angora Goats

Blueberry Angoras is a small scale farm specializing in the breeding of angora goats for onward sale, showing and for their luxurious mohair fibers. The farm is based around the studio where visitors can learn a variety of textiles based handcrafts such as wool preparation for dyeing, spinning and weaving. Raw material comes directly from the goats at the farm. A limited range of equipment is on sale as well as yarns, rugs, throws and socks all made from the Blueberry angora fibers. Goats are for sale and expert advice and consultations are available by appointment. Visitors can spend time in the studio, engage in an activity or visit and interact with the animals on the farm. Despite its isolated location, Blueberry Angoras Farm is an exemplar model of a successful small scale agritourist operation providing specialist services and niche products.



Angora goats at Ffynnon Watty.

The Brundtland Report

In the field of sustainability and writings about sustainable design, one of the most frequently cited reports which attempts to define sustainable development, is that of the World Commission on Environment and Development, more familiarly known as the Brundtland Report of 1987. The report's classic phrase, 'meeting the needs of the present without compromising the ability of future generations to meet their own needs...' has become problematic in recent times.¹ What does this really mean when most of the global population's needs are not being met on a basic level even now? This is a matter of how we perceive what those specific needs are. The question, 'how can something so vague be so popular?', sums up the problems associated with ideas and definitions of sustainability.² The lack of consensus contributes to and perpetuates its wide-ranging use by authors and politicians. This imprecision is somewhat advantageous in developing a set of criteria for practice which draws on sustainability indicators that are linked to the environment rather than the outdated paradigm of sustaining incessant, linear growth patterns.

The Brundtland Report is an acknowledgement of environmental problems relating to the accelerated depletion of natural resources, overpopulation, effects of war, poverty, and

conservation. It concedes that these problems have been brought about by human activity and that they must be addressed at source. It calls for all governments to embed the theme of 'sustainable development' in all new policies from now on.

There is a strong inference that only the developed nations have control over the problems at stake, despite the title of the document 'Our common Future'. It may be more effective to make all countries equally accountable and for each to have roles and responsibilities. Some of the poorest countries have abundant natural resources but seek to emulate the lifestyle of the consumerist Western societies which is 'being held up as the one to follow' and in so doing, lose sight of the value and richness of their surroundings.³ As declared in QNV 2030, Qatar is aware of the consequences of wanting 'to make up ground quickly, but [realizes] there are speed limits'.⁴ The document states that it must not abandon the richness of its traditional culture nor allow 'financial vulnerabilities... environmental damage; and widening social cleavages and tensions' in the quest to emulate modern western lifestyles.⁵ The development of sustainable farms as agritourist centers or revitalization projects would be one solution in moving towards creating a balance between the oil and gas industry and conservation.⁶

*Design, Ecology, Technology: A
Historiographical Review,*
Pauline Madge

This review of eco-design writing spans almost thirty years from the sixties to the end of the twentieth century. It attempts to deal with the 'various dimensions' of the interrelated subjects of design and the environment.¹ Madge is hasty to point out that the term 'ecology' has grown problematic as it shifted away from its scientific roots to begin its metaphorical use in terms of social and cultural issues. For this reason, the study of ideas and writing that link design and the environment implicitly suggests that an interdisciplinary approach would prove most successful. Madge lists fifteen disciplines that she believes have relevance, such as 'ecology and environmental science... policy-making and environmental law... and cultural geography'.² She implies that it is the study of any discipline deemed necessary to contribute to a positive final outcome. This comprehensive list is evidence of the breadth of study carried out and is useful in examining whether there are sustainable opportunities for the use of the camel in today's industrial and urbanized Qatar. The statement also underpins current interdisciplinary design approaches which are reflected in this project.

Madge goes on to highlight the difficult and inherent controversial nature of eco-design, which has formed an ongoing debate of shifting values. Originally the preservation of

the natural order was anti-Modernist, over time however, associations with environmental activism have manifested as avant-gardism. This is in line with the argument that ideas about sustainable design are fluid and subject to 'underlying social and political attitudes'.³ The very fact that the field is saturated with literature and publications which have been sending similar messages for the last few decades rather than producing new knowledge, might suggest that the discussion, although in the interest of all life on earth, is at a point of stasis and that a shift is due if we are to renew the debate.

Madge provides a road map of eco design, which serves to contextualize the different meanings through time and space. Reference is made to key moments such as the coining of phrases 'sustainable development' and 'design for the real world' and '... as if people mattered.' (Brundtland Report, 1987; Papanek, 1984; Schumacher, 1973).^{4,5,6} This article is useful because it serves to demonstrate, through the range of literature, the breadth of the subject and its interconnectedness with all disciplines as pointed out by Pretty, in the context of scientific research and natural sciences.⁷ Designers are one element in a larger network and by connecting themselves to it and crossing discipline boundaries, they have much to contribute. Victor Margolin explores this issue in *Design for a Sustainable World*.⁸ He reminisces on the conception of design as a way of 'giving form to products for mass production' and

how this model still stands today.⁹ He makes reference to the works of Papanek and Buckminster Fuller in their calls for a radical reform of the profession and suggests ways 'to reinvent design culture' preferably through sustainability practices.¹⁰ The fact that he views design as 'a contingent practice' would presume that making this shift should be straightforward. This claim is backed up by Dilnot's words, that design would be better as 'a means of ordering the world rather than merely of shaping commodities'.¹¹ He calls for the design profession to rise to the challenge of creating a sustainable world'.¹² The new approaches that he discusses in 1998, which include a broadly based directive of themes such as quality of life, efficient use of natural resources... and fostering sustainable economic growth' are relevant to the thesis

proposal.¹³ Margolin's belief in the above values are reiterated throughout this project; if we use readily available natural resources wisely (camel by-products) and focus on ways to connect people and land (agritourism), the quality of life for those involved (new kinds of employment), will in theory be improved. Towards the end of the paper, Margolin goes on to specify that 'expanding eco- and cultural tourism as new forms of consumption... [and that] ... creating better environmental impact statements for new products' have 'particular relevance to design'.¹⁴ The idea of agritourism as posited here is clearly ratified by Margolin's discussion of design changes and critically, the culmination of the research in the creation of a range of product outcomes is a manifestation of the entirety of the thesis.

Deep Economy, Bill McKibben

Bill McKibben is an advocate of small scale economies and his research proves that a return to smaller farms and locally based production could be the answer to problems of ecology, correct use of the environment and better quality of life. McKibben suggests that global economies can no longer be sustained. In chapter 2, *The Year of Eating Locally* in his book *Deep Economy*, he focuses on current agricultural methods, which as a widely accepted fact, is the only way to feed the rapidly increasing global population. McKibben highlights the costs of huge scale production in terms of costs to communities, abuse of the environment such as soil degradation, inhumane treatment of animals, the high risk of associated diseases and the risk of terrorism on centralized systems of intensive monocultures. His research provides evidence that the small farmer can actually produce more per hectare than the high tech, chemical farms of global corporations. He provides evidence of the benefits of small scale farming structures such as research carried out in Japan, which has shown that the consumption of locally

produced food 'equates to cutting household energy by twenty percent'.¹ Other surveys in the UK have revealed that small scale farms use land and water much more efficiently; if they have animals, the manure 'is a gift not a threat to public health'.² This study provides evidence that supports the case for the development of agritourist sites using the camel in Qatar. It is proven that small-scale farming is operating viably at a sustainable level in many parts of the world such as those pointed out by McKibben. There are also other valuable benefits to society such as redeveloping the kinds of community based connections associated with rearing and caring for animals and the preservation and adaptation of traditional agricultural knowledge that may soon be extremely important as the world's resources continue to dwindle. McKibben goes on to support his case with valid examples that *Deep Economy* is about reconnecting with the basics by adopting the philosophy based on whether we are prepared to choose between 'more or better'.³

Design Activism, Alastair Fuad-Luke

Alastair Fuad-Luke uses Charles Jencks' 'Space-Time' model to illustrate 'Tribal Economy' and its significance in terms of human survival.¹ Bedouin culture, in existence up until the last quarter of the twentieth century seems to reflect this model.

Fuad-Luke questions how the role of design has altered in the context of each historical economic phase. The 'space-time' model is dominated by the 'survival' or 'tribal economy' which has prevailed as a cyclic model for at least 100,000 years before the Renaissance and also coinciding with the beginnings of a 'linear time' space notion of progress'.² The Renaissance moment, according to Fuad-Luke, marks man's departure from a life governed by *kairos* when our bodies were in tune with nature.

Chronos or chronological, linear time gradually took over and began to govern and speed up the pace of our lives. John Thackara explains, 'if you go to bed because the clock says 10.30, you are adhering to ...chronological time... if you go to sleep because you are tired, you are following kairological time'.³ The life of the Bedouins as described by Thesiger clearly matches this model 'as their lives were in empathy with nature's rhythmns'.⁴ They barely had enough to eat for most of the time as recorded by Thesiger during his journey through the Empty Quarter. More recently, Trevor Wilson hails nomadism as 'a sophisticated response to resources that are temporally and spatially highly variable in quantity and quality... a characteristic of the system... was... the sharing of products so that all had enough on which to live'.⁵

Sustainable by Design, Stuart Walker

Walker tackles the two mainstream threads regarding notions of sustainability and how they are inextricably linked. The idea that 'sustainable development' a term first coined in 1987 in the Brundtland Report is related to development or economic growth, and that 'sustainability' relates to environmental issues.¹ Walker argues that because each impacts on the other, it is a futile to try and create a distinction. He points up the obvious but overlooked fact that we do not actually know what Sustainable looks like or what it means other than the severe overlap when discussing sustainable concerns related to the environment, economics and social inequity.

He believes that 'theoretical ideas inform the design of an artifact and, [that] contemplation of the artifact can advance the development of ideas.'² He urges us to think carefully about our material culture and to be mindful of the way we continue to shape and give meaning to it. He uses the Star of Africa diamond to illustrate the subtle point that it is the stone's inherent beauty that accord its value rather than the fact that it is a diamond. He challenges designers to consider aesthetics as an outcome rather than an aim of product design.³ This approach to product design has potential to reframe our preconceptions about what design should

be or do within our post-industrial material culture and he believes that this is a step towards the production of objects that can endure time, such as prayer beads. Walker asks how we can imbue designs with the same long lasting values to make them inherently sustainable.

Another discussion highlights what he views as the disconnect between people and things. He explains that nowadays objects are designed and manufactured in ways that make them inaccessible when they break down or become old. We are denied the opportunity of learning how to repair our goods or replacing old parts with new, which are activities that contribute to the nurturing of the human spirit. This isolation from our daily objects means we readily dispose of them because we are not meant to repair them and they are designed in such a way that nor do we want to try. Walker backs up his arguments with examples from his own design research. He uses his design explorations and experiments to explain his ideas about sustainable design often setting himself research boundaries, as simple as developing design solutions that are produced locally because of their benefit to the environment. Other simple criteria include use of fewer materials, less process, improvisation and spontaneity some of which have served to aid in the development of my own working framework.

