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Viability analysis for desert settlement and economy: Value in and of desert Australia

Noah Pleshet

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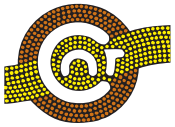

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The Desert Knowledge Cooperative Research Centre (DK-CRC) is an unincorporated joint venture with 27 partners whose mission is to develop and disseminate an understanding of sustainable living in remote desert environments, deliver enduring regional economies and livelihoods based on Desert Knowledge, and create the networks to market this knowledge in other desert lands.

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Abbreviations and acronyms

ABS	Australian Bureau of Statistics
CAT	Centre for Appropriate Technology
CLC	Central Land Council
DK-CRC	Desert Knowledge Cooperative Research Centre
CDEP	Community Development Employment Program

Viability analysis for desert settlement and economy: Value in and of desert Australia

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Abstract

This paper is framed as a conceptual contribution to the Desert Knowledge CRC analysis of settlement viability. Within this brief, it addresses systematic dimensions of discrete settlements, and the dynamic social and spatial systems that connect them at local and wider regional scales. It makes particular reference to central Australia, and observes that in this context, a systems model of remote settlement needs to examine processes at a scale above the individual settlement. With a particular view to understanding the circumstance of desert Indigenous settlements, two key lines of discussion follow. First, viability analysis is discussed as the study of minimum conditions under which a settlement economy is self-reproducing, or retains functionality given certain resource inflows. In government and non-government investment decisions, cost-benefit analysis links valuation procedures with settlement viability as assessed by investors. For this reason, decision-makers often demand uniform quantifications of value in desert settlements. This situation leads discussion to a second concern, namely the conceptual issues involved in measuring and recognising the value of desert activities, desert resource flows, or 'capital' stocks, social and financial. Together, these two themes suggest the case for a substantive approach to settlement economy. Such an approach would draw the focus away from allocation decisions that assume static conditions, towards a closer view of the dynamic processes and practices of settlement livelihood activity. Static models lend support to a misguided view that, largely irrespective of types and levels of settlement activity, viability is driven by the efficient governance of settlement resources.

Key Words: Settlement, community, viability, sustainability, economy, value.

1 Framing desert settlement

Across its existing and prospective activities, the Desert Knowledge Cooperative Research Centre (Desert Knowledge CRC) is concerned with the particular conditions of economy and settlement in desert Australia. For these purposes the 'desert' is defined broadly as the arid plus the semi-arid zone, an area of 5.5 million km^2 across which approximately 0.5 million people are unevenly distributed (Desert Knowledge CRC 2005:1). As Wand and Stafford Smith (2005:2) note, the 'system' of settlements spanning this space shows marked discontinuities, with unusually sharp decreases in population when moving from larger centres to smaller satellites. By any measure, this is an immense and diverse field for settlement research. For example, we find that within this area, activities involved with tourism and mining introduce a substantial traffic of short-term residents and visitors from coastal Australia. At the same time, major Indigenous populations of the arid zone retain near-zero net out-migration to coastal Australia, while being highly mobile within their desert domain (Taylor and Bell 2004:30; Hamilton 1987:49-50; Young and Doohan 1989). The co-development of such distinct patterns of movement and residence, mapped onto a landscape of very uneven market activity and resource values, constitutes a particular kind of economy in desert Australia. The task here is to ask: what could this mean for a viability analysis of desert settlement processes and, how might such an analysis shape viability conditions of desert settlement economies?

Answering these questions depends on exactly how 'settlement' is defined as an object of analysis, and how this is distinguished from the 'community' concept. Stage 1 of this paper commences with this task (section 1.1). As this paper is a conceptual contribution to the Desert Knowledge CRC desert settlement viability analysis, the bulk of its discussion seeks to define the terms of reference for such a project. Given the overall importance of settlement viability in the paper, I define 'viability analysis' now as follows: it is a way of understanding the range of *capacities* a settlement has to transform *resources* into *livelihoods*. This paper addresses systematic dimensions of discrete desert settlements, and the dynamic social and spatial systems which connect them at local and wider scales (section 1.2). Section 2 sets out by tying these comments in with a discussion of the differences between concepts of 'viability' and 'sustainability'. Section 3 will take a longer look at how issues of value, and valuation procedures, bear on the question of viability in desert Australia. Following this, section 4 assesses what these procedures can add to understanding of local and regional economy in central Australia, for Indigenous and other resident groups.

1.1 Desert settlements and desert communities

Within the broad Desert Knowledge CRC research agenda there is an explicit concern for the longer-term prospects of desert Indigenous settlements – for settlements of different scales and in varying public policy climates. Recent work aimed at understanding resource flows, and their impact on settlement structure and function at the local scale, has introduced particular demands for conceptual clarity (Fisher 2004; Fisher and Young 2004). Desert Knowledge CRC proposes to define the 'settlement' as a *spatial unit* of housing, infrastructure, and associated technical services, which is therefore distinguished from the 'community' as a *social unit* of common interest (Desert Knowledge CRC 2005:15ni.). This responds to the way in which, for Indigenous people, the term 'community' has often been used in a way that conflates

social and spatial processes. As the Desert Knowledge CRC defines the terms, the 'community' and the 'settlement' are never assumed to be empirically identical entities.

