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The Australian Rangeland Society

DEVELOPING A KNOWLEDGE BASE FOR SUSTAINABLE OUTBACK LIVING

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ABSTRACT

The future of outback Australia depends on the creation of new regional economic development opportunities. We argue that these are likely to be based on a new approach to valuing our current or prospective industries and related livelihoods, branding them under a single concept as desert Australian products, with an emphasis on the 'desert knowledge' embedded in their production. We follow the issues that would arise from the decision to take this approach through to the consequent R&D needs. There are key features of inland Australia which must be taken into account in this analysis; these reach beyond natural resources to all aspects of life in desert regions, but paint a picture of some extraordinarily positive opportunities for the future if we can take a collaborative approach to their development across desert Australia.

INTRODUCTION

This conference is mainly about managing natural resources. We argue, though, that there will be no management of the natural resources of inland Australia if managers don't want to live there; and they won't want to live there if there is no livelihood to be had or conditions are too harsh to be tolerated. However, we say this as a matter of exciting opportunity, not of despair! The recently developing ideas behind 'desert knowledge' specifically aim to address this issue.

The general concept of Desert Knowledge emerges from three observations – two negative, but the third very positive, albeit creating a further quandary:

- a) Outback Australia faces many pressures and problems, and potentially greater ones in the future. On the one hand there are declining levels of services in remote centres, with many smaller towns shrinking; on the other hand the work-aged Indigenous population is expected to grow by a third over the next 15 years (Taylor 2003), in the face of massive unemployment and related social disharmony.
- b) It is also a reality that there has been no quantum change to the economy of inland Australia in the 20, 50, or even 100 years. It is narrowly founded on mining, pastoralism and government services, with only the addition of tourism in recent decades. All of these are susceptible to external forces, whether terrorist attacks, resource prices or distant policy priorities. Thus the solution to the first point currently must be found from a narrow and fragile economic base.
- c) Yet if you watch people living out here, innovation and local knowledge abounds everywhere, from the builder who can put down a concrete block without it cracking on a 45°C day, to the Indigenous knowledge about bush plants and animals, to contractors who can transport a remote area power supply out across 500 km of corrugated roads without destroying it then install it so that it doesn't fail in the first dust storm, to the health clinic that knows how to support staff and patients in an inhospitable medical environment, to the pastoralist who can target a patch of woody weeds with a well-controlled management burn. Although we don't do it perfectly, there is this immense store of knowledge about how to live well in remote desert environments.

The quandary is that no single one of these examples is going to make the silver bullet, single focus export industry which solves the problems of livelihoods in inland Australia. But if we stand back

from the individual bits of knowledge and ask what they are all about, *living sustainably and harmoniously whilst creating wealth in desert regions*, then we have a collective commodity that can be developed, used, marketed and exported. This is essentially the vision of *Desert Knowledge*. Inland regions could benefit in three general ways:

- Immediately and locally, by improving the quality of life in desert Australia through the better use and exchange of these ideas. But this alone won't bring new money into the economy.
- Identifying a (probably small) subset of the knowledge which could be used in international markets (or at least markets outside desert Australia) as a real export.
- Establishing such a good reputation that people are attracted to come to desert Australia, both to live in the long term, and to visit for education or as tourists as a result of that exciting, knowledge-based reputation.

Over the past five years, several organisations have been established or refocused their activities to support this vision. The movement is led by Desert Knowledge Australia, established in Alice Springs but with membership now across the continent, which has a focus on promoting the idea and creating the networks needed to implement it. One spin-off effort from this has been the creation of the (independent but closely aligned) Desert Knowledge Cooperative Research Centre (DK-CRC), with a mandate to pursue research-oriented aspects of the vision. Essentially, this is in recognition of the fact that the Desert Knowledge idea needs to be backed by a new "*Science of Desert Living*".

DK-CRC argues that we need to work towards these four outcomes:

- Sustainable livelihoods for desert people based on new natural resource and service enterprise opportunities that are environmentally and socially appropriate.
- More viable remote desert communities to support the presence of desert people, as a result of facilitating access to more attractive services that are delivered more efficiently.
- Thriving regional desert economies that are based on unique desert knowledge and which are more self-sufficient.
- Increased social capital of desert people, their communities and service agencies.

But what are the areas of science needed to back all this up – what is the niche that this new science must fill and on which it must capitalise?