The Spirit of Design, Stuart Walker

Walker's ideas on what sustainable design might entail have been the most influential in the development of this thesis and towards the generation of the framework used to produce the final outcomes. He asks us to reconsider our current ideas of material culture which are driven by mass consumption which in turn is depleting global resources, degrading the environment and destroying man's humanity to man. These are familiar ideas, which he infuses with concepts relating to the spirituality of design ideas or lack of. He is an advocate of the notion that problems of sustainable development should 'consist of several broad, interconnected themes that address some of the major pragmatic challenges of our time'.¹ Like Bell and Cross, (see earlier discussion), he views sustainability as an elusive concept, more of a myth, constructed to replace the gap left by diminished religious ideologies.² If this is really the case and we ask the same questions we have asked about religious truth and meaning, we might end up with a different set of answers. Like Margolin 1998 he believes that design by its nature is contingent and that impositional design, now outmoded, lacks the insight and creativity to solve today's problems.³ In response, he presents possible solutions to this meta design problem through a reframing of design to reflect contemporaneity rather than the outmoded axiom of industrial capitalist society, itself a product of the nineteenth century. He gives prominence to the notion of improvisation, and provides

the following encapsulation:

'A characteristic of improvisation is that we have to make do with what is available and use limited resources in creative ways'.⁴

This brought to mind being a hard up student. I believe this situation forced above average creative performance. Having to think of alternative ideas or substitute materials for my work meant I was always thinking in fresh and inventive ways and producing unexpected outcomes. Now I have all I need and if not, I can ship it from the source. As a consequence, I don't need to improvise nor am I creatively challenged. I realized that imposing a restriction or condition on my working method, such as using only the materials immediately available, might produce similar unexpected and hopefully creative solutions. This was my first step towards a working method.

To summarize, Walker possesses the ability to represent well-known ideas like a vanguard. His approach looks to the positive rather than the numerous doom and gloom of writings on the global crisis and how we must begin to live sustainably. He seems to see this as a move towards designing intuitively, imbuing objects with enduring traditional ideas from the past rather than constantly striving to come up with something new. The mantra 'form follows meaning' signals a new freedom for designers to go out and use what's always been available, in ways that reflect the current time, which is what art and design has always and only ever done.

Nature and Culture

Ecocultural Revitalization: Replenishing Community Connections to the Land, Sarah Pilgrim and Jules Pretty

Sarah Pilgrim, Colin Samson and Jules Pretty discuss what they term, 'revitalization projects' as a way 'to maintain or reclaim the culture of local peoples and reconnect them to the land for long-term individual and societal health'.¹ Although the work refers mostly to North American indigenous communities and their plight in the reclamation of land and establishing rights, in essence, the arguments can be directly applied to this thesis. The trio has developed seven categories for each revitalization project containing objectives and outcomes. The projects are viewed as system frameworks for 'the protection of biological and cultural diversity ... in industrial and non-industrial contexts'.² The research of Pilgrim et al. shows that 'disconnection from the land [can] damage and even destroy cultures ... particularly if disconnection is rapid ... across one or two generations'.³ Their findings state that obesity, diabetes and heart disease are the most common modern ailments, which afflict the people of rapidly changing cultures. Two of the revitalization project categories can be fully utilized to validate elements of the agritourism proposal, those of traditional foods and ecotourism and a further two, education and language offer appropriate and relevant objectives and outcomes. (see opposite).

According to Pilgrim et al., traditional foods revitalization projects, such as the reintroduction of camel milk, which could

be produced at agritourist centers, enhance the development of sustainable community enterprise. Associated activities may involve the publication of recipe books and organizing local food fairs to raise awareness and for sampling. Pilgrim reports that such projects can be on any scale from local to national and stimulate 'market creation, the establishment of support programmes, the creation of new businesses, in particular the emergence of micro-enterprise, and incentivizing traditional food production and consumption'.⁴ Ecotourism revitalization is viewed as a more mercenary pursuit which offers 'non-industrial communities' the chance to compete in 'capitalist economic markets' through exploiting their own traditions, foods and skills.⁵ Regardless of what they view as a danger, ecotourism serves to enhance sustainable development and through it, the preservation of culture, skills and language.

The work of Pilgrim et al. provides sound and current research in the fields of science and nature. The book itself *Nature and Culture* hails like a vanguard for an 'integrative approach to conservation' through interdisciplinary research and action and a call for crossing boundaries to examine, socio-cultural, biological, agricultural and ecological perspectives. This mantra is echoed in the current field of design in the work of Blizzard and Klotz, Madge, Margolin and Walker who also recognize the need for a whole system approach to solving local and global problems.^{6,7,8,9}

Project type	objectives	outcomes
Traditional foods	Increase awareness of traditional foods Increase consumption of traditional foods Revive food collection Revive preparation practices	Benefit mental and physical health Potential to generate income and jobs where markets are created Effective in the transfer of new skills and knowledge associated with traditional foods Strengthen community bonds through intergenerational knowledge transfer Positive impact on local people and ecosystems and local small scale economies
Ecotourism	Revive traditional cultural practices Generate income	Effective at teaching/reviving traditional knowledge and skills Successful at job creation and income generation, although need to ensure equitable benefit sharing within communities Likely to benefit local people and economies and ecosystems only where land-based activities are revived and sustainably managed If established in line with values, can reinforce cultural identity
Education	Provide a culturally appropriate education system, separate from or part of state education	Focus on knowledge transmission and the revival of traditional skills and knowledge Can strengthen intra-community bonds Benefit to local people but no direct impact on economies and ecosystems
Language	Preserve endangered vocabularies. Open communication channels between community	Transference of new knowledge, but practical skills not emphasized Opens and strengthen channels between older and younger generations

Adapted from *Ecocultural Revitalization: Replenishing Community Connections to the Land*¹⁰

Whole systems design

A framework for sustainable whole systems design, Jacquelyn L. Blizzard and Leidy E. Klotz.

This study concluded with a developed framework of processes, principles and methods containing twenty criteria, which can be used to classify a whole systems design approach. This framework could be used in developing sustainable agri-tourism in Qatar. Its purpose is to 'enable [a] more widespread application' of a definitive framework in practice.¹ There is a call for the ways in which designers solve problems in/of the world to radically alter if we are to cope with the current challenges of energy shortages, the depletion of natural resources, water, food, and political upheaval. Only in addressing our current needs can we learn how to plan responsibly for the future'.² Many of these issues apply to Qatar today. The realization that

problems are interconnected means that design solutions should strive to reflect the 'interrelatedness of systems' rather than using traditional methods of reductionism to solve problems in isolation. Blizzard and Klotz intimate that there is a lack of understanding by designers because the whole systems design approach is ambiguous.

The framework for a whole systems design approach has implications for the planning and designing of an agri-tourist center where there would be a need to tackle multiple problems simultaneously. This means 'single expenditures' for manifold outcomes which were not necessarily originally planned for. The authors state that whole systems design is not a 'guarantee [of] sustainable design outcomes' but that it is a holistic method that is more likely to be considerate of related issues.³

A framework for sustainable whole systems design

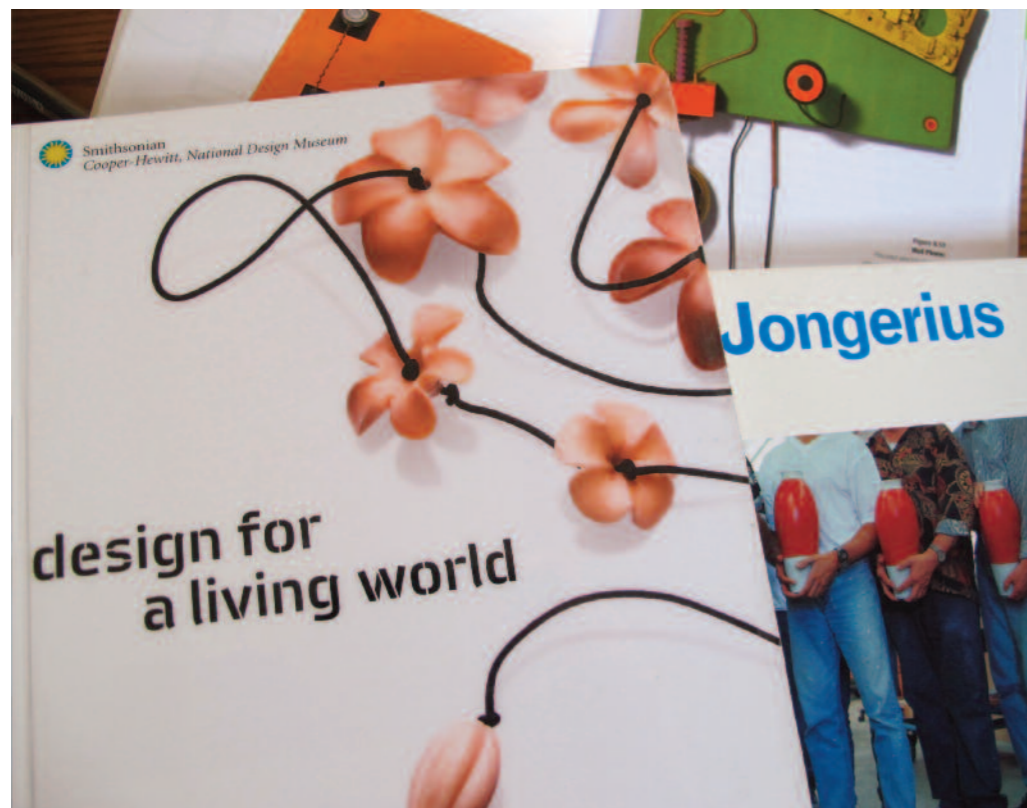


The above framework is the work of Blizzard and Klotz in attempting to define a whole systems approach to improve the way designers think and work. They explain that the first column illustrates the initial phases of the design analysis stage. The second column makes reference to biomimicry and biomimetic design thinking in a bid to use nature as a guide to designing whole systems in an efficient way. The third column incorporates an inclusive and holistic approach to ensure all parties involved stay connected from conception to realization. Because global challenges are interconnected, Blizzard and Klotz state that there is a need to shift the ways in which we find not just single solutions for individual problems but the need for multi-solutions for linked global problems.

5.4 Part III: Design Precedents

Introduction

The following space is devoted to the work of relevant designers who create work from locally sourced natural materials using simple methods and processes, which contributes to a straight forward understanding of the work. This concept is in opposition to the mass produced shiny, amorphous objects that serve to perpetuate mass production and consumption and with which the user has no affinity because of his/her lack of understanding of the inner workings of the object.¹ Such slick impersonal items are irreparable, they are designed to become rapidly obsolete and they cause untold damage to the ecosystem. Jonathan Chapman's notion of emotionally durable design is echoed in Walker's research into how to create objects that endure time. He discusses examples such as prayer beads, shoes and Sambo's Stones that become loaded with symbolism and also Dejan Sudjevic's discussion of 'old SLR camera that was bought to last a lifetime and which improves its attachment due to not in spite of each mark on its worn surface.'²



Cover of the catalogue *Design for a Living World* which accompanied the Cooper Hewitt Exhibition, 2009, of the same name.

Design for a Living World

The Cooper Hewitt Exhibition, *Design for a Living World*, in 2009, was instigated to 'encourage cross-fertilization' of design ideas and natural capital in order to re-evaluate the 'choice of materials and... relationship with the land'¹ It was also a collaboration between Cooper Hewitt and the Nature Conservancy, which placed ten designers in the context of an unfamiliar (to them) natural environment. Mark Tercek believes that 'designers hold a crucial position in the supply chain...[and that] design has the power to make us love an inanimate object and want to understand it.'² This project echoes Margolin's assertion that this is exactly where design should locate itself. It also reveals that the concept of emotionally durable design is gaining ground in the public mainstream rather than being confined to specialist books and journals.

The aim of the exhibition was intended to stimulate answers to the following questions,

What products do we use?
Where do they come from?
How are they made?
What are their impacts?