There are two principal difficulties with analyses that conflate concepts of 'settlement' and 'community.' The first relates to the use of sedentary residence patterns as a model for understanding desert settlement populations. Recent anthropological and demographic analyses agree that while all desert residents are more mobile than their coastal counterparts, Indigenous desert residents sustain even higher rates of mobility, for social or ritual reasons and to access services (see Peterson 2000; Taylor 2002). As one report put it, for remote Indigenous people the ' "community" in a geographic sense is a shifting one' (House of Representatives Standing Committee on Aboriginal Affairs 1990:2.8). This means that an Indigenous desert settlement population could be constituted by a set of communities that periodically converge on its locales. Indeed, this is what generates significant difficulties with fixed time-interval Indigenous population estimates at low levels of aggregation (see Warchivker, Tjapangati & Wakerman 2000). It is simple yet important to note that service regimes which require fixed time and place population estimates are derived from conditions of sedentary residence. In these terms, measurement difficulties which are identified as constraints on effective policy may indicate that the models of settlement process that underpin the policy are somewhat inconsistent with desert settlement demography.

There is a second key difficulty with 'settlement' and 'community' concepts that relates to political organisation in Indigenous settlements. It derives from the assumption that people living in the one place necessarily have a common and unifying purpose for doing so. Evidence suggests rather that larger co-resident Indigenous groups are more likely to be cross-cut by interests that run along 'family' lines, or according to the vagaries of resource politics (see Peters-Little 1999; Memmott and Moran 2001). The relationship between, on the one hand, the fictive 'residential community' of Indigenous self-determination policies (and Indigenous self-representations of the places they live), and on the other hand, the Indigenous 'communities of interest' constituted by native title holder groups, can generate other sources of uncertainty (Davies 2003:23–25). For example, the existence of different bases for cadastral authority within one residential settlement may intersect with issues of how the resources from economic activity are distributed, or how decisions about land use are actioned.

As Holcombe (2004) shows for Luritja people at Mount Liebig, sentiments about identity can be both drawn from and tied to common residence at specific localities. This marks one reality of the history of settlement in central Australia. The bases of these common ties to place include service regimes, contemporary ritual life, and common participation in regional sports events. Such activities may be ways of inscribing settlement localities with meanings common to a diverse set of Indigenous residents. This is no guarantee that such communal identities lead to integrated residential communities, or stable regional political units (Holcombe 2004:11–13).

In summary terms, what all this amounts to is a situation where: (i) relatively sedentary resident communities are atypical for any given desert settlement, and (ii) certain emergent forms of 'community' are not necessarily associated with or amenable to efficient civic governance or servicing. These conditions pertain even when a range of co-resident groups might move between specifiable sets of settlements, and sustain predictable patterns of circular movement. In these terms, what we learn from looking at desert settler society is that patterns of residence in the desert are affected by people moving there to find work, often moving from interstate. This means that sedentary desert residence can be mediated by cycles of population turnover at the national scale, often relating to work roles, and thereby also labour-market sensitive (Bell and Ward 1998:65–7; Taylor 2003:263; Access Economics 2003:4). What we learn from looking at the lifestyles of Indigenous desert dwellers is that communally integrated sedentary residence is only one type of settlement geography. Apart from being very spatially dynamic, Indigenous sociality in desert Australia has changed and grown in ways which take full advantage of the imported energy supplies, and transport technologies, available in engagement with settler society (Hamilton 1987:48; Peterson 2000; Young 2001). Together these conditions of economic expansion, and human adaptation to such, place particular demands on any account of a desert settlement economy and society.

1.2 Economy and the desert settlement system

Responding to these demands, Desert Knowledge CRC (2005) has indicated that a systems analysis of desert settlement(s) will form a central plank of their research contribution. Understanding desert settlement as a system requires a conceptual 'scaffolding' that allows us to move across the range of desert settlement types and scales. In desert Australia, these run from 'outstation' settlements as small as a couple of houses; to the Indigenous secular township and the former mission; to the largely non-Indigenous service hub. There is some agreement between researchers that the pattern of Indigenous settlement in the desert is distinct from that of non-Indigenous people. For example, in the desert regions of the NT and WA, non-Indigenous residents are more concentrated in larger urban economic centres, compared with the Indigenous population.

Holmes (1988:72-3) used the term 'remote settlements' to refer to the full range of settlements in desert Australia. He categorised them as follows: 'wayside centres' reliant on through traffic and with limited local demand (e.g. roadhouse settlements); specialist towns where service functions are government provided, at levels designed to meet perceived internal demand only; and 'multifunctional regional centres'. Holmes used the latter description for mining towns such as Kalgoorlie, and for administration, transport, and communications hubs such as Alice Springs. Until quite recently, Indigenous desert settlement trends have involved a move away from larger desert centres. On this issue Taylor and Bell (2004:17) note that, although the political-economic factors sustained a pull towards what were once government or mission townships, since the 1960s a countertrend emerged towards more fragmented 'outstation' settlements with family groups on traditional lands. Taylor (2002)

points out that with a few exceptions, both larger and smaller Indigenous settlements typically have no economic base outside the provisions of the welfare state, and have historically failed to attract private sector consumer services. The latter was the case 'not solely because of their remote location and perceived inadequate market potential, but also because of their institutional status as essentially state-sponsored settlements' (Taylor 2002:9). This being the case, it raises questions about the adequacy of understanding this system in ways which address state 'provisioning' in the same terms as productive activity. To do so would seem to suggest that the processes of economy are coextensive with those of governance, and more particularly with the resource allocations of the welfare state.