DRIVERS

We must first address the term '*desert*' – some people are uncomfortable with labelling all of inland Australia as desert. We need to be clear that it is being used as a marketing term for those regions sharing the characteristics of low and uncertain primary productivity, low and dispersed populations, poor infrastructure, and significant Indigenous interests. This more-or-less corresponds to the modern usage of the term 'rangelands' (i.e. where the usage is not seen as limited to grazing), but 'rangeland knowledge' (let alone 'arid and semi-arid knowledge') was judged a poorer brand name!

These underlying characteristics bear with closer examination:

- *Variability*: we are accustomed to talking of inland Australia as possessing one of the genuinely most variable climates in the world, a characteristic it shares to a various degree in different regions with other southern hemisphere semi-arid areas. Less uniquely, it is also subject to variability driven by distant markets, and by policy-making processes which are directed mainly towards people and conditions nearer to the coast and which are split between at least five state jurisdictions in this regard.

- *Settlement patterns*: remoteness and sparse population (and an indigenous desire to return to remote outstations) has created an unusual settlement pattern in desert Australia, which is still evolving. Population in the major service centres (like Kalgoorlie, Mount Isa, Broken Hill or Alice Springs) is about 100 times less than in the coastal cities (~1-3m to 20-30,000); there is generally another 100 times step from the service centres to the remoter communities (eg. 25,000 to ~100-500). This is quite different to the typical European experience, where settlement sizes are more continuous but in any case rarely step down by more than ten-fold. Other obvious differences are the typical physical distances between larger and smaller settlements, and the fact that a significant proportion of the smallest settlements were not located with regard to market access or conventional economic resources. This has huge implications for the relationships between these population centres, in terms of human capacity, internal competition, service costs, governance patterns, even social norms, which cannot rely on models that work in coastal Australia.
- *Aggregation and globalisation vs. regionalisation*: remote areas are on the receiving end of the tendencies towards social and economic agglomeration driven by critical mass and economies of scale. Given that globalisation forces are clearly speeding up this effect, investment decisions need to be made in full awareness of the degree to which they may be mitigating (or exaggerating) the rate at which this pressure to agglomerate proceeds, with its attendant implications for “fugitive capital” of all kinds. However, these economic forces are interacting also with current ideological and political forces towards de-centralisation and local empowerment, with the potential for some serious conundrums in terms of conflicts between economic and social efficiency if the implications of each are not understood (Stafford Smith *et al.* 2003).
- *Partnerships between Indigenous and non-indigenous people*: desert regions have the most intact surviving Australian Indigenous culture, and least alienated land rights. Plenty has been written about the often dire circumstances of these peoples. The essential point here is that the future of remoter Indigenous communities depends on the thriving persistence of the mainly non-indigenous service centres; but also that the future of the service centres is dependent on economic investment from Indigenous interests, as well as the development of industries based on Indigenous culture, among other opportunities. Thus the future of desert Australia depends on real partnerships among all desert peoples.

These features create a syndrome of characteristics for desert Australia which require special consideration, but which are not so different to the other 35% of the world’s land surface that is desert that the solutions found here might not be valuable elsewhere (nor, indeed, that we would not learn by linking with them). The drivers also lead to some issues we must recognise and manage. After all, the population of ‘desert Australia’ exceeds half a million people (Taylor 2003), bigger than the Australian Capital Territory or Tasmania, yet whilst the latter both possess universities, seats of government and headquarters of major companies, the 70% of the continent that is desert Australia possesses none of any of these. This did not happen by chance – we need to understand why.

PROBLEMS, OPORTUNITIES AND RESEARCH NEEDS

Some key influences emerge to provide a coherent picture of the issues that a *Science of Desert Living* must tackle, moving from internal issues to those relating to interfacing with the rest of the world.

Data bases for a coherent view on the region that is ‘desert Australia’

At present there are few statistics for which a coherent picture can be drawn of what is happening in desert Australia as a single region with common issues. Vegetation types (at management resolution) are defined in different ways on either side of state borders. Feral animals numbers are estimated with methods which mean that there appear to be major step-changes in populations at unfenced political boundaries. There is very little integrated information on economic flows in and out of remote regions, and none then collated at a desert-wide level. Very recently there is the beginnings of a

desert-wide analysis of the education and training needs of inland Australia, through the work of Rangelands Australia for resource managers (Taylor 2002) and the Desert Peoples Centre for the special needs of Indigenous communities across the region. The Australian Collaborative Rangelands Information System (ACRIS) of the National Land and Water Resources Audit is also starting to address this issue for natural resources. Ironically, some of the more coherent services data is not in the long-established resource industries, but for Indigenous communities, where ATSIC has sought data over recent years, for example in their Community Housing and Infrastructure Needs Survey database, which identifies the ~860 remote Aboriginal communities – it is not possible to obtain similar statistics on non-Indigenous settlements. Although data collation may not be an exciting task, there is an urgent need for information which clarifies the common nature of issues across desert regions and thereby forms up “desert Australia” as a coherent entity.