In responding to the above problems, the activities of the designers involved the regeneration of 'fragile locales', human reconnection with nature and working with materials that use rather than deplete places, resources and species.³



Yves Behar was one of the selected designers. His design is inspired by the story of the cacao bean in Costa Rica and is the only one which elected to avoid the use of the raw material.

Christien Meindertsma

Among the designers commissioned for the work, was Christien Meindertsma who sees herself 'as a designer of products that tell something about their origins'.¹ She works with textiles derived from both plant and animal origin. Consideration for the origin of the raw material used in the conception of the projects One Sheep Sweater 2010 and Idaho Rug point up the same methods used in this research. Getting to the source of materials plays a critical role in being able to demonstrate and develop the concept of the notion of a purely sustainable loop. Some of the more relevant goals stated by Meindertsma and manifested through her design objects are as follows,

"to regain understanding of processes that have become so distant in industrialization"

"to revive the understanding of production processes that have often become so distant to our modern industrialized world."

"... with the intention of forming authentic relationships between the product and the consumer."

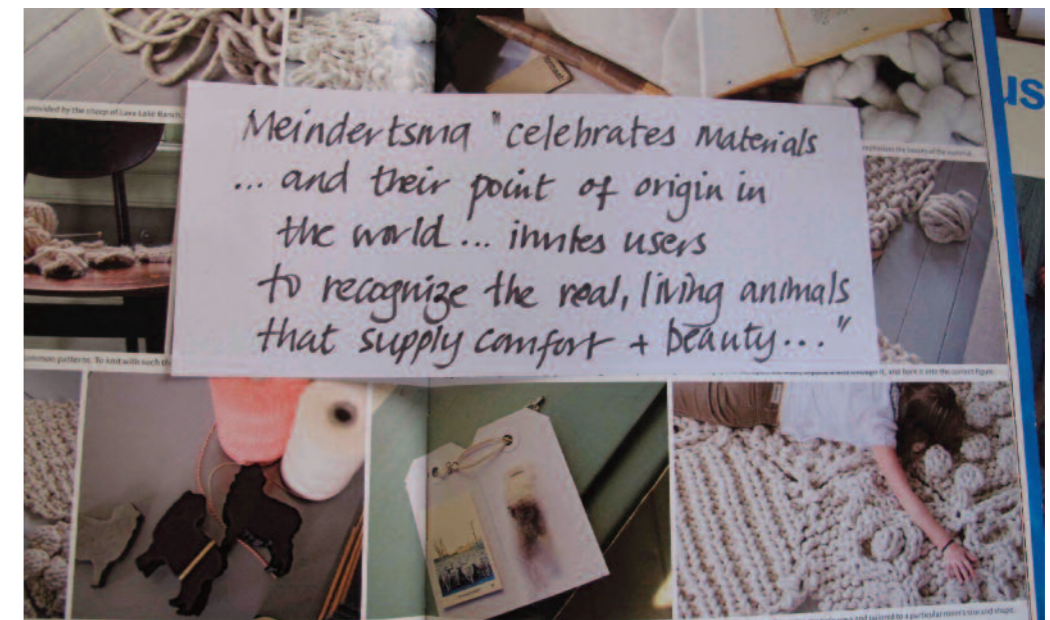
"...why carry things across the globe?"²

One Sheep Sweater, as the name infers, uses the fleece of one sheep to produce one sweater. The yield of the raw material determines whether the garment remains incomplete or is created in a smaller size. After shearing, each fleece is kept separate and undergoes washing, carding, spinning etc. individually. The effect of this unique treatment in processing is that it transforms

the fleece into a precious commodity. Another effect is that it connects the consumer to the origins of the product, hopefully provoking thoughts about the life cycle of the animal and the processes undertaken in the production of a single item, the simple sweater.

Idaho follows a similar run. Described on Meindertsma's website as, 'a project for The Nature Conservancy made with wool from an organic flock of Panama sheep from Lava lake Ranch, Idaho', and where all the work was carried out on site.³ The end product is a patchwork rug made of oversized knitted hexagons which have been stitched together; each individual shape represents one sheep and the act of sewing them together seems to reflect the work of the shepherd in keeping the flock safely together. Meindertsma designed variations into each shape representing the individual personalities of each animal that come together as one flock, in this case, the rug.

The above projects are significant because of certain individual aspects of their concepts rather than the overall outcomes. The fact that Meindertsma has managed to produce items from locally sourced materials in order to inform, educate and provoke thinking have been useful in the design phase of this thesis. Her products are intended to tell the consumer the story of their origins and how they came to be; this is the most seductive aspect of her work and one which will contribute to the design criteria for the practice based research of the project.



1
PIG is Meindertsma's piece de resistance. It took three years to complete. She traced the destination of all the products derived from a single pig and documented each one in book form, bound by the skin, and pierced on the spine by the identifying ear tag. The project demonstrates the extent to which man stretches to make use of an entire living creature. Although the idea of using the camel in the context of an agritourist center, where only its by-products are intended for use, it must be understood that the meat, skin, blood, bones, stomach, hooves and teeth are also valuable raw materials. It is only in setting the boundaries for this study of the camel as provider of renewable and therefore sustainable by-products, that the above camel products are not under discussion here. Plans for further exploration of those products will be dealt with in the section on recommendations for future research.



1-2. Flocks project for the Nature Conservancy

3. PIG project

Hella Jongerius

Hella Jongerius has a knack for combining old and new materials, and incorporating traditional and modern methods of production, including the handcrafted and the mass-produced to create functional objects that can be situated in the gap between art and design. Through the juxtaposition of familiar elements and designed imperfection that suggests each object is unique and individually made her work takes on a reflexive quality. Designed irregularities that look like the result of the manufacturing process serve to engage the user more readily than perfected objects. Like Meindertsmas, Jongerius makes reference to the production origins of the object but through the use of historical hand making techniques or the industrial process rather than provoking questions surrounding the source of the material. The work of Jongerius is about 'variation, imperfection and change' and through suggesting 'a process of coming undone as much as a process of completion'¹ She helps us retrace the steps of the object life cycle through saturating the objects with variations of this type of narrative.

Jongerius uses 'diverse elements and techniques to create overtly collaged products' such as the chicle latex vases she created for the Nature Conservancy project.² The objects combine chicle gum, glass, plastic and porcelain. They are rigid

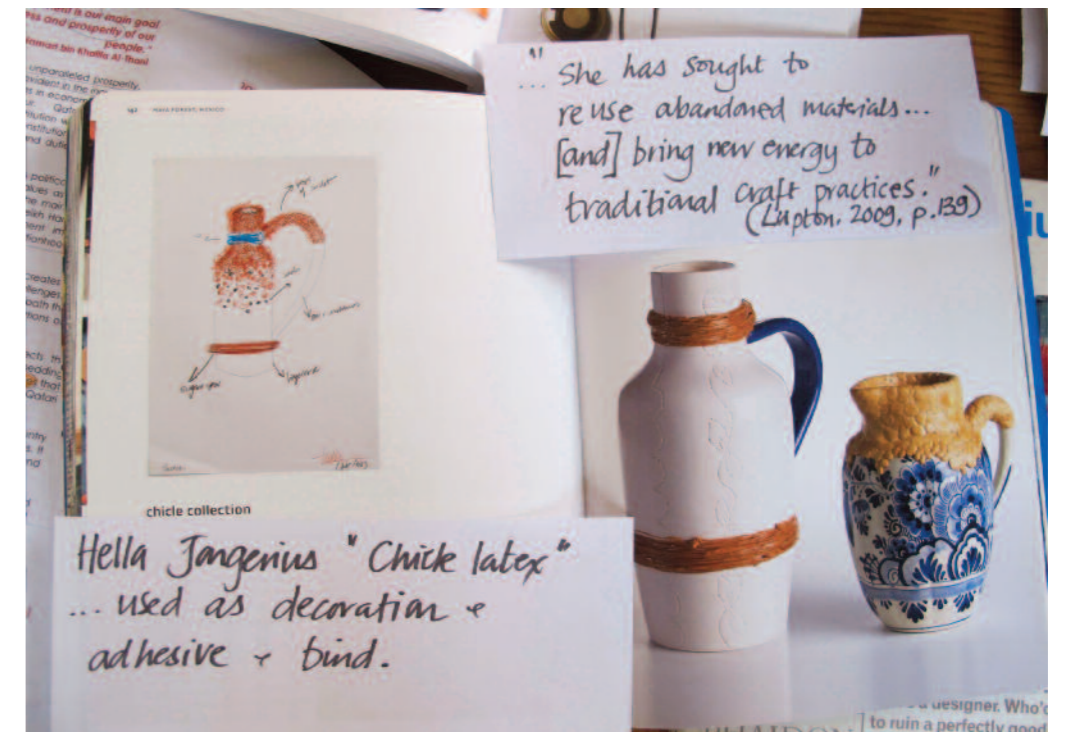
and flexible and constructed from man made and raw materials. Her approach involved starting with the material rather than a specific design problem. This method is gaining ground as a direct and active method, which is being developed as a way of discovering 'unexpected solutions'.³ In the book, *Exploring Materials*, the authors assert that 'there is no substitute for confronting physical materials in the flesh' and that 'understanding materials is essential to design'.⁴ The working method of Jongerius, who said she felt 'like and alchemist trying to find a better function than chewing on' the chicle gum and the philosophy of design methods in *Exploring Materials* have both led to a relevant approach for creating a range of products from camel renewables.⁵ The use of materials is a valid and effective starting point used by prominent designers and is evidently becoming a topic of recent design discourse. The way Jongerius has 'sought to re-use abandoned materials... [and] bring new energy to traditional craft practices' can be applied to the camel project since its conception began with seeking ways 'to re-use abandoned' or wasted materials.⁶

Opposite
Jongeriuslab designs
1. Pages from *Design for a Living World* showing the chicle latex project

2. *Long Neck Groove Bottles*, 2000, porcelain and glass.