Marked locational differences in the *sources* and *levels* of desert settlement activity motivate people to move to access goods and service. This fact suggests that it may be appropriate to look at a settlement model that commences by taking in more than the situation of an individual settlement. The question of appropriate scale ultimately comes down to the sociological accuracy with which a settlement model can address its empirical object. Following a range of ethnographic analyses (e.g. Collmann 1979; Samson 1982), Taylor and Bell have characterised Indigenous settlement *dynamically* by focusing on 'circuits of population movement between places which combine to form functional regions' (2004:17). This shifts the emphasis away from discrete settlements and towards inter-settlement relationships, driven by patterns and propensities of human movement. Evidence suggests that there is also an increasing population of short-term or periodic Indigenous residents in larger desert centres such as Katherine and Alice Springs (see Taylor 1998). Memmott and Moran (2001) argue that 'dispersed settlement in urban townships' should be a research priority.

Other than scale and function, there are a range of factors to consider in conceiving a 'system' of desert settlements. In simple terms one would need to define (i) the style of system model to be used; (ii) the levels of settlement process to be addressed; and (iii) the time-horizon within which they are to be addressed. I make the following remarks to situate the account of settlement economy sketched in this paper. The style of systems model suggested for desert settlement economies draws principally on institutional and political-economic analysis. I note here Karl Polanyi's (1968) suggestion that economic activity is always 'embedded' in social life, and that its understanding could not therefore be reached via models of rational economic behaviour or relative scarcity. Polanyi usefully adds that the object of economic analysis is 'the configuration of goods and person movements, which actually make up the economy' (1968:119). Economy is then very much a question of *resource flows*, as the Desert Knowledge CRC research program suggests. By reading the concept of settlement economy widely enough to encompass such concerns, I suggest that it is not simply a matter of formal allocation problems but of the socially 'instituted process' of making a living in the desert (see Polanyi 1968:146).[1] Although this

1 This wording is borrowed from Polanyi's (1968) discussion of a 'substantive' approach to economic analysis which distinguished itself from 'formal' preference modelling and supply-demand theory (i.e. a static allocation problem under conditions of relative scarcity). Polanyi was the first to formulate this distinction by emphasising that the problem of choice in the face of scarcity should not be confused with that of economy, even if it is an adequate description for capitalist societies. His substantive conception of economy as *instituted process* refers to a 'tissue of relationships between man as biological entity and the unique structure of symbols and techniques that results in maintaining his existence' (1968:116).

approach is directed at capturing what beyond the problem of scarcity is meaningful in economic life, it does not exclude variables such as employment rates, sectoral income proportions, or relevant demographic data, all familiar from mainstream economic policy analysis.

2 Viability and sustainability for desert settlement

At the discrete settlement level, the Desert Knowledge CRC viability concept is intuitively based on the principle of a balanced input-output position for each settlement unit (Desert Knowledge CRC 2004:20; Fisher 2004; Fisher and Young 2004). Work of Desert Knowledge CRC partner organisation the Centre for Appropriate Technology (CAT) proposes to develop a normative seven factor viability model which allows settlement residents to diagnose and solve problems impinging on their capacity to remain remote (Fisher 2004; Fisher and Young 2004; Young 2004). Viability in the CAT 'resource flows' model is not a *binary* but a *scalar* variable, with a bundle of seven inter-dependent determinates: governance arrangements, expressed aspirations, infrastructure reliability, livelihood activity, asset stocks and resource flows, and functional resilience (Fisher 2004:6–7). These seven factors form a nexus of causes that gives viability an application in an action research framework for settlements. This model aims to provide a 'toolkit' to address issues as they arise.

Beyond local scale 'resource flows' research, there is a broader problem guiding all such work. The suggestion is that analysts and policy makers presently have no adequate way to index the economic value of the activities of desert settlement populations. While the resource flows of smaller settlements remain related to judgments of utility value (willingness to pay) at wider scales, there is potential that desert production could be 'undervalued,' and activities of some settlements under-resourced. For example, coastal perceptions of desert products, from beef to bush tomatoes, may affect the decisions of consumers making a purchase, or supporting policies that promote research and investment in desert livelihoods. As such it has been argued that desert products and services often have potential values either not internalised in their market price, or lacking a market altogether (Wand and Stafford Smith 2005). These arguments echo important developments in ecological economics including contingent valuation literature (see Hanemann 1994; Nelson 1995:140), and associated approaches to cost-benefit analysis (see Portney 1994; Throsby 2001:82-3; Sen 2000). In the first instance, Desert Knowledge CRC emphasises the need for broadening the desert settlement 'cost-benefit' analysis beyond current and readily recognisable productive outputs. Following this is a need to address those products and activities which remain underdeveloped due to consumer information gaps, and to assess how closing such gaps could affect the consumer's willingness to pay for desert products (see also Altman 2001:6).

Indigenous natural resource management activities are now the most commonly cited in this valuation debate, as was recently emphasised by the National Indigenous Land and Sea Management Conference convened by the Central Land Council (CLC) (2005). This debate now involves assessment of the benefits forgone (opportunity costs) if Indigenous people lose their capacity to remain remote. For instance, what would be the social and economic implications if a large proportion of remote settlement residents, now dependent on Alice Springs for services, adopted the town as a place of residence? This population currently exceeds half that of Alice Springs (Taylor and Bell 2004:24). There is an additional emphasis placed here on extending cost-

benefit concerns beyond their conventional gaze on Indigenous settlements, to encompass the range of settlement scales, sectors, and activities of desert Australia (Desert Knowledge CRC 2005:5). Within this broadened gaze, the activities of government, community, and research sectors, cannot be logically excluded from the same cost-benefit analysis.