Variability, unpredictability, feedback and community learning

The natural environment, but also the economic and political environment, of people managing all sorts of resources in the rangelands is variable and largely out of the control of the desert dweller. This results in great variability over time, the major effect of which is to make it hard to detect whether a particular approach to management (of land, organisations, businesses, or whatever) is good or bad – the externally-driven noise always tends to overwhelm the signal that one is trying to monitor unless the monitoring continues for a long time, or it is based on proper adaptive management experimentation. Experiential learning is therefore hard – herein a role for science. But there will never be a great deal of scientific resources for so large an area so we’ll always depend on local experience to ground the science – herein a vital role for local knowledge. In short, in deserts as nowhere else there is a critical need to develop new modes of engaging local (Indigenous and non-Indigenous) knowledge with the scientific method to create new approaches to efficient community learning (Lynam and Stafford Smith 2003). This engagement needs to be particularly around understanding the variability in all the aspects of our lives, whether biophysical, social, political or economic. Extending concepts of adaptive management, and developing ethical and effective ways of linking science with local knowledge, whether that of pastoralists, small businesses or Indigenous people, are vital areas for research.

Small communities, governance structures and statistics

One of the subtle forms of variability and unpredictability brought about by small populations is the sensitivity of outcomes to individual events (including individual people). Of course exceptional leadership drives outcomes in any size community, but at the level just below those extraordinary people, outcomes are greatly affected by whether there is a pool of supporting talent. In large communities there may be the same proportion of capable people at this level, but there will be 1000 individuals instead of 2; as a consequence the large community is statistically far more resilient to the loss of a few of those people. Perhaps more subtly, this issue extends beyond leadership – the smaller the governance unit the more susceptible it becomes to being disrupted by a single chance event of any type. For example, in a large community one death among 1000 hospital patients may create some bad press but (if there is no underlying structural problem) likely to be accepted as part of the chances that we must all take (0.1% risk). A remote clinic with only three beds may have the same long-term death rate, but one untoward death will appear as a 33% death rate at the time it occurs, which can create much greater disruption. Similarly a single incident of corruption, or wilful leadership, or personality clash, or just leader burnout, acquires a much greater significance in a small community than a large one. Of course, the contrary point is that a single person can make a much greater difference. All of this is expressed as a greater variability in these issues for desert communities than in large communities. The opportunity in this is that, even if innovation is as common in large communities as small ones (and we may argue that this is not the case), innovation is more likely to be able to surface in the small communities. Key research issues here are to enable communities to understand and find solutions to the issues raised by being a small community (solutions which may

themselves be marketable knowledge), as well as to facilitate the emergence of innovation in these environments.

Critical mass and demand-driven services

One of the great tensions in governance structures is the debate about regionalisation and self-determination in obtaining a balance between genuine local (downwards) accountability and efficiency of service delivery. There is plenty of international research showing that ensuring communities have local accountability results in much better outcomes – it may take an election cycle or two to sort out mistakes and build local confidence, but eventually the local feedback loop is (re-)built and services become sensitive to local demand. However, as noted above, in small communities, there is often a lack of critical mass of skills and other resources, so there is always a tendency to need to agglomerate services into larger units for efficient delivery. What is the appropriate trade-off between these issues in different circumstances, and what institutional structures can be devised which perhaps allow accountability to operate at a much lower level than service delivery?

There are many other governance-related issues. In particular, the practice of regionalisation generally devolves responsibilities faster than it devolves rights and resources, setting small communities up to fail because they don't really control what they need to, or lack the financial and human resources to do what is being asked of them. On the other hand, desert Australia has been particularly embedded in a welfare mentality (however subtly) for much of its European history – whether in terms of drought support for producers or paternalistic policy towards Indigenous peoples. As a consequence, local communities can be too ready to take the rights and resources but not respond adequately to the responsibilities. Understanding how to change this culture is an essential component of re-thinking governance, local knowledge rights, and service delivery in these regions.