3. Examples of chicle latex designs

4. *Soft Urn*, 1994 and 1999, silicone rubber



2



3

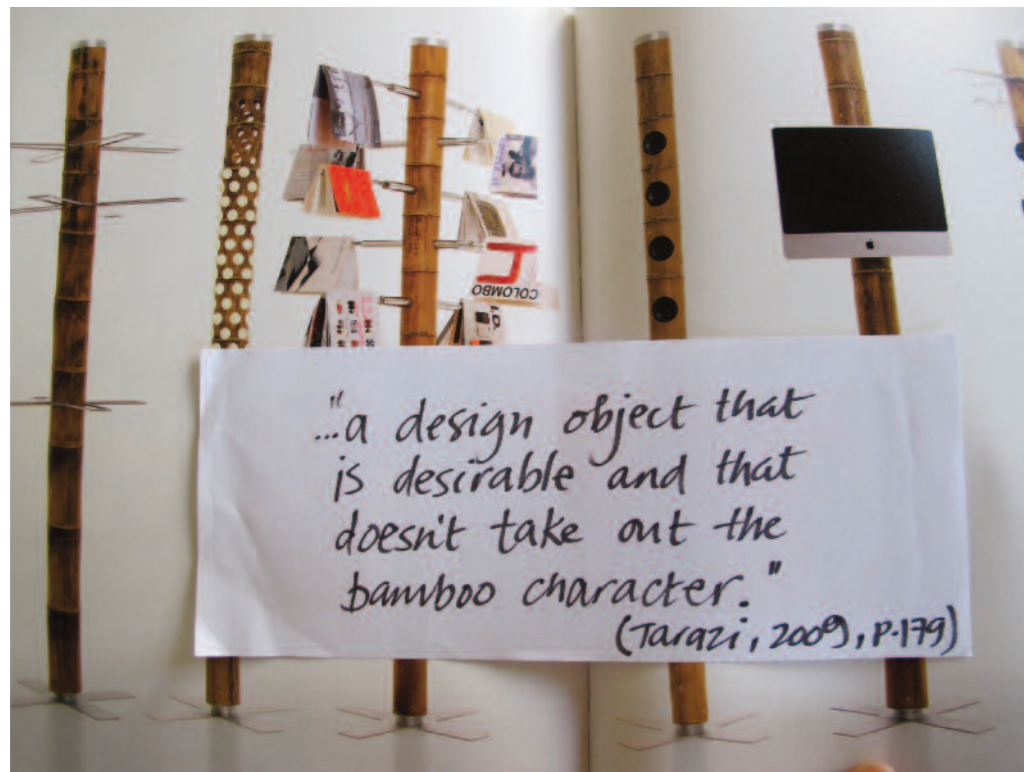


4

Ezri Tarazi

The final designer selected from the 'Design for a Living World' (2009) team is Ezri Tarazi. Like Jongerius, his 'intense engagement with material characterizes Tarazi's work at every level'.¹ Tarazi used the structural quality of bamboo poles to build functional objects that resemble totem poles. The bamboo retains its inherent natural characteristics and surface marks which are the result of the felling process and damage during transportation. These elements refer to the forest origins and the journey that the resources have undertaken to reach the consumer, yet their functionality is firmly located in the urban, rather than the natural world. Tarazi adapts the poles to house speakers or light fittings

by carving holes. With the addition of simple industrial style brackets the poles can accommodate a media center, a sound or light system or books and magazines, thereby transforming them to respond to the title of the project and exhibition. At the same time, the designs transcend functionality and take on a performative role. The way that Tarazi uses materials in their raw state and with minimal processing demonstrates that it is not always necessary to look for ways of transforming them into something else. By allowing materials to remain with their unrefined characteristics can create or maintain the connection with the source.



Pages from *Design for a Living World* showing Tarazi's Bamboo stands.

Natural Fiber Company

The NFC is licensed for organic production by the soil association. It is the last remaining company in the UK that processes wool and worsted 'under the same roof'. It was originally founded for spinning wool on a small scale to meet the needs of the small scale sheep farmers in the area of Merthyr Tydfil in 1991. Myra Mortlock, the owner, continued to produce undyed wool, spun using traditional methods until her retirement in 2004. At this point, the mill was taken over by Sue Blacker, an ex-stock-broker, who wrote a detailed and updated business plan based largely on her customers' requirements through community engagement, which would now be seen as a form of co-design. Sue Blacker's core values published on the NFC website suggest priorities based on need and socio-economic considerations. The heartening story of NFC, is that it has managed to resist selling out to large corporate manufacturers such as Coats UK which has bought out many of the smaller yarn producing companies like the famous Rowan yarns of Holmfirth. The company prides itself on being specialist wool spinners, serving a niche market. They process sheep fleece, mohair, alpaca, silk, bamboo, linen etc. and blending fibers to the customers' specific requirements. Once the fibers are received by the team, they sort, scour, card and spin the fibers into the weight and quality

specified and will also wind the finished product into balls, hanks or put onto cones for knitting machines or weaving. They also offer a bespoke dyeing service and can match any color. This is the type of company Meindertsmas might use in producing designs to specific requirements. Blacker prides herself on offering free consultations and being willing to arrange collection and delivery of fibers and fleece. NFC recycle almost all waste which reduces disposal costs, maintains a low cost to customers and is good environmental practice.

The website is encyclopedic. Everything anyone would ever need to know about the process, fibers and care of wool from basic to expert knowledge is given. It is also friendly; there are anecdotal stories about the team and this particular humorous comment, 'enquiries are welcomed; we are not advocates of call centers or telephone button pressing, so you should quickly find a person to talk to,' tells the customer that this is a company that is built upon human value.¹

Damson and Slate

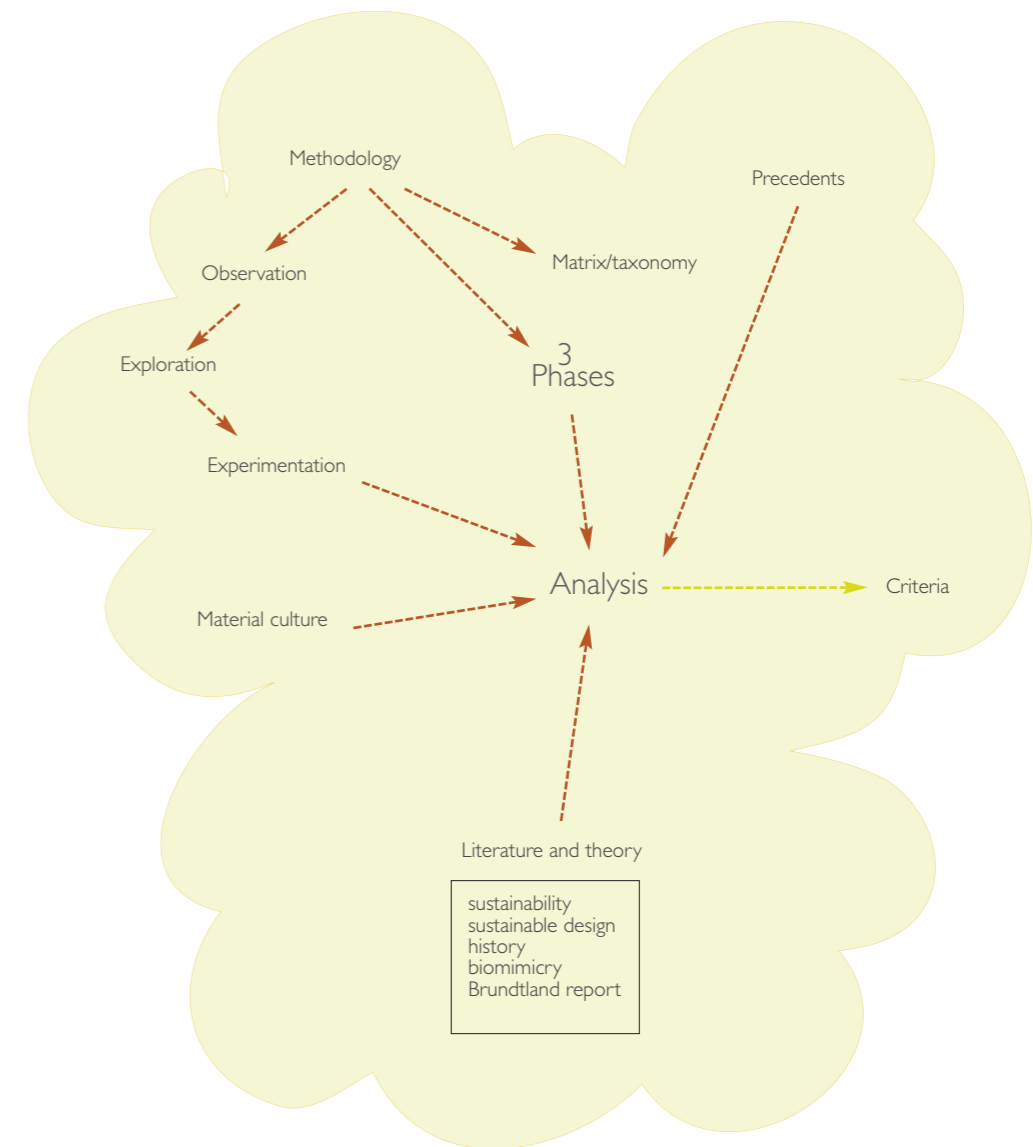
Damson & Slate is a co-operative based in the UK producing locally sourced organic materials and products. It began as a reaction to the kitsch souvenirs of Wales, such as bright red fluffy dragons. The founder, Hilary Lowe decided to bring together beautiful 'and most covetable of Welsh goods' that are made in Wales from Welsh materials. One of its aims is to actively support[ing] ...a new generation of craftspeople who are using traditional skills in a fresh way'. Based on these conditions, the range of products on sale takes care of itself. Most items are textiles based such as wool rugs, runners and throws, socks, hats

and a limited range of hand knitted garments. Sheep and goats are the providers of raw materials and the variety of characteristics of the items is determined by which animal it is derived from. The mohair products are soft yet drape better than other woollen fabrics. The surface has a lustre that only comes from this type of goat hair and which makes a simple item such as a pair of socks instantly recognizable as something unusual and special. Other products include slate butter coolers, seasonal lavender products and buttons made from reindeer antlers all locally sourced and made.

Opposite
Slate dish - locally sourced slate and locally made, by
Damson and Slate, 2010



6 | Process



Overview of the thesis research illustrating the analysis and connections between all of the information.

Introduction

The surviving woollen industry continues to exist in pockets of the UK where sheep farming began as a subsistence economy. Those areas remain today as remote harsh upland environments where arable farming is impossible and only Plath's 'hearts of sheep' can survive. Once a thriving industry and centre of the global market for worsted, the mills have gone into decline due to foreign imports of cheap raw materials and the rise of man-made fibers. In today's economy, the survival of this

traditional industry depends on specialized manufacture. The niche market for luxury products made of less familiar animal resources such as rare breeds of goats, llamas and alpaca is now a thriving trade.

Despite the high costs of processing such products (£15 to shear one alpaca as opposed to £1 per sheep), the overall qualities including comfort, softness and durability make them highly desirable. Add to the material qualities the fact that most of these animals are reared on small

farms accredited by the Organic Standards Board and that 'wool is a high performance, sustainable fiber' promotes such products as ethical.

My home is in Yorkshire and so I am more than familiar with the scenario described above. When I came to Qatar, I was struck by the presence of animals in daily life. Researching a problem for my thesis, presented the opportunity to investigate the ways in which animal products were used apart from providing meat.

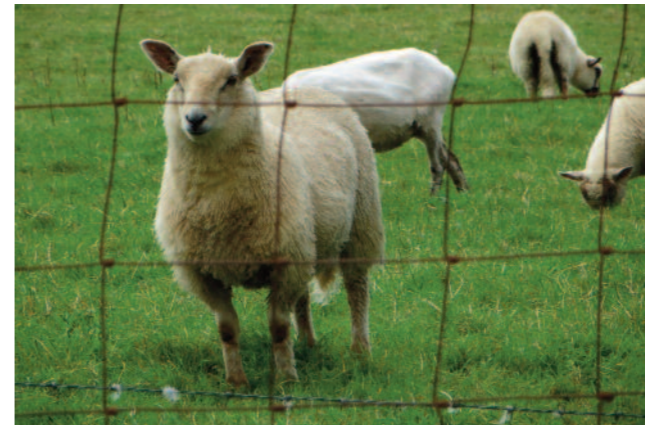
*There is no life higher than the grasstops
Or the hearts of sheep, and the wind
Pours by like destiny, bending
Everything in one direction (Sylvia Plath)*



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3



2



4

1. The Yorkshire Pennines consist of a bleak and barren landscape. Farming is impossible due to the boggy terrain and acidic soil.

2. The interior of Qatar is bleak and barren. Farming exists under artificial conditions.

3. Only sheep herding is possible in the Pennines. They are covered in greasy wool that repels the rain and insulates their bodies. They can survive on the coarse heathers and gorse bushes that grow in abundance.

4. Camels have adapted and can survive the desert conditions. Their hair strands are hollow to keep them cool and they have become tall and narrow so the least amount of hot sun falls on their bodies.