2.1 Sustainability and viability concepts

We come then to examine viability as a conceptual scheme for understanding desert settlements, and how this relates to the issue of sustainability.[2] The relationship between the two concepts is as follows: while *viability* foregrounds the more situated integrity of a system or process (an intensive analytic), *sustainability* foregrounds the ramifying effects of a system or process, working outwards in space and time (an extensive analytic). While this is a difficult and abstract distinction, I argue its importance and will attempt to expand a little to account for this suggestion. The notion of 'sustainability' is commonly linked with the concept of 'development'. This highlights, on the one hand, the conditions of self-reproducing 'economic' activity, and on the other hand, the ecological and human limits of its expansion (see Escobar 1995; Peet and Watts 1996). The following is the somewhat normative Bruntland Commission definition of sustainable development:

> *A process of change in which the exploitation of resources, direction of investments, orientation of technological development, and institutional change* are made consistent with *future as well as present needs (Banerjee 2003:151, my emphasis).*

This definition downplays the manifest tension between ecological and economic reproduction. An emphasis on the possibilities of technological substitution, whether promoted by policy or prices, is considered by some to invoke a 'weak sustainability' hypothesis. This is counterpoised with a 'strong sustainability' hypothesis, which underlines the need for integrity of natural capital and ecological systems (Rudd 2004:6).

If we place 'viable' alongside 'development' we generate a dissonance that indicates that viability typically has a rather different connotation. If the sustainability concept does foreground ideas about steady-state growth, then it also assumes a dynamic and 'extensive' frame of reference. That is, it renders the 'intrinsic' qualities of a particular example (e.g. the scale of a settlement or a production process), principally by way of relationship to other instances, situated outward in space and time. The 'sustainability' of a system or process is relative to those taking place beyond the fence-line and into the future. *This is why we might attribute the concept of sustainability a space-time 'extensive' dynamic*. Viability, on the other hand, is the capacity or capability of a system to maintain its existence, usually subject to defined internal or external constraints. For example, capital accumulation or productivity increases at the firm level could reflect viability, yet the manner in which these

2 Elsewhere I have developed an analysis of viability as the problematic of the reproduction of value, or value in duration (Pleshet 2003). This earlier analysis was not framed in terms of the concept of sustainability.

same processes might externalise certain costs (e.g. via noise or air pollution) would have sustainability implications. In these terms, viability analysis foregrounds the intrinsic qualities of a system or process, both in their *integrity*, and in their capacity to *integrate with* external structures and agencies. It is not then proximally concerned with the ramifying and spatially expansive implications of a situated activity. Hence it is suggested that *unlike sustainability, the conceptual frame of viability is space-time 'intensive'*.

I would account for the relevance of this abstract distinction in the following terms. Across the range of settlement types, the argument is that sustainability and viability refer to problems of systematic integration. However, while viability fixes the analysis inwards on situated conditions of livelihood activity and economy, questions of sustainability move progressively outwards to examine global interactions and effects. Viability for a given settlement might be construed as a local manifestation of its situation within a connected, and therefore sustainable, region. In general, I have proposed that the viability of desert settlements is defined by the range of *capacities* a settlement has to transform *resources* into *livelihoods*, now and in the future. Within this analysis, it would be useful to consider both technical and socio-cultural processes, to define a range of dimensions of viability. The following are suggested:

- ***Environmental*** – capacities that flow from *substantial values* presented by the resources of a particular environment. These are not limited to subjective computations of 'use' or 'existence' values (as concern orthodox value theory).

- ***Economic*** – the capacity to produce (or procure), distribute, and consume resources such that one's means of living is both meaningful and reproductive.

- ***Spatial/territorial*** – the relative capacity to exercise use rights, including the rights of passage and mobility, over a defined territory of resource locales. This might involve political or practical constraints on movement.

- ***Social*** – the capacity to hold and activate social relationships which permit the maintenance or expansion of a productive system. This might also relate to the relative stocks of 'social capital' or the nature of this capital, or whether it is a recognised 'currency' between zones within a wider social space (see subsection 3.2 below).

- ***Cultural*** – the capacity for groups to lead a life according to more and less different symbolic systems, and the practical priorities which accompany them. This involves the capacity to realise meanings through different kinds of productive activity, even if they are not socially recognised as such.

In some respects coextensive, these dimensions provide an indication of the range of factors which constitute viability conditions at local, regional, and national scales. For Scoones (1998), the achievement of sustainability is about how people combine livelihood *resources* (different 'capitals') with livelihood *strategies*. An approach

which jointly assesses human and natural 'resources,' and the social and cultural strategies which make them *useful*, is one aspect of the viability analysis being suggested here. It thereby also bears some relationship to the social theory of capital(s) (see Bourdieu 1990; Coleman 1988; Ostrom 2000), and the 'sustainable livelihoods' framework which guides a range of Desert Knowledge CRC activities. For example, Bebbington argues that a focus on social capital in understanding livelihoods dissolves the distinction between 'access' and 'resources,' principally because '*access* becomes perhaps the most critical resource of all if people are to build sustainable, poverty- alleviating rural livelihoods' (1999:5). Drawing on such discussions, we could observe that in desert Australia or other places where marginal economy and ecology converge, the practical use of more or less durable assets, and the time horizon of use strategy, might be as much determinate of systemic viability as perfect substitutability between resource or capital types, or even absolute ecological integrity. This is illustrated by the array of uses of transport and communication technologies that contribute to sustaining a regional system around Alice Springs.

