

Valuation of Indigenous Rights to the Sea Estate

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Abstract: The Mabo [no. 2] 1992 High Court decision and subsequent judicial decisions indicate a quantum shift in the recognising the rights of Aboriginal peoples and Torres Strait Islanders to their sea estates 'as far as the eye can see'. These ongoing changes create a circumstance in which the transfer and trade in rights to fish resources between Indigenous and non-Indigenous people can be mutually beneficial and the requirement to be able to access damage, loss or diminution of rights.

The paper provides a means by which compensation for the diminution or loss of native title rights might be estimated on the basis of the opportunity cost of time. Insights are provided into the economic characteristics of the benefits obtained from native title rights and how such rights will affect a community's budget and the choices available. In particular, the paper shows that, because of the particular relationship Aboriginal and Torres Strait communities have with their estate, and the inclusive nature of community management of the estate, behavioural based methodologies may be applied to the valuation of native title rights to non-use cultural values. While it is clear that additional work is required in the application of economic methodologies to valuing the rights of Aboriginal and Torres Strait Islander peoples, what is offered here will broaden the scope of this work.

Introduction

The *Mabo [no. 2] 1992* High Court decision and consequent judicial and legislative actions was a quantum shift in the recognition of the rights of Aboriginal peoples and Torres Strait Islanders, while the *Croker Island 1998* decision verified¹ the existence of native title rights to the foreshore and marine environment. These ongoing changes create circumstance in which the transfer and trade in rights to fish resources between Indigenous and non-Indigenous people can be mutually beneficial. Economics offers a mechanism to do this so that the social benefits of resources are maximised.

There is a high level of uncertainty in applying economic valuation methodology to the estimation of compensatable loss or diminution of native title rights and interests under the *Native Title Act 1993 (NTA)* as amended in 1998. Unlike those for non-Indigenous uses of fish resources, the methodologies for valuing Aboriginal and Torres Strait Islander uses are poorly developed. This is in part because the legal and institutional framework for indigenous rights is still being developed and because this issue has received minimal attention from economists.

This paper deals with the methodological question of how this might be calculated, in particular, with the use of opportunity cost as a means to estimate non-use value. While valuation is discussed primarily in relation to those rights recognised under the *Native Title Act 1993 (NTA)*, the methodology reviewed in this paper are generic. In this case, the *NTA* acts as a constraint on the indigenous rights recognised. Or, alternatively it defines the recognition space, or the area shared by Indigenous law and Common Law (Smith 2000).

The paper consists of two primary parts. The first part of the paper provides a brief textural background to native title rights in Australia. The second part of the paper deals with the question of valuation for purposes of compensation under the *Native Title Act 1993*. The reason for discussing valuation in terms of compensation is that native title rights are inalienable rights and cannot be traded in the open market. Thus setting the need for valuation.

Background

The nature of the relationship of Indigenous people with the sea

In general terms, if not for specific cases, the relationship of Aboriginal peoples and Torres Strait Islanders with the sea is well documented. The most recent of these include (Chapman 1997), Meyers et al (1996), Peterson and Rigby (1998), Sharp (1996, 1997), Smyth (1997), and

¹ As discussed later, this is under appeal to the Australian High Court.

Sutherland (1996, see pp. 7-11 for a review of the earlier literature),

The texture of this relationship can be complex, as shown in Sharp's (1997) description of the relationship of the Meriam people's relationship with the sea around Mer (Murray Islands). Sea holdings are described as similar to land holdings and exist on the basis of four principles:

'firstly, land-sea properties are inherited as a sacred trust first and foremost through the spoken word; secondly, these rights, which are vested in the elder male, entail complementary responsibilities to other kin; thirdly, they form an interrelated whole with a living habitat which is part of culture (not nature); and finally, the religious and economic aspects are inseparable, thus neither sea nor land is seen simply as a resource. The Meriam people carried out investments and improvements in the sea including extensive stone fish traps, unique little crayfish houses out of coral outside their home reef; who honour a child's first fish catch with a personal feast; whose totems are sea creatures, sea flora and sea birds; where sea analogues form the texture of their thought; and who travelled northwest to the island of Saibai in double outrigger canoes for ceremonial exchange and trade' (p. 29).

Recognition of indigenous rights

Since European settlement in 1788 and the fiction of *terra nullius* or vacant land, the major legal decisions and legislative acts concerning the recognition of indigenous rights of Aboriginal peoples and Torres Strait Islanders at a national level are the²:

- *Racial Discrimination Act 1975* which guarantees that no one shall be disadvantaged on the basis of race;
- *Mabo [no. 2] 1992* high court decision determined the Meriam people to have pre existing common law native title rights to land above the high water mark;
- *Native Title Act 1993* regulates the recognition and protection of native title rights. Provision was also made for recognition of native title claims to the sea;

² The Queensland Government publication '*Native Title and the pastoral Industry*' presents a good review of the effect of native title from the perspective of another primary industry. The similarities existing between the *Wik* and *Croker Island* decisions are worth noting.