Formulation, appropriation and validation

The thesis formulation began to take shape after selecting waste materials as a point of departure. The initial categories included plastic water bottles, waste from construction sites and food waste. The first two suggested research about recycling and reuse. Such activities, although pointing in the right direction, are in danger of allowing consumers to continue wasteful habits, under what seems to have become, the recycling pretext. A move towards research that would involve the use of natural materials could provide an opportunity to restore man's preference for the natural over the man-made. Highlighting the inherent characteristics of natural materials, combined with their ability to safely decompose back into the environment, seemed more purposeful. Drawing on my knowledge and experience of the use of domestic animals around my hometown, I wanted to find parallels in Qatar. The initial impetus came with the discovery that Qatar received a shipment of 46,500 sheep from Australia last year.¹ The animals are to meet the demands of the growing population, which has more than tripled over the last 10 years. In

2003 the population was 610,000 whereas today it stand at 1,920,798.² The sheep numbers were encouraging and suggested that there were enough animals to be used for more than meat production alone. I found no evidence of the skins or fleece being produced in Qatar. In the UK, as much of the animal as possible is used. The fibers are sheared throughout the animals' lifetime, the skins are processed into leather or sheepskins and the bones are boiled down to produce glues and ingredients for cosmetics. Some specialist farmers produced milk and cheese for allergy sufferers and horns are used as decorative objects or made into buttons. A project that would highlight this suspected waste of natural readily available products saw the chance of becoming a small-scale enterprise, manufacturing any one of a number of possible products. The search for a national product is ongoing, hence the Made in Qatar exhibit at Tasmeeem, 2013. This research could add a range of products that are not only made in Qatar but where the materials used are locally sourced. After this point, two shifts occurred. The first was toward the idea of using

the Al Warid goat, a common type found in Qatar. It is famous for its long black silky hair, which was used to make the traditional tents used by the Bedouins of Qatar. The second and final shift came after discussions with Constantin Boym, my primary adviser. The camel has better relevance because of its iconic status in the Middle East and its significance in terms of history, society and culture of the area. If the camel was upheld as a traditional icon, part of the Qatari cultural heritage and history, then it could be argued that the camel had much more relevance than it was currently being given credit for. The camel is an inherent strand of the story of Qatar, which cannot be told in its absence.

Further justification came from the Four Pillars of Qatar's National Vision 2030 document, social, cultural education and economics. There was a chance that the research would demonstrate that the animal would ultimately prove to have so much modern value that it could market itself.



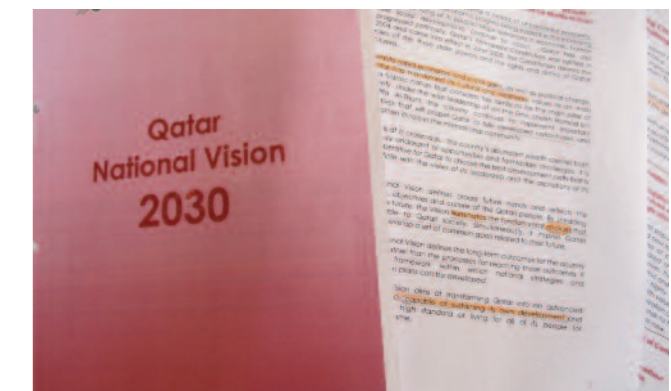
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1. A young camel under one year old. It has a thick coat of down. This material could be harvested and made into a fiber comparable to cashmere.

2. *Sheep* by Henry Moore. Hill sheep farming has dwindled since the decline of the textiles industry in Yorkshire. Cheap foreign imports and man-made fibers were largely to blame. Some still value the raw material provided by sheep and are seeking ways to reintroduce it back into the market place. Makepiece is a Pennine design studio producing one off pieces and annual summer/winter collections from fine wool. They are working to alert people to the quality and sustainability of wool. They call it 'a fiber with a clean conscience.'³

3. As Doha grows as a modern metropolis, less land is available for farming and the herding of animals.

4. The Qatar National Vision could play a key role in highlighting the value of the camel for modern and future times.

Planning the research

'Select and organize information...'

The map opposite served as the starting point for selection and organization of the research. It was formulated using the simple linear map below, which simplifies the thesis problem. I needed to know what was researchable in order to check that my claims were true; were camels in Qatar a wasted resource and could they be of value to contemporary Qatari society?

In order to position the thesis in the field of sustainable design, research was essential in discovering the differing current views of its meaning.

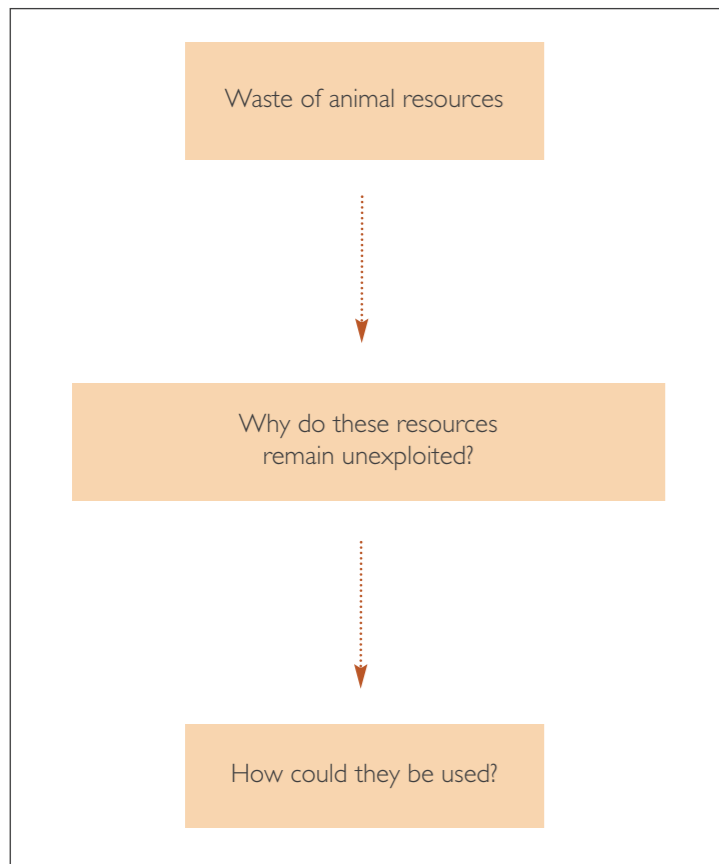
This information would enable me to test the validity of the project and locate it within the most appropriate context.

Heritage was a key consideration because the camel is an intrinsic element in the heritage of the Middle East. Researching the historical use of the camel and its role in culture and society and the camels' relationship to the land, would provide a historical framework to link the past with the present.

The history of sustainability was the third area of investigation. What does sustainability mean and how

have ideas in the field changed or expanded since the beginnings of the discourse in the eighties.

The initial activities consisted of visual research (bottom left on map) in the form of observation and recording related to camels and camel herding. A critical review of the contexts (bottom right on map) through an analysis of the historical use of the camel, a review of literature relating to ideas about sustainability and its relationship to design today would provide the breadth of knowledge for an overview of the topic.



Left
Linear map illustrating a simplified version of the thesis problem.

Right
Map showing the beginning of the research process. The top section asks questions to prompt the research process. The lower section establishes the research boundaries. The bottom left and right bubbles, which are disconnected from the central thesis question, are prompts for the methodological enquiry

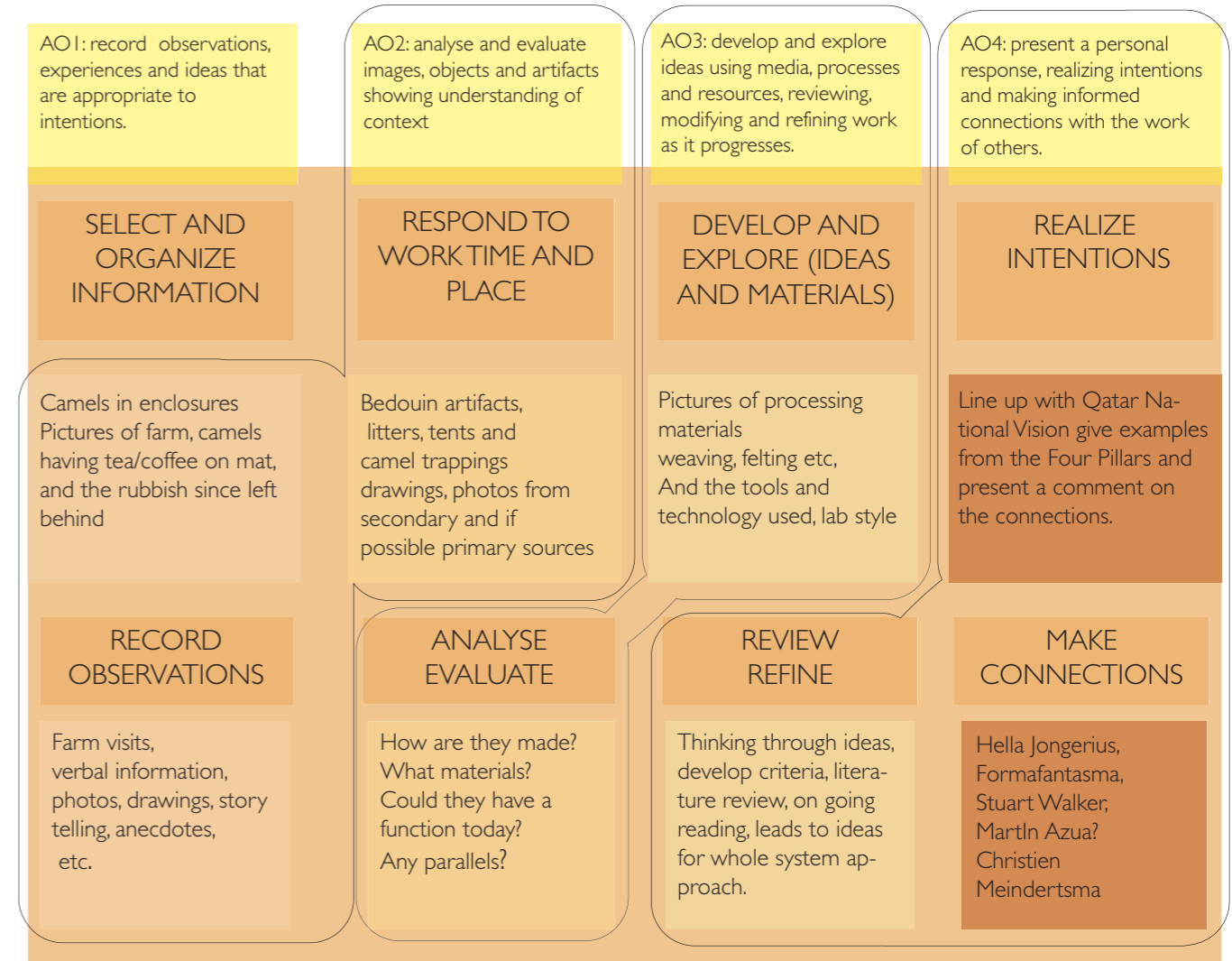


Overview: 3 phases

During the initial stages of the research, a strategy was needed to organize the unwieldy volume of information being collected. In order to ensure its relevance to the topic within the research boundaries, I chose to use the same taxonomic framework that I had used to assess art and design examinations in the United Kingdom.¹ I was familiar with its success not only as a tool for assessment but more importantly, in

this context, for ensuring students had covered each of the four double stranded objectives. I adapted the taxonomy and reduced it to three objectives. I was able to isolate a variety of activity and content related themes. The initial observations and recording in the field formed the basis of the ethnographic work.² The comparative analysis of objects and artifacts began to make sense only by contextualizing them within the topic.