3 Value(s) in the desert

A socio-culturally attuned viability analysis can perhaps begin to contribute two things: Firstly, it may advance understanding of how generic technical drivers are mediated by aggregate behaviour identifiable as Indigenous or non-Indigenous specific; secondly, it may demonstrate the limited imagination behind the economic frameworks which typify the remote settlements anti-case.

Lately there have been some persistent suggestions that, given the striking statistical inequality found in and around Indigenous settlements, there are now few and diminishing prospects for remaining remote (see Karvelas 2005). According to this view, aside from some small earnings from the arts sector, discrete settlements are 'uneconomic' (Johns 2004). The observation is juxtaposed with dramatic portraits of intractable violence and distress. It is now proposed that the social problems of remote settlements are grounded in collective (non-capitalist) property relations; moribund social competition; and non-reciprocal resourcing relationships; leading to boredom, antisocial conduct, physical violence, ill-health, and so on (Hughes and Warin 2005). Hughes and Warin (2005) propose that the solutions are found in restoring robust competition through the privatisation of government services, more stringent provisions for welfare benefits or wage subsidies, and private ownership of land – just as they would be for anyone living in remote Australia. Moreover, they argue, state 'intervention' on the scale undertaken in Indigenous settlements would be socially regressive whoever was living there.

The policies which flow from such a position are a *de facto* proposition for large scale Indigenous migration, on a rotating or permanent basis, to regional and coastal centres.[3] The diagnosis which grounds these suggestions presents a virtual negation of the Desert Knowledge CRC view that substantial unrecognised resources lie in the desert, and especially that they are to be found in the

3 The assumption may be that these are places of greater opportunity for Indigenous Australians. Boosting access to employment activity would no doubt be a desirable circumstance, correlated with improved social wellbeing. Although it is the case that in the Northern Territory, the rate of mainstream (non-CDEP) employment in non-remote, compared with remote areas, is higher by a margin which is statistically significant (ABS 2002), the conclusion that people would do well to shift is forestalled by the fact that Indigenous capacity to engage with mainstream employment, along with Indigenous employment to population ratios, continue to fall across the board (Hunter, Kinfu and Taylor 2003). A call for migration misses the mark because it fails to ask why welfare and CDEP have not promoted increased levels of activity and quality of life throughout desert Australia, and not simply in smaller and remoter desert settlements.

knowledge and practices of its Indigenous population. By making the Coombsian self-determination ethos its man of straw (see Howson 2004), the current conservative position also consigns debate about the value of 'on country' activities to what it regards as a discredited rights-based frame. The result is that the very terms in which this position sets up the question – what support do customary activities *deserve*? – means that support of remote Indigenous settlements can be rejected with discursive ease. The problem here is not necessarily the focus on efficiency over equity, but restricted criteria for efficiency, and the basic assumption that only equity is at issue in assessing the value of Indigenous production.

3.1 Measuring and recognising value in the desert

Altman (2001; 2004) has invested considerable effort in substantiating rights-based arguments with economic analysis, such as valuing the labour and productive outputs of hunting and gathering activities. He has also looked at what Indigenous production is worth in terms of utility and wellbeing that accrues to non-Indigenous social groups. One significant function of these computations is as Altman articulates it:

> *Designing payment mechanisms for this currently unrecognised social benefit that will facilitate its continuation and possible expansion if, and when, equitably resourced by the state (2004:517).*

This suggestion is one implication of Altman's (2004:520–22) argument that a two-sector model of Australian regional and remote economies is misconceived. Such a model both neglects to acknowledge the economic value of the 'customary sector', and arbitrarily attaches a negative moral value to essential public investment within its domain. Resource economist Ron Duncan (2003) has also called for his profession to play a greater role in valuing natural resource management, along with other activities and resources on Indigenous land. This would be of use, he argues, in the negotiation of Indigenous land use agreements, and in the reduction of transaction costs associated with private sector resource development on Indigenous land. Such views have resonance with aspects of Holmes' (2002) proposal that a 'post-productivist transition' is underway in the economy of Australia's rangelands, an area approximately corresponding to the Desert Knowledge CRC 'desert Australia' (Wand and Stafford Smith 2005:2). Unlike the commodity quantities derived from traditional pastoral or extractive industries, 'post-productivist values' are often intangible and non-market, 'most clearly so with the national recognition of [I]ndigenous land rights, as well as the existence values associated with conservation of unique biota and valued landscapes' (Holmes 2002:366). Evidence of changing industry income proportions suggests the actual development of a broader range of desert resources, which has in turn enlivened discussions about the measurement of their value.

At the same time, this has led to calls for relatively enduring productivist values to be reformulated, and the sustainability of their bases at the enterprise and regional scale assessed and managed (see Stafford Smith *et al*. 2000). Fargher *et al*. (2003) have established that although the Australian rangeland pastoral industry generated gross revenues of approximately $1 billion per annum in 1996/97 (admittedly a dry year),

in the same year the industry cost the national economy $215 million. Moreover, on aggregate, pastoralists 'have not been able to generate sufficient productivity growth over the long-term to stay ahead of their declining terms of trade' (Farhger *et al*. 2003:148). Alongside this, policies targeted at encouraging post-productivist activities, such as biodiversity conservation among pastoralists in North West NSW, have not resulted in an easy matching of public good and private land uses (Sinden 2004). Difficulties here relate to the measurement of private losses and public gains from different resource conservation strategies, but also the distribution of losses and gains across population sectors and geographic regions (Sinden 2004:221). At the very least, problems of low productivity, and of addressing these by promoting alternative (perhaps 'post-productivist') activities, are not uniquely faced by Indigenous people. This should never imply that support for any Indigenous economic strategy be grounded in arguments of its relative merit *vis a vis* Australia's least productive industries. But if the issue is one of the *distribution* of marginal value (benefit or cost) flowing from different strategies for achieving a desert post-productivist transition, then an appreciation of the relative worth of such strategies might inform changes in the resourcing of activity across desert Australia. This would apply to both Indigenous and non-Indigenous activity, and resources of the public and private sector.