- *Wik High Court 1996* decision establishes the coexistence of native title with pastoral lease rights;
- *Croker Island Federal Court 1998* (6 July 1998) decision recognised the Croker Island community to have pre existing common law coexisting native title rights to the sea from the high water mark and to the sea-bed of the claimed area from the low water mark;
- *Native Title Amendment Act 1998*, confirms government powers to regulate marine areas and resources, the requirement of compensation in 'just terms' for all future acts in addition to those performed by the Commonwealth, and sets a cap on the amount of compensation payable; and
- *Tanner High Court 1999* indicates that fisheries legislation passed to meet conservation requirements may need not have nullified customary native title rights.

By April 1998 the National Native Title Tribunal had received native title applications from Aborigines and Torres Strait Islander people to 140 locations that included areas of sea³. Of these, 73 were in Queensland, 35 were in Western Australia, 5 were in South Australia, 11 in the Northern Territory, 11 in New South Wales, 3 in Victoria, 1 in Tasmania, and 1 (Jervis Bay) in the Commonwealth.

Recognition of sea country under the *Native Title Act 1993*

The *Native Title Act 1993* recognises the possible existence of native title to sea and coastal country and the preconditions for recognition to occur. According to the *Croker Island 1998* decision⁴, communal native title

³ Based on data supplied by Geospatial Information, NNTT. Sea includes any waters seawards of the mean high water mark.

⁴ An appeal against the *Croker Island* decision has been lodged by the Commonwealth and by the claimants for a hearing by the Full Bench of the Federal Court in 1999. The basis of the appeal by the claimants include:

- the Court misconstrued the evidence and that the exclusive nature of the traditional rights apply to both Aboriginal and non-Aboriginal people; ie., that the native title includes exclusive rights of possession etc to areas of sea;
- the native title rights, on the evidence (of pre-colonisation Macassan trading) includes a right to trade in the resources of the sea;
- the native title includes the rights to minerals; and

exists in relation to the sea ‘which washes the shores of the relevant land masses’, and sea-bed within the claimed area, in compliance with traditional laws and customs for any of the following purposes:

‘(a) fish, hunt and gather within the claimed area for the purpose of satisfying their personal, domestic or non-commercial communal needs including for the purpose of observing traditional, cultural, ritual and spiritual laws and customs;

(b) have access to the sea and sea-bed within the claimed area for all or any of the following purposes:

i) to exercise all or any of the rights and interests referred to in subparagraph 5(a);

ii) to travel through or within the claimed area;

iii) to visit and protect places within the claimed area which are of cultural or spiritual importance;

iv) to safeguard the cultural and spiritual knowledge of the common law holders’ (p. 161 iii (a)-(d) as amended by Olney J 4 September 1998).’

Native title gives a right to take fish and shell fish without the need for a fishing licence or entitlement in those locations in which the native title applies. It does not give a right to take fish without a licence or entitlement in those areas in which an Aboriginal or Torres Strait Islander does not hold a native title right.

The Federal Court also ruled that when inconsistencies exist between native title and other rights, native title rights must yield or give way to all other legal rights and

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- the native title is not subject to the public right to enter waters and fish, public rights to navigate, or international right of free passage (information supplied by the Northern Land Council November 1998).

The Commonwealth also appealed the decision on the grounds that Olney J erred in finding that native title rights and interests can be recognised in relation to the sea.

In 2000, a majority of the Full Bench of the Federal Court found against the claimant, while the finding against the Commonwealth was unanimous. The decision was appealed by both parties to the High Court.

interests in relation to the sea and sea-bed. In some cases, Aborigines peoples and Torres Strait Islanders may qualify for compensation for the loss of rights depending on when the acts or actions resulting in the loss of rights occurred. Following the 1998 amendments, the *Native Title Act 1993*, exclusive native title is limited to the landward side of the mean high-water mark of the sea (s. 26(3)).

Other Acts and policies

A number of *Acts* bare directly on the ability of Aborigines and Torres Strait Islanders to carry out traditional activities relating to fish and marine resources. Many of these *Acts* are in response to aspirations of Indigenous peoples to have their traditional knowledge and concern with natural resources respected through their participation in management regimes (see Sutherland 1996). *Acts*, in addition to the *Native Title Act 1993*, provide recognition of indigenous rights to fish resources, including the *Fisheries Act 1995 (NT)*, the *Aboriginal Land Rights (Northern Territory) Act 1976*, and the *Torres Strait Fisheries Act 1984*.

Under the *Aboriginal Land Rights (Northern Territory) Act 1976*, claimable land extends to the low water mark, and may include those reefs and sandbars observable at low tide. The Northern Territory administrator may close the seas adjoining and within two kilometres to any person other than those having an indigenous right to enter the area (*Aboriginal Land Act 1978 (NT)*). Such closure does not confer any right of tenure to those with an indigenous right to enter the area. The *Fisheries Act 1995 (NT)* allows a restricted community license to take fish and sell fish within the community.