The next step involved the exploration of materials and processes before further analysis could start. Review of all the work enabled ideas to develop, which then needed refinement. At this stage, a personal response was emerging. The final phase involved an investigation of contemporary design practice with a view to making the final connections in order to locate the work within the field of design.



The Edexcel taxonomy (see explanation on page 72), used for marking art and design examinations. The framework has been adapted to reflect the 3 phases of development. It served to ensure all relevant areas were covered and justified.

I: Observe

'record observations, experiences and ideas in forms that are appropriate to intentions...'

After formulation of the project statement, many questions arose relating to the viability of the topic. Additionally, I knew little about the circumstances of the camel in Qatar or whether concepts for the development of agritourism and availability of resources were feasible. Due to the lack of published material relating to camel husbandry in Qatar, there was a need to find and communicate first-hand with local keepers of camels. Gaining access to small farms would provide a primary source of practical information about camels, permit observations to be made and allow for the collection of evidence. Ethnographic methods, as defined by Giampietro Gobo,¹ were the most appropriate for this stage of the research. Additionally, approaching the field with barely any knowledge of the subject meant that grounded theory would also play a role at the start of the project. Although I wanted to try and observe with an open mind and without bias, I knew that my aim was to use my observations to construct ideas I could use later on in the design process. My preconceived purpose meant that the qualitative inquiry would be viewed as constructivist grounded theory as discussed by Ian Dey.²

Research began after establishing unlimited access to a small-holding farm situated 26 kilometers north of Doha at Al Rashid. The farm belongs to Sayer Al Anzi who keeps around a dozen hens, twenty-five goats, twenty-six sheep and fifteen camels. The figures fluctuate throughout the year due to births and consumption of the animals.

From the time of the first visits in October 2011, until recently, the farm has undergone a profound transformation. Initially, the animals were contained in a wire netting enclosure which was a semi-permanent pen set up to accommodate the government anti-grazing scheme. The enclosure was divided into three sections each determined by its use (see *opposite page*). The camels were separated from the sheep and goats and there was one large area for human use. Two tents and a structure reminiscent of the fishermen's huts of Bahrain were constructed here. There was one goat hair tent for family use and a smaller canvas tent, which provided living accommodation for Hamad, the resident herder. Much of the construction on site, such as the

partitions for the animals and the hut was ad hoc and made of wood, which was held together with nails and rope binding and knotting. Plastic feed sacks, canvas and sections of traditional tent fabric were tied to the wire fence to protect the calves from cold winds during the winter.

In April 2012, Sayer was allocated a new site and given a time frame within which to build a new farm structure and move the livestock. By June 2012, the Al Anzi farm had been modernized. The new adjacent site was located on a 'street' of visually homogenized structures and the farm seemed now to be reduced to one unit in a larger grid system. The geometric form acts to signify the transformation of Qatar at all levels whilst simultaneously manifesting the modernized means for traditional continuity.

My notes and photographic evidence of fieldwork were transformed into a reflective journal for analysis. 'Research does not proceed in a straight line, but in a series of loops' and the need to revisit some of the earlier findings was prevented by animal life cycles, such as spring molting and the rituals of care associated with them.³ Additionally, an



The former Al Anzi farm occupied this site until June 2012. There is a trailer on the left which was used for storage. To the right, sheep with late spring lambs and bait al sha'ar reserved for family gatherings.

investigation into whether materials for the design stage could be obtained locally, either at the farm or elsewhere in Qatar could be conducted. If materials could be acquired on site, gaining knowledge about the methods involved in their collection would contribute to an evaluation of how practical it would be to organize harvesting camel

resources from such farms and establishing small scale local enterprise. Observing the nature of the camels in confined spaces was an important factor in establishing whether the concept of developing an interactive agritouristic centre based around the camel would provide a pleasant



1. Remnants of goat hair tent on former site of Al Anzi farm.

2. Living quarters of Hamad who looks after the farm. This tent is made of canvas and lined with colorful printed cotton. Rocks are placed around the base to hold the canvas in place during sand storms.

3. Elevated majlis, reminiscent of the Bahraini fisherman's huts on which the winner of the 2010 Venice Architecture Biennial received the Golden Lion Award.



4. An example of a traditional fisherman's shelter, on which Bahrain's pavilion at the Venice Biennial 2010 was based. The reconstruction won the Golden Lion Award.

5. Side panelling of the new farm structure. New materials have superceded traditional ones. They have a homogenizing effect.

6. Evidence of two people sitting together provides an example of unintentional design.

7. View of the farm showing the traditionally made goat hair tent, a make-do outdoor majlis made of found materials and a mass produced trailer made of modern materials and already in a state of decay.



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8. View of the interior of the canvas tent.

9. Wind breaks made of animal feed bags sewn onto wire netting. An example of ad-hocism. 10

10. Bare essentials: the tent accommodates only what is needed.

11. Bare essentials: water carriers.



7



9



11



1

Observations, which focused specifically on camel details. The different types of hair which grows on the body, mane and neck and hump is noticeably distinct in texture. It ranges from short soft down fibers to long coarse wiry hair. There are many objects demonstrating a material culture of camel husbandry, such as the use of udder covers, nosebags and hobbles.

1. Female camel wearing a typical udder cover to prevent the calf from suckling. The herder uncovers the udders at evening time and uses the calf to aid the cow in letting down the milk more readily.



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2. Soft thick down grows on the camels' bodies from November until March or April when the animal begins to molt.

3. The mane hair is wiry and strong. It was traditionally used to make ropes for tents and other objects requiring extra strength and durability such as tethering animals.

4. Beard hair can grow up to 30cm in length. It has the same characteristics as the mane. Note the wasm on the neck. This symbol is one element of a group of three, which signify Doha. This is the only camel at the farm originating in Doha; the rest are from Hofuf in Saudi Arabia.

5. A hobble, which has been home made from strips of old tent canvas. It has been neatly hand stitched into place by Hamad.

6. A camel relaxing at sunset and demonstrating that the face is another location for wasm.

7. Young camel with striking white down on its legs.

8. Fresh milk served warm with lots of froth.

9. Traditional coffee pot, locally made. Palm fibers are used to strain the dregs from the *gawha*.



9

2: Explore

I moved into a recursive episode in order to acquire new textile related skills, which I believed would lead to a sequence of successful outcomes in the journey towards a design concept. A novice in textiles, I struggled with the discovery that the craft processes traditionally associated with fibers, such as spinning, weaving and knitting, proved to be a hindrance to development. The more the fibers were processed, the further away they seemed from being a material full of character. My perception was that the incorporation of traditional methods, diminished the expressive quality of the fibers. Ideas about whether

solutions could lie in the afterlife of the craft samples, through reversing or sabotaging processes, was investigated as a means of restoring the aesthetic of the raw material. The problems here were associated with the element of time and also skill. Looking for a sustainable method of production shouldn't be reliant on inordinate amounts of time associated with specialized craft production where the acquisition of skills takes years. A peripheral argument arose which related to issues of craft versus design, but after concluding that design has depended on craft throughout its brief existence, whereas craft has existed

in the absence of design for centuries, spelt out a status hierarchy in my opinion. And anyway, this argument is beyond the research boundary entailments and does not form part of this project.

Moving on through and beyond this phase proved problematic because of the way recursive practice self perpetuates. I was struck with the inability to go forward until I began to reflect on the overall progress to date.



Visual representation of the types and qualities of the range of fibers which grow on a camel. The molting process is also illustrated.

1.Fleece sorted according to quality.

2.Garter stitch tension swatch.

3.Hand spun single camel down yarn

4.Bobbins of single wheel spun camel hair ready for plying.



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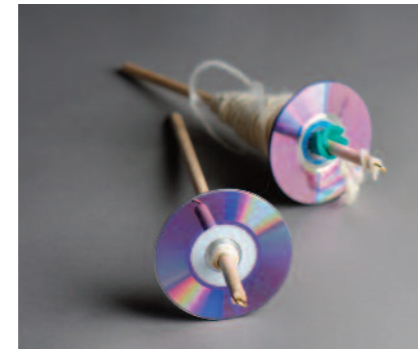
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5.Home made spindles.

6.Hanks of sheep and camel yarn after washing.

7.Cardars.

8.Camel hair rolags.



5



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9.Hand spun plied camel hair yarn.

10.Carding camel down.

11.Single spun, chunky weight camel down yarn.

12.Fleece laid out to dry after soaking.



9



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11



12

13.Camel hair top.

14.Hair from the mane and beard of a local camel.

15.Picking over a local sheep fleece

16.Washing fleece.



13



14



15



16

17.Fibers ready to be carded

18.Tools used for exploration of materials with various qualities of camel fibers.



17

19.Camel hair felt and rolags.



18



19



Process map showing how raw fleece is transformed into yarn and then back to fibers.

From top to bottom, the map illustrates what happens to fibers once they leave the animal. Each stage of the process relies on ancient technologies and the human skill of picking, carding, spinning and plying. The map suggests how spun and plied yarn can be unraveled and reused. This final stage is not considered part of the conventional treatment of the fibers, yet it is highly feasible and is confirmation of Braungart's 'cradle to cradle' philosophy of production.



Map of the felting process

Locks of combed fleece and fibers are rubbed and pounded together under warm, wet conditions. The fibers hook together and cause matting. The result is a dense fabric, which was made as early as 6500 BCE.

3: Connect

I referred back to Ferdinand's monograph containing hundreds of examples of Bedouin objects. I adopted methods used in the study of material culture to gain an understanding of the items and the camel.

I made a study of the textiles in order to discover what items were made from camel hair or leather. Camel fibers were divided into two qualities; the rough mane hair was used for rope making and the soft down was used for socks or sections of weaving for travelling litters. It was never dyed, as was the case with sheep wool. I examined how the main body of each item is woven using time consuming methods of loom work and tapestry techniques, which create extremely strong and durable fabric. Despite this fact, the woven textiles were often joined with large, irregular stitches that appeared to have been made either in haste or without the extraordinary care, time and attention that was unsparingly given over to the production of weaving. This juxtaposition created an unusual aesthetic which is reminiscent of the way Jongerius combines processes

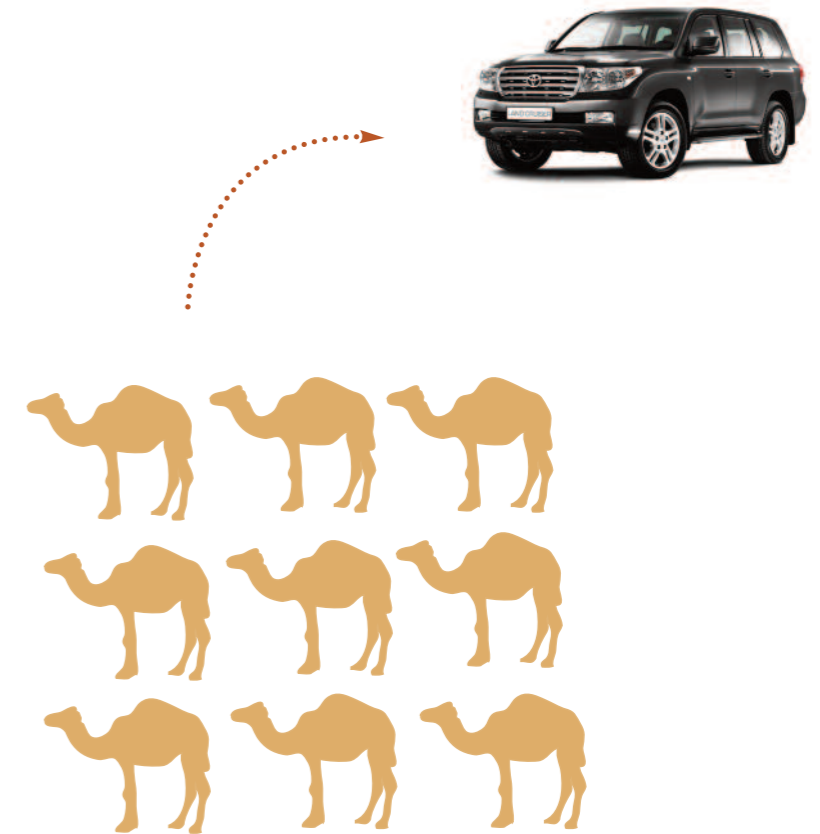
and materials. The way objects and tents were used in the desert explained why they were constructed in this seemingly rough manner. Attempting to imagine life in the desert through the psychological processes behind artifact production and not the artifacts themselves was an important reminder that the 'psychological processes' involved in my own design work should take precedence over what the designs would be.