What then might it mean to say that the sustainability of desert economies, and the viability of their settlements, now depends on the *recognition* of diverse values? The answer is unlikely to be simply about 'taking note' of other values, but rather it is about their *realisation as market(able) values*, which implies measurement. It needs to be recalled that the very categories of 'existence value' (including that of 'preservation' and 'bequest' value) were derived within the contingent valuation literature, to facilitate their measurement for the purposes of cost-benefit analysis (Nelson 1995; Sen 2000).[4] As Edwards puts it, this literature assumes that 'a person is willing and able to compute the value of the wellbeing of others – particularly wildlife (preservation value) and unborn humans (bequest value) – strictly in terms of his/her personal utility' (Edwards 1992:120). When we refer to recognising 'value' in this sense, we do not refer to attribution of equal analytical standing to different 'regimes of value' (Appadurai 1986:14–15), but rather the more or less adequate ways in which we can render their effects in terms of consumer preference and relative price. Accepting this, there is also the argument that by trying to draw so much of a symbolic nature into the frame of economic value, we risk losing what is cogent about an economic analysis. In this sense Nelson (1995:140) argues that existence values are only arbitrarily restricted to goods such as wilderness and wildlife, and that they could potentially apply to categories of job or major infrastructure projects, which will also have clearer market values. For example, it is entirely plausible that the activities of rangeland industries from the old 'productivist era', perhaps such as Indigenous cattle work for pastoralists, might be attributed an existence value. The implication is that, for measurement purposes, the value equation might become over-determined, and

4 As already noted, concepts such as existence value have been put to work on externalities and market failures within orthodox economic literature, and within derivative literatures on non-market values in ecological economics. We need to be clear that these literatures largely accept the technical and agency assumptions of orthodox analysis, and argue that information gaps prevent the market mechanism from achieving an optimal allocation of resources.

that careful consideration has to be made before symbolic criteria are admitted. This raises the question of procedures guiding decisions about what is valued, and what categories of value are allowed, within a policy-oriented cost-benefit framework.

The points being made here are not merely arcane and theoretical if it is suggested that contingent valuation or other procedures may provide useful cost-benefit data. It might therefore be necessary in the first instance to be very specific about what is being valued and *for whom*, and who receives the marginal benefits of any change. The argument is not that cost-benefit analysis is irrelevant, but for the recognition of its limits and the adoption of a relatively minimalist model, if only to preserve its analytical clarity. The other option might be to diverge where necessary from the assumptions of orthodox value analysis, along with its insistence on subjective measurement and quantification.

An alternative assumption could be that value is a function of both objective and subjective causes, the *meaning* and the *materiality* of practices and products (Garegnani 1987:563; Screpanti and Zamagni 1993:63). It is argued that the case for such a sociological model of value is particularly evident in desert Australia. Remotely localised people demonstrate a surprising capacity to effectively deploy exogenously derived resources according to their own social and cultural criteria and interests (their own 'regimes of value') (see Rowse 1998; Folds 2001), but perhaps in few other places are the objective limits of this capacity more at issue. Under marginal economic conditions, a sociological approach to value focuses attention on procedures for *revaluing* Indigenous activities on country, in the sense of affording them new recognition. This means promoting Indigenous activities on country that actually *change their value* (as in meaning or significance) to the people participating in them, such that the wellbeing of these people might be enhanced. This would certainly involve qualitative assessment of what Indigenous people are doing to address their situation, and which activities they regard as possible and meaningful within certain time horizons. Such an analytic is out of keeping with orthodox micro-economic assumptions, but offers instead a way of assessing how macroeconomic or demographic trends (for regional or wider scale data sets) are inflected according to the different *regimes of value* which they express. Whatever the approach adopted, the challenge for Desert Knowledge CRC is to assess how it is possible to value Indigenous practices on county, as is partly reflected in their measurable outcomes, without at the same time either pathologising or erasing the cultural difference of Indigenous values.

3.2 Are capitals viability conditions?

An enlarged notion of 'capital' may also be significant in an analysis of desert values and viability which seeks to incorporate the human dimension of resources. It is useful to refer back to a simple definition of capital as a produced means of production. Bourdieu's argument is that although economic capital is a specific capital among other capitals, all capitals need to be *recognised* in order to have effect. This is because capital is 'a social relation, that is, an energy which exists and only produces

its effects in the field in which it is produced and reproduced' (Bourdieu 1984:113). It may be that the quality of certain social relationships that require social investment may in turn be viewed as a productive asset. Hunter (2004) reviews the 'social capital' concept in relation to Indigenous Australians. He indicates the diversity of meanings which accrue to the term, and the possibility that capital may be a bad metaphor for durable social relationships. Hunter (2004:3) also quotes Woolcock and Narayan (2000) as making a distinction between 'getting by' with *bonding* capital (intra-network); 'making connections' through *bridging* capital (inter-network); and 'getting ahead' with *linking* capital (vertical networking). Each of these are explanations of social life which treat social capital as intrinsically benign, and none suggest easy resolutions in relation to measurement (Durlauf 2002).