Agglomeration, social norms and linking to the rest of the world

The gravitational pull of larger urban centres for people, capital, political power, and even social norms (as marketed back out through media such as TV) is universal. In the past, remote areas have resisted it because communications were poor, and costs of transport were such that goods and services had to be provided locally. This is often no longer true except for specific activities (wherein the competitive advantages of the rangelands must be sought – see next section), and it is important that we understand this conflict between the economic pressures to agglomerate and the ideology of regionalisation, in order to steer regions away from some sterile lobbying (where economic realities will eventually crush action) and enable them to focus on capturing opportunities (where real competitive advantages exist).

Agglomeration has implications that extend far beyond simple economics. For example, there seem to be good theoretical reasons to expect that, left to their own devices, small communities will evolve different social norms for consultation and interaction than larger ones (*pers. comm.* Yiheyis Maru and Ryan McAlister, CSIRO). Small communities (like family units) often develop extensive interactions which sustain social relationships – a process illustrated most particularly in Aboriginal culture. As communities become bigger, extending this intensity of interaction to involve more and more people becomes increasingly costly and unsustainable, and communities create new mechanisms for interaction, generally requiring less time and perhaps more codification of outcomes in policies. Recent research shows that these effects can be simulated, and that when small communities interact occasionally with big communities, the interactions are driven by the social norms of the larger communities, leaving the small community feeling 'cheated' in terms of process. How often does one hear the country complain about Canberra bureaucrats not spending the time to understand the local problems, even whilst the latter are delivering substantial subsidies to the former? The point is that this may not be malfeasance on the part of central bureaucrats, but an *inevitable* outcome of our

settlement patterns that we must learn to live with and manage, not simply rail against. The 100-fold difference in size between our service centres and hinterland communities only exacerbates this, and again creates a marketable knowledge opportunity.

Differentiating our product and a “post-productivist paradigm”

Given that we don't want to compete with the rest of the world on their own ground – globalisation will beat us at that – what should we be focusing on? Holmes (2002) has argued that outback Australia is moving from a 'productivist' (i.e. mining and grazing) driven past towards a 'post-productivist' future (i.e. based on its non-market values, particularly Aboriginal culture and welfare, and natural resource conservation), although he shows how different regions are doing this to different extents (Holmes 1997). Consider some examples. We can market “beef”, or we can market “beef grown on natural pastures, managed to preserve their natural heritage and a rich diversity of forage sources and flavours”. Likewise we can market “bush tomatoes”, or we can market “bush tomatoes harvested from their natural desert environments by traditional Aboriginal women who benefit from their sale”. We can even market “accessible gorge country”, or we can market “central Australia ochre gorges containing palms that have been isolated for tens of thousands of years from their nearest relatives a thousand kilometres away and are carefully managed for their survival”. In each case the first product will be competing in a market with many others, but the second – if established – cannot be taken away from desert Australia. Essentially we are seeking to imbue each product with a sense of embedded 'desert knowledge'; note that the actual product (as in the case of beef, above) may not be that much changed, but its marketing is focused on place – or culturally-based values; other products, like Aboriginal art and music, are quite different. There is research needed here not only to develop new products and services, but also to understand how to market them, and how to manage and monitor their environments and benefit sharing so that the marketing claims about sustainability and cultural harmony can be credibly substantiated.

Business networks and creating livelihoods

Finally, in this review of issues, it remains that businesses in desert Australia are small and dispersed, and often fiercely independent. Yet we know it is foolish to imagine that a one-person operator at Wiluna or Yuendumu can (a) afford the time to research and reach out to international markets, nor (b) assure the continuity of supply needed to sustain that marketing link. What are the models of business networks which enable people to remain as local competitors yet to collaborate in larger markets? There are examples of these in community art networks (DESART, <http://www.desart.com.au/>) and organic beef already in desert Australia (e.g. OBE Beef, <http://www.obebeef.com.au/>, see elsewhere in this conference), and again the issue arises as to whether the models are peculiar to the conditions of desert Australia. There is no doubt that the use of the internet and related technology is essential for facilitating the process (Yuendumu Art Centre sells directly into New York art dealers over the internet for example, <http://www.warlu.com/>), but what other public investments and new governance systems could help the success of these processes?