Through the use of Ferdinand's cultural relativism, I attempted to understand the objects within their own context. I knew how the traditional objects were made and from what materials. I also understood that although it was important to learn about the historical uses of the camel, I should find a method for developing a framework that would ensure my work would be aesthetic, functional, but significantly, of its time.

I had already analyzed the exploration of material processes and concluded that the use of specialized craft was not an option if production

was to be sustainable. As already briefly discussed, craft relies on several years of apprenticeship to acquire specialized knowledge in the use of tools and materials, which can detract from ideas of social equity. My aim was that the processes should be simple and available for anyone to master in a relatively short time. I also wanted the objects to reflect the inherent characteristics of the fiber, in the same way that Tarazi intentionally retained the character of bamboo. In theory, according to Walker and Chapman referencing the characteristics of natural materials can produce designs that are more readily understood.^{1,2}

From these early analyses, which were an inherent part of the process, and that merely needed drawing out, I saw emerging criteria. Rather than attempt to imagine a product, which could be made from camel by-products, I reminded myself to trust the process and move towards developing a justified framework for undertaking the design work. I began to revisit all the work to date with a view to adding to my nascent criteria.



Through an analysis and evaluation of sources, intentions were realized and connections made across time and between cultures. This led to the formulation of the criteria used in the product design phase. I also recognized two emerging themes which I was able to use as the link between past and present tradition; transportation and the *majlis*.

Criteria

The criteria or framework was developed by making connections between the parts of research. It was necessary to develop an individual framework that answered personal ideas about what sustainable design ought to look like in terms of this

project. This thought process was prompted by Walker's discussions, which demonstrated that the designer creates his or her own point of departure. In undertaking design research, the designer makes the decision to develop a vision of what

the field means. At this stage, the designer plays a central role in shaping the manufacture and consumption of a material culture of positively altered value.

1. Locally sourced materials, 'mass produced plus locally made parts', (Walker 2009, p. 93).
2. Locally produced, low tech, low impact products.
3. '...not readily classified ...not industrial designs, ...nor are they craft designs – little or no traditional craft skills are required to produce them...' (Ibid).
4. Improvisation, spontaneity, a 'making do' aesthetic.
5. Explicit construction, facilitates comprehension which might lead to repair and/or disassembly, Walker, Chapman, Papanek (2006; 2005, 1985)

The list of criteria which formed the constraints for the development of the products.

7 | Product Design



The 9 images illustrate two design directions. This work was based around combining old and new materials and asked whether the traditional value of the camel could prevail in today's contemporary Qatari society.

Hobble



Camel down and sheep staples
102 x 102 x 5cm
Fall 2012

Hobble rug references the hobbles worn by camels to prevent them roaming away. The hobbles I observed were made from scraps of cloth twisted together and stitched neatly around the ankles of the camels. The homemade hobbles are soft for the animal and they are made to fit the individual animal comfortably. These observations prompted an analysis of ad hocism, spontaneity and making-do which I saw in the work of Hella Jongerius and Ezri Tarazi and which formed one of the set criterion for the final outcomes.



1. A home made camel hobble constructed from old strips of twisted cloth.



2. Remnants of a small gathering before the relocation of the farm site.

3. The hobble rug was designed to reflect one aspect of the material culture related to the camel, in this case, the hobble. The rug is similarly constructed by twisting lengths of roving before stitching it in place.

4-6. Construction.

7-9. Details of the completed design.

10. Reverse side of the rug showing loops for maneuvering it into position.



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Calf



Camel down
27 x 27 x 30cm
Spring 2012

Calf teapot cozy evokes the coat of the newborn camel calves in spring. At this time, they display a dense coat of soft curly down which has the effect of plumping out their bodies whilst disguising their fragile form. The dense fiber keeps the calves warm, protecting them against the cold *shamal* wind of spring.



1. The young camels have a coat of curly twisting fibers, which is extremely soft. The characteristics of this coat lead to the development of an over twisted yarn that could be used to create a thick insulating material.

2. The twisted fibers were stitched onto a felt base, which served as an additional insulator for keeping the tea and coffee warm inside the pot. The cozies evoke the quality and characteristics of the young animal.

3. The final products on display at the MFA Design Studies exhibition in December 2012.

4. Using the draping technique to create a flat pattern for a specific three-dimensional form.

5. Creation of the flat pattern using felt.

6. Working out the dimensions for a flat pattern specifically designed for a selected tea-pot.

7. Using a felt substrate for the twisted fibers.



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8. The yarn was stitched in place by hand and was built up in layers. Adjustments were made as the felt base was covered to ensure there were no gaps and the surface was even.

9. A hole was left in the top to allow for manipulation of the object during production without damaging the fibers.

10. Variations on a theme. Treatment of the bulbous form, as a camel hump. Mane hair was attached to the 'hump' to emulate the real camel.

11. Variation using felt as the main material.

12. Aerial view of the calf tea-pot cozy placed on top of a camel and sheep's wool coaster.

Jassasiyah



Wire with yarn and felt made from camel down
50 x 30-40 cm
Spring 2012

Jassasiyah are a set of sunshades designed for the car. They are reminiscent of the sunshades used by the Bedouins in transit. The traditional shades were constructed from tightly woven cloth with panels made of camel down because of its thermo-regulating properties. The modern versions are based on designs observed in the petro glyphs at Al Jassasiya in Qatar and although construction is different, they still keep the car cool.

1. The petroglyphs at Al Jassasiya in Qatar served as a reference for the forms used to design the car sun-shades.

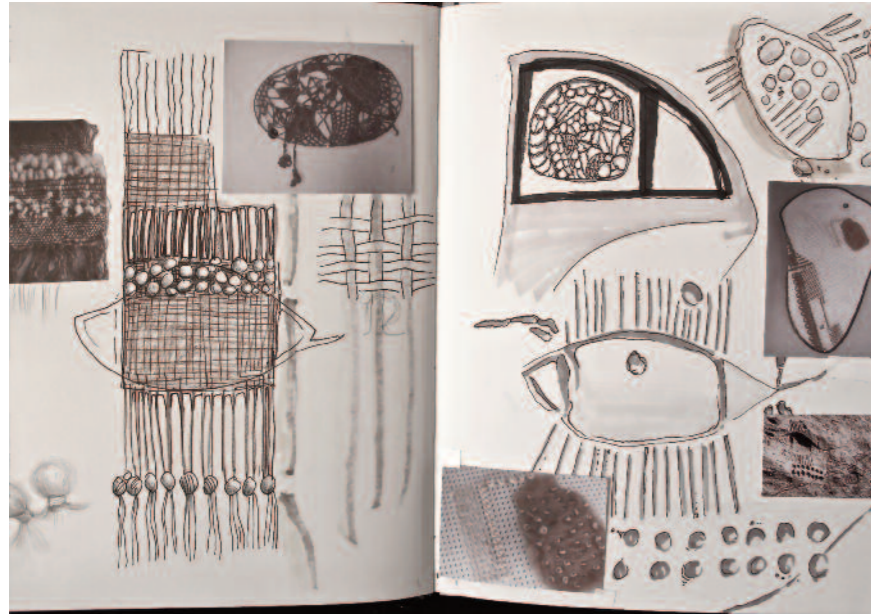


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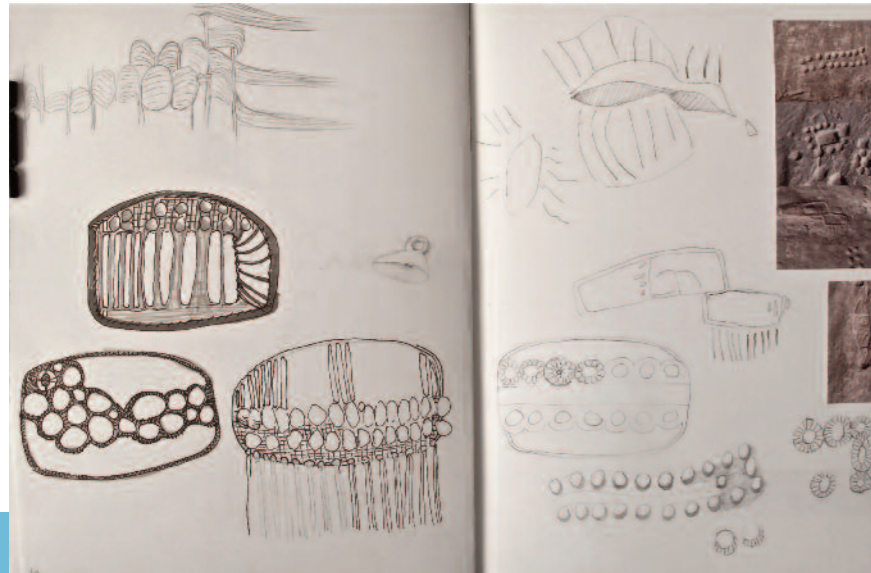
2-4. Sketchbook pages showing design development.

5-6. Woven design incorporating old and new, natural and man-made materials.

7. Close up of 9 showing the use of felt scraps and hooked yarn to create a web-like structure.



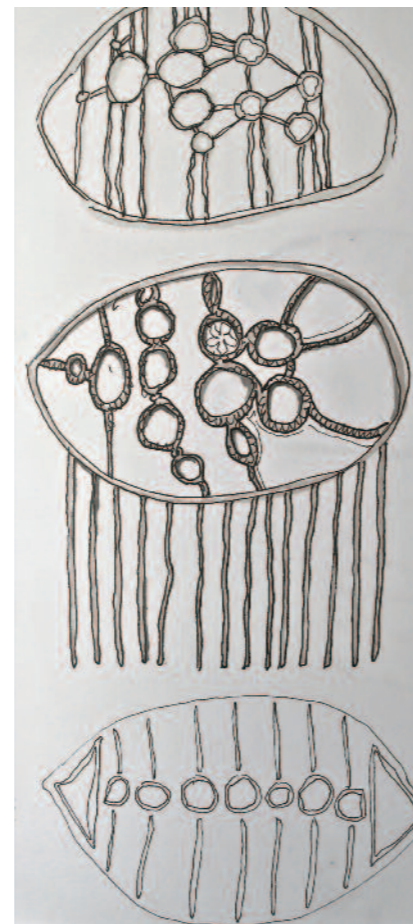
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8. Detail of one version of the car sun-shade showing contrasts between raw materials and material which has undergone further processing using traditional craft methods.