Social capital theory may present an analysis of social resources via their relationship to social reproduction and viability, an analysis that has merit beyond its capacity to isolate quantifiable variables. For example, it has been observed that aggregate demographic data confirms ethnographic observations about stable patterns of Indigenous circular mobility, associated with family connections in remote Australia (Taylor and Bell 2004:21). The implications of these, distinct from non-Indigenous patterns of movement, can be interpreted in terms of 'social capital' without specifically quantifying the values involved. Within its sustainable development agenda, the World Bank now refers to the strengthening of social capital, and generating income from cultural knowledge, as poverty reduction strategies (cited in Throsby 2001:71; see also Bebbington 1999). If we aim to develop an analysis of how people in desert Australia get access to the technologies and material resources they require to reproduce their social life, and the ultimate value of activity which promotes wellbeing, then we might approach this as a process of 'accounting for' social capital.

There are two factors that are of special relevance to the more and less tangible capital(s) of Indigenous desert settlements. The first is a marginal and uneven natural environment, a stock of natural capital with low, intermittent, and often degraded productivity. From this I infer that, if we follow convention and assume substitution between capitals (Throsby 2001:52) in the constitution of a sustainable region, in the desert case the significance of social capital is relatively increased in the viability equation. The second factor is that if social and natural capital are in some sense complimentary (Ostrom 2000), the type of social capital associated with desert ecology (past or present) would be highly specific. It is evident that the quality of productive relationships and land tenure systems across Indigenous Australia varied according to ecological factors over time, water availability being among the most significant. Desert populations relied on social connections widely-held across space in order to ride out leaner times on their own country. Contemporary desert settlements, and their networked outstations, are a transformation of these earlier conditions. They are *the limiting case* of desert economy not only in their substantive marginality, but also in the ratio of social to natural capital they require, and in the type of social capital they produce. If the desert's natural resources can only support a certain number of people in any given area, it is not necessarily the case that social capital can make up the difference. Desert Knowledge CRC research could not

proceed with a uniform assumption that all social capital accumulation is welfare enhancing.

We must add to this the historical dimension of settlement process. Around Alice Springs the pattern of larger settlements is the legacy among other things of missionary activity, administrative exclusion, and the creation of Aboriginal army labour camps (see Morris 1965). The demobilisation of Aboriginal servicemen and post-war mineral price falls, both of which created the first substantial experience of 'Aboriginal unemployment' in Central Australia, directly lead to the formation of larger Indigenous settlements (Read and Read 1991:73, 133–4). The availability of local resources was not always the primary consideration when establishing larger government settlements and later their hinterland outstations. In the establishment and decentralisation of these settlements, both demography and consumption regimes have changed dramatically, meaning that the brand of social capital compensating for a relative absence of natural capital has become *very physical or economic capital intensive*.

The substitution of local social capital for natural and human capital occurs, but with significant involution and opportunity costs. As Hunter (2004) argues, connections with relatives far and wide are a valuable resource, but one limited to the horizons of a comparatively low-income social universe. Recent research on Indigenous job search behaviour by Gray and Hunter (2005) has found that in this particular situation, common methods of looking for jobs are not statistically associated with attaining or retaining a job. Indigenous social connections might not, for example, be readily transformed into job opportunities or the potential for other human capital accumulation through attaining work skills and experience. These factors need to be kept clearly in mind when talking about social capital and desert settlements.

4 Viability conditions in central Australia

When talking of regional value systems and viability, it is significant that of the 1,000 or so remote Indigenous settlements situated throughout desert Australia, approximately a quarter are serviced by Alice Springs. These settlements are found within and beyond the region of central Australia, defined by a recent social and economic baseline profile as the 'Alice Springs' and 'Apatula' regions of Australian Bureau of Statistics (ABS) census Indigenous geography (Mitchell *et al.* 2005). Although people bound for Alice Springs come and go, the inward flow has to be seen as high magnitude, creating an intensive urban space in an otherwise thinly populated landscape. As reflected in average occupancy rates of around nine persons per dwelling (Mitchell *et al.* 2005:71), the implications of this are felt by town camp and other Indigenous residents of Alice Springs, as well as the wider town population. This can produce social conditions of what, in Aboriginal discourse, is sometimes called 'noise' or 'no room' (Munn 1996:93; Samson 1988:162). In addition, looking at the group of remote settlements which draw on Alice Springs, they are more spatially dispersed and their population is smaller than the remote Australia average. This geography is clearly a causal factor in injury and deaths rates from land transport accidents in central Australia, which are the highest for any accident category, the Indigenous rate being approximately four times the non-Indigenous (Mitchell *et. al.* 2005:111).

The Alice Springs hinterland also exhibits a desert version of characteristics which pervade the NT economy. These include distance from markets and a small, relatively narrow, and variable productive base (Access Economics 2003; O'Faircheallaigh 1990). We should add to this that mainstream activity is highly dependent on the government sector, which provides 30% of personal employment income, 7% of this to Indigenous workers (see Mitchell *et. al.* 2005:47). This and other industries also generate a flow of visiting professional and manual workers from metropolitan Australia and a wider world, whose residence is relatively short-term and whose propensity to save is above average. These characteristics give some indication that central Australia presents a prototypical regional nexus for examining the conditions of desert economy, particularly if these are understood in relationship with patterns of remote settlement.