WHAT THIS MEANS FOR RANGELAND RESOURCES AND THEIR MANAGERS

Not all the issues raised above (and summarised in Table 1) are in the conventional ARS mould. However, we would argue that unless we all become a little more sophisticated in thinking about the wider concerns of regional economic development in inland Australia, then the natural resource management aspects that the ARS normally focuses on will be lost too. Clearly we emphasise the need to think about our natural resources slightly differently in terms of where the world around us is heading, and in terms of the market opportunities for the future. This has implications not only for the financial aspects of rangelands operations, but for the management and image that surrounds those operations. Conventional industries such as grazing and wild animal or plant harvesting enterprises

need to consider how they will be positioned compared to non-rangelands industries in the future. And new bush products or service industries can seek to position themselves from the start with respect to ensuring their long-term competitive advantage.

The Desert Knowledge CRC is really only a small part of considering these issues since it remains that the ideas and innovations are mainly in the heads of all the desert people in the thousand kilometres or so surrounding us in Alice Springs. DK-CRC is seeking to address these issues through four research themes, as well as a series of cross-cutting activities:

- a) Natural resource management for better livelihoods in desert environments
- b) Technical services for improved community viability in Desert Australia
- c) Governance, management and leadership leading to improved equity, opportunity and efficiency
- d) Integrated systems for desert livelihoods - scaling up to regional economies.

Table 1. A summary of some desert knowledge-related opportunities and research implications raised.

Issue	Problem/opportunity	Research
Data bases for a coherent view of 'desert Australia'	<ul style="list-style-type: none"> • No coherent picture of desert regions except as hinterlands of each state's coastline 	<ul style="list-style-type: none"> • Collection, collation and presentation across state boundaries
Variability, unpredictability, feedback and community learning	<ul style="list-style-type: none"> • Physical, social, institutional market and policy environment variable and distantly controlled, hence (seemingly) unpredictable • Peculiarly difficult to get experiential/ adaptive management feedback 	<ul style="list-style-type: none"> • Focus on understanding (if not predicting) all aspects of variability (rather than averages) • Develop new ways of linking science and local knowledge systems to speed up local learning
Small communities, governance structures and statistics	<ul style="list-style-type: none"> • Individual events/people have disproportionate impact (+ and -) 	<ul style="list-style-type: none"> • Understand the critical effects of small size and how to manage/benefit from them • Understanding the minimum community size for maintaining different functions
Critical mass and demand-driven services	<ul style="list-style-type: none"> • Obtaining local accountability yet building viable-sized services 	<ul style="list-style-type: none"> • Developing institutional structures attaining the best balance between demand accountability and scale of service delivery
Agglomeration, social norms and linking to the rest of the world	<ul style="list-style-type: none"> • Conflicts between agglomerative forces and regionalisation ideology • Lack of recognition and data about structural social and economic constraints 	<ul style="list-style-type: none"> • Better understanding of contribution of different activities to economic and social multipliers, and 'capital flight' • Analysis of social norms and conflicts between small and large communities
Differentiating our product and a "post-	<ul style="list-style-type: none"> • Not going to beat the world at their game 	<ul style="list-style-type: none"> • Create new livelihood opportunities based on "non-market" values, possibly in conjunction with

productivist paradigm”	<ul style="list-style-type: none"> • Genuine competitive advantage in desert culture and environment – space, natural state, indigenous and outback culture, etc 	<ul style="list-style-type: none"> • conventional production values • Understand how to value, sustain and market our competitive advantage
Business networks and creating livelihoods	<ul style="list-style-type: none"> • Low critical mass • May need new models for business networks and market supply chains to function in remote areas, and permit appropriate benefit sharing 	<ul style="list-style-type: none"> • Develop effective models for business networks, and supporting public investment • Identify and develop strategies to deliver desert-branded products to high-value, niche markets

In its first year of operations DK-CRC has sought to get a series of smallish, 1-2 year projects on the ground in these areas; these are now operating, and building a further set of data through case studies, pilots and community consultation on which to base the subsequent five years investment. During the remainder of 2004 we now aim to take on a great deal of consultation with the community and other stakeholders, in order to focus our on-going investment into fewer, larger efforts which have the potential to make the difference on key issues of importance to the future of desert Australia. This will mean dropping some research areas in favour of others. We welcome your input now or over the next few months as to what you perceive to be the critical areas for our research investment.

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