9. Sun-shade based on petro glyph forms.

10. Sun-shade in progress incorporating craft and *ad hoc* techniques.



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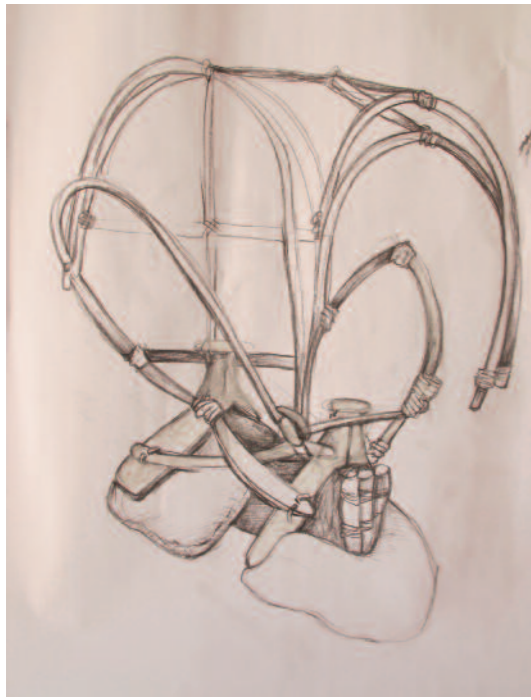
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Numdah



Camel fibers felted and woven
Various dimensions around 50 x 38 cm
Fall 2012

Numdah is a traditional rug or carpet of the Middle East. It is typically made of thick felt or rough woven fabric, which felts over time. The small felted designs can be arranged and rearranged on upholstery for thermo regulating the passenger or sitter. When piled in layers, they begin to be used in the same way the way the Bedouin used felted blankets beneath and on top of the camel saddle for both human and animal comfort.



1.Observational drawing showing the skeletal structure of a traditional litter attached to a wooden camel saddle.

2.Bedouin lady assembling and packing a litter.

3.Felted sample using available colors of camel down

4.Numdah in situ.

5.Sample with roving left unfelted.

6-8.Construction process.

9-11.Variations in numdah design based on use of materials and methods of construction.

12-14.Samples of numdah with irregular edges.



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Roving



Sheep and camel fibers with camel yarn

110 x 35 x 5 cm

Fall 2012

This is a play on the word roving. It means 'to travel constantly without a fixed destination' in the manner of the desert nomads, or in my home town, it is a sliver of carded wool which has been prepared for spinning. The car seat massage cover is used whilst roving and from roving.



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1.Observational study of wool tops which have been commercially prepared ready for spinning.

2.Experimentation using a crude loom, camel down and a rope warp to create a soft but strong surface for a car seat upholstery material.

3.Felted balls trial.

4.Using polystyrene balls to speed up the production of larger balls. The balls were found items and follow the idea of incorporating a make-do philosophy of design.

5.Covering the balls with raw fibers and experimenting with ways to secure it for felting.

6.Tying the fleece with hand spun yarn

7.Tying the balls into a piece of cloth ready for felting.

8.Detail of the above

9-11.Finished product, where the construction is explicit.



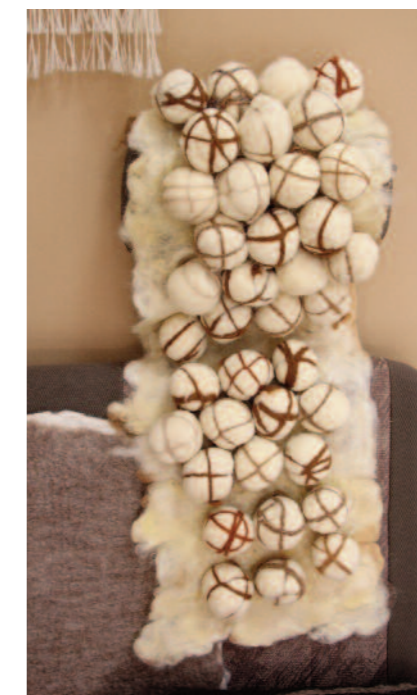
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8 | Evaluation

Introduction

The final outcomes were generated based on the criteria that were developed from an analysis of current theory and practice in the fields of sustainability and sustainable design, despite the fact that there is consensus about its vagueness. In designing work based on a set of criteria rather than an end product, the designer relies on process. The final outcome can not be known in advance, it emerges from trial and error and constant evaluation. Boundaries included starting with the raw material and the imposition of the themes, Majlis and Transportation. The raw material was the initial starting point therefore indubitable. The themes arose from the research both visual and theoretical.

Locally-sourced material

The material was a known entity from the start because it was the catalyst in the formulation of the problem; the idea being to use wasted animal renewables. The research has shown that camel fibers can be found locally, but at the current time, there is no system in place for the collection of fibers. Five kilograms per camel is half the weight of an average sheep fleece, but the fibers are finer and can be used in a more economical way. Fibers can also be blended with sheep and goat hair, which is abundant in Qatar.

Locally-produced, low-tech, low impact

Camel fibers could be processed in Qatar. Their low grease content means they require little water for cleaning. Alternatively, fibers can be beaten with a wooden stick until they are dust free. Simple textiles processing such as carding and spinning can be done effectively by hand or through the implementation of semi-mechanized production to retain the hand-made quality of the product. There is not enough locally available fiber to warrant larger scale production methods. No complicated skills are involved in production allowing for simple training in methods of manufacture.

Simple felting using minimal amounts of water was used to produce fabric for some of the designs. The technique is low-tech requiring only a pair of hand carders to brush the fibers to clean them and to ensure they are aligned before use.

Not reliant on craft

The production of the designs relies on the use of simple techniques such as plaiting, hooking, twisting, looping, stocking stitching and felting. The simplicity of techniques doesn't allow for much variation once the work is underway as in advanced craft methods therefore, variations of color or pattern are better planned

in advance if control is desired. Any additional changes, once the work is in progress or afterwards enhance the characteristics discussed in the following section.

Improvisation, spontaneity, collage, making do

This criterion is particularly reflected in the circular rug where the use of only locally available materials is evident. This could encompass natural materials combined with other materials which are required to complete a task or project. The notions of improvisation and making do should be emphasized because all designs were subject to limitations of what was available. When one material was used up, instead of shipping materials at huge environmental cost, an alternative had to be found. This old-fashioned way of thinking and working forces another kind of creativity and leads to unexpected juxtaposition which is evident in the work of Jongerius and Bedouin stitching.

Explicit construction leads to repair and disassembly

According to Walker and Chapman, when we are able to understand how an object is made, we are more likely to repair it.^{1,2} All products are created so that the construction is made explicit. They can be taken apart, resized, remade or transformed. They appear as collages of materials and are suggestive of 'a process of coming undone as much as a process of completion'.³ As such, they invite the user to investigate first and foremost, the inherent qualities and spontaneous construction, as much as knowing what the object is.

Discussion

The aim of the original proposal was to design products made from camel hair, wool and skin. My initial plan was to investigate a linear practice of obtaining camel fiber and using it to create a range of products.

Camels + herder = camel hair products for a niche market

For this to happen, connections needed to be established with farm owners and herders in order to acquire raw materials. At this point, I realized that far more was at stake than camels. It became immediately apparent that there was a whole system surrounding and connected to the upkeep of the herds. This has been passed down through the ages and now, in its current fragile form, is on the brink of elimination.

This evidence, pushed me to investigate agritourism as a way of creating a whole system with the camel at its core and to ask how can it be allowed to survive under the current circumstances. This perspectival shift to agritourism would provide a reason for the camel to endure. Agritourism could also provide a place to draw

those looking for the currently absent products made of camel. Further investigation presented evidence of the exemplar agritourist farm, Tannuta Vannolo along with its philosophical ideals of environmental responsibility, focus on the welfare of the animal and the production of traditional quality products, all sourced and manufactured on site. The discussion of agritourism looks at a whole systems approach to developing camel farms for the purpose of tourism whilst functioning to offer sustainable manufacturing, preserve cultural and natural heritage, advance education and provide commercial opportunities.⁴ It also reflect issues highlighted in the QNV 2030.

Summary

This thesis has examined past and present uses of the native domestic dromedary camel of Qatar. It has also investigated the types of renewable resources a camel produces and ways in which the fibers can be used as a raw material. There has been a focus on the role of agritourism and how its development would enhance commercial opportunities, create employment, preserve the natural environment and heritage, contribute to the maintenance of cultural identity, provide choice for tourists and enable a contemporary use for an animal associated with tradition and history. It has demonstrated links between specific and current thinking in the fields of sustainability and sustainable design and the paradigm shift from sustainability as a notion of continual economic growth to one that is in line with responsibility for the preservation of nature at all costs. Many believe that this can only happen with an approach that crosses discipline boundaries which is reflected in the original aims of the MFA program. Finally, the extraction of recurring themes and ideas was used to develop a set of criteria with which to advance my own ideas of what sustainably designed and produced objects might mean or be. I am currently using these criteria to develop an educational course about sustainable textiles, sourced and made in Qatar.

In conclusion, the opportunities for the sustainable use of the camel are far-reaching. As presented in the thesis, they go further than ideas about merely using the fibers as a raw material. Instead, they give prominence to the camel in terms of its function and meaning and provide evidence to show that the camel is as relevant today as it was before the advent of the hydrocarbon industry.



Camel bones provide material for further projects.



CAMEL PROJECT

Camel Project created by Corby Elford MFA Design Studies

In the course of the modernization of Qatar, the need for camels has greatly diminished; herds have reduced in numbers and are now confined to enclosures. Overall, neglect of this valuable resource means that the camel is threatened with extinction. Currently, there is a need to address problems about sustainable development in Qatar by taking actions such as investing in the existing natural heritage to develop the use of indigenous animals like the camel.

Long-term

Future plans for this research include presenting a modified version of the proposal as an open-air camel center to the Qatar Museums Authority for consideration to become one of the several museums that are planned for development in the near future. I also plan to submit further research and a proposal to the PNRP and QNRF in a bid to see the concept of agritourism based on the camel become a reality.

Suggestions have been made to publish a book to include all additional research undertaken but not included here. The aim of the book would be in preserving the camel lore that is currently not recorded. As camels diminish in numbers and specialist herders are no longer needed, specialist knowledge will disappear with them.

The production of a business plan for commercial enterprise based on the ideas contained in the thesis proposal would serve to test the viability of a private agritourist farm. To adhere to the philosophies of the thesis, such an enterprise should ideally be developed as a community run operation such as Al Sadu House in Kuwait.

Medium-term

I have written a proposal for instigating a course on sustainable use of fibers and textiles in Qatar. I aim to teach students the simplest processes involved in making with fibers. The intention is that all materials will be locally sourced and students will have the opportunity to prepare fibers directly from the animal. The course is based on the criteria used to develop the designs. I view this course as one way of beginning to nurture and sustain the small-scale local farms in Qatar where materials can be purchased directly. It is a small step towards making use of available local resources. It is intended that any part of the course can be adapted into a workshop format and will serve as a forum for the dissemination of the knowledge I have amassed whilst undertaking the research.

Short-term

In the short term, my research already continues in the investigation of using other camel products, albeit outside the boundary of renewable by-products. I am currently starting research into the use of camel bones and plan to discover whether there is the possibility of incorporating hooves, teeth, sinew and leather to produce designs made from locally sourced, but currently, wasted products of the camel.

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