If we seek to understand the different regional economic geographies of desert Australia, we can examine the relatively remote settlement economy as the limiting case of these. There is potential that a valuation project relating to Indigenous activities, in comparison with the non-Indigenous remote sector, has something to offer the Indigenous economic policy debate. Increased information may induce more government funding, or even lead to a positive adjustment in private sector investment in remoter desert settlements. Other aspects of the provisional engagements with mainstream activity involved what could be referred to as 'locational trade-offs':

> *From an Indigenous cultural perspective ... ongoing dispersion of population can be seen as representing the spatial optimum in a locational trade-off which ... involves reduced access to urban-based mainstream labour markets, opportunities for education, training and income generation as well as access to better housing and other social facilities. To the extent that these are perceived as losses, they are set against the not insignificant social, cultural and economic gains acquired from renewed residence on Aboriginal lands. (Taylor and Bell 2004:32)*

Aside from locational trade-offs, there is still however the issue of the *declining* standard of living in remote areas, combined with an increasing younger population who may have a greater desire, combined with a reduced capacity, to engage with mainstream consumer society. The magnitude of working age population growth, as currently projected (Taylor 2003), means that the project to value activity 'on country' could not in itself offer a sustainable livelihood to a larger, and more resource intensive, future Indigenous population. In the region surrounding Alice Springs (ABS 'Apatula' Region), population projections to 2021 indicate that 462 new jobs will be required to keep the Indigenous employment-to- population rate stable (assuming too that current jobs remain); and 1,441 new Indigenous jobs are required in order to bring this employment rate in line with the NT wide rate for Indigenous people (Mitchell *et al.* 2005:14). The 2001 census indicated that the Indigenous employed labour force in this region was 1,120, of which only 370 were non-CDEP jobs (ABS 2002). This demonstrates the magnitude of the gap any strategy must address.

To be of any ultimate usefulness, the analysis of value and viability at the local scale must provide some traction in understanding the conditions for any given locality. There is good reason to think that the concrete value focus of the CAT *resource flows* project (see Fisher and Young 2004) will address such issues. But overcoming the technical and theoretical challenges in understanding localised patterns of action is not enough. While we may refer to remote settlements as a limiting case of desert economy, their empirical situation is more properly viewed as a part of connected

regional networks, focused on major desert resource and production centres. This means that any understanding of viability for settlement economy must also take seriously the situation of urban desert peoples, Indigenous and non-Indigenous, and in particular the potential opportunities presented by less- and more-intensive sites of mainstream economic activity.

Conclusion

In this paper I make a range of propositions about viability as a concept for understanding desert settlements. My aim was not to develop an integrated deterministic model focused on quantitative variables, but rather to elicit some of the processes which allow settlements to be viable. While all settlements rely in part on external resource flows, this discussion seeks to explain how desert settlements transform these flows according to their internal processes. Viability analysis was defined as the study of conditions under which a settlement economy transforms resources into livelihoods. This discussion has proceeded from an analysis of models of a desert settlement system, to an illustration of settlement viability constraints in light of central Australian desert conditions.

The distinguishing feature of desert settlement is its spatially dynamic nature, and the importance of inter-settlement human and resource flows. As I have argued, desert economy is generated through the co-development of Indigenous and non-Indigenous patterns of movement and residence, across a landscape of unevenly distributed resource values and livelihood activities. In pursuing a 'systems model' of desert settlement viability, Desert Knowledge CRC Core Project 4 leaves broader considerations of integrated regional systems to Core Project 6 (see Desert Knowledge CRC 2005). Across *Working Paper 1* and *Working Paper 2*, my argument is that it is necessary to see the viability of any given settlement as (i) relative to other population centres; and that (ii) these relationships are *intrinsic* to its viability at the local scale. This level of inter-settlement viability analysis can also be distinguished from that of *regionalism* proper, which can if necessary be defined as a process *extrinsic* to the settlement scale. That is, regionalism could be viewed as somewhat exogenous to internal settlement functioning. One empirical circumstance supporting this inter-settlement focus is found in Taylor's (2001:25) observation that Indigenous desert settlements have a size threshold of around 500, above which they tend to fragment. There are settlement internal processes that determine inter-settlement relationships. This, along with the highly dynamic quality of desert Indigenous sociality, necessitates shifting viability analysis to the inter-settlement scale, acknowledging different nodes and trajectories of activity, and making a baseline sociological assumption of population movement.

Value and viability are closely tied in a functional relationship. To this end, Desert Knowledge CRC projects emphasise the need for a broadened desert settlement 'cost-benefit' analysis, and wider criteria for desert settlement utility value. The use of 'contingent valuation' procedures, if deployed to gain an appreciation of the relative worth of desert activities to the consuming public, will not determine what these activities are worth as livelihoods to the people conducting them. Even in the event that there are net benefits from valuing and moving towards 'post-productivist' activities, this does not address the criteria for allocating marginal values (benefits and costs) associated with this transition across desert communities, Indigenous and non-Indigenous.

Whatever the approach, the challenge for Desert Knowledge CRC is to assess how it is possible to value Indigenous practices on country, as is partly reflected in their measurable outcomes, without at the same time homogenising and erasing the cultural difference of Indigenous values.

There is a pressing need for a viability analysis which is dynamic across time and space, yet sensitive to enduring Indigenous values of place, in order to properly address the changing economic life of the Indigenous and other peoples of desert Australia. Analysis must turn then to the potential for promoting activity currently taking place in remote locations, its significance for remotely localised people, and the institutional context currently serving as the conduit for resources derived outside of settlements. It must centrally assess the growing significance of activity for Indigenous people in larger settlements, as well as the implications of longer periods spent 'in town'. Against those who promote generic solutions and claim that the time has passed for such understanding, these are issues to which Desert Knowledge CRC can fruitfully contribute.

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