Currently, under the *Torres Strait Fisheries Act 1984*, indigenous Torres Strait Islander people:

- and indigenous people from Papua New Guinea and Australia may take catch as traditional fishers for their own use in both Australian and Papua New Guinea waters;
- from Australia may partake in community fishing, which gives a restricted right to catch and sell fish within the community; or
- from Australia may fish using a commercial entitlement. The intention of the Australian Fisheries Management Authority, which administers the Torres Strait, is to combine the community fishing and commercial fishing entitlements by 1 April 1999.

In addition, some people from Timor have an indigenous right to fish in the waters of Ashmore Reef in north-western Australia.

Policy documents

Many State, Territory and Commonwealth fishery management authorities have developed policy papers that are available to public review. For the States and Territories these include the papers by Harding and Rawlinson (1996), Loveday (1998) Pyne (1997), and the QCFO (1996). Several papers have been written on this area from a Commonwealth perspective, including those by Sutherland (1996) and Smyth (1997). In addition, a number of authorities employ officers with full time responsibility for indigenous fish resource use issues and to address questions dealing with the accommodation of native title within their jurisdiction. A number of papers have been published to keep commercial fishers informed of the expected effect the *Mabo [no. 2]* decision may have on access to and use of fish resources (eg: Beckinsale, 1997, Boileau 1997, Haines and Carpenter 1998).

When is valuation likely to be required?

What is included in the valuation of fish resources used by Aboriginal peoples and Torres Strait islanders depends on the expected use of the valuation results. That is, whether the purpose of the valuation is to do with maximising the social benefit of fish resources, compensation for loss of rights, access to resources, or the voluntary sale of rights to another party.

Maximisation of the social value of fish resources depends on the alternative uses of the resource regardless of who holds right to the resource. In all other cases, the valuation of indigenous rights to fish resources will depend on legislation and the recognition of rights under common law as legislated under the *Native Title Act 1993*.

Maximisation of social value

Maximisation of social value is when value is assessed so as to allocate fish resources between competing users and uses with the intention of maximising the social benefits from resource use. Such valuation need not depend on the ownership rights. Such valuation does not depend on the distribution of property rights

Compensation

The basis for compensation is derived from s51 (xxxii) of the Australian Constitution, which requires the acquisition of property by the Commonwealth to be on 'just terms'. The requirement for all States and Territories to pay compensation on the same basis comes from the *Native Title Act 1993*.

Grounds for compensation will occur as a result of the impairment, or extinguishment of recognised indigenous rights. According to the *Native Title Act 1993*, such grounds can be viewed according to whether the actions involve 'past acts (Acts or actions)' or 'future acts (Acts or actions)':

- Past acts are those rights lost due to an act taken since the passing of the *Racial Discrimination Act 1975* and prior to July 1993 for a legislated Act, or before the 1 January 1994 for any other act, including, 'intermediate period acts' (*Native Title Act 1993* s. 4(5)), that have arisen in response to the *Wik High Court Decision 1996*.
- Future acts are those legislative acts that take place after July 1993 and any other action that takes place on or after the 1 January 1994. Following the amendments in 1998 to the *Native Title Act 1993*, all acts offshore are permissible future acts⁵.

Compensation for past and future acts is according to the conditions set out in division 5 of the *Native Title Act 1993*.

Compensation under the *Native Title Act 1993*

In Australia, most of the input to the valuation of native title rights has been by land valuers such as Whipple (1997) and Sheehan and Wensing (1998). However a major criticism of their work is it fails to accommodate what Neate (1999) describes as the 'special (even unique) features of native title'⁶. While this shortcoming in the use of land valuation is recognised (Neate, 1999, Litchfield 1999), little consideration has been given in Australia to the use of alternative methodologies in the economic valuation literature⁷. Indeed, many, including Whipple (1998), believe this conundrum to be best resolved by the courts, such, on the basis of judicial experience in assessing damages for pain and suffering, libel and wanton damage or through the use of a solatium.

⁵ Which, of itself, may be a compensatable act.

⁶ Smith (2000) discusses the questions and issues in conceptualising cultural values for purposes of compensation.

⁷ The reasons for this are not surprising, while land valuers have given this literature a fleeting acknowledgement (Whipple 1997), input by Australian economists is noteworthy for the low level of participation in this issue. Whether this lack of participation by economists is a function of the allocation of research funding is another question.

A solatium is paid to accommodate the disruption or loss of convenience resulting from a loss of rights. It is not normally used as a basis for estimating the value of benefits forgone as a loss of rights (see Humphry 1999, p. 93). It may still be appropriate to pay Indigenous Australians a solatium for any inconvenience due to the loss of native title rights. It is difficult to see, however, how such a payment can provide a basis for the valuation of the special features of native title rights.

Based on experience in the United States, the economic literature indicates that giving up of responsibility for the application of economic principles to be done with care. Indeed, they have been observed to be arbitrary and inconsistent in the application of economic principles to Native Americans (Cummings 1991, Cummings and Harrison 1994, Duffield 1997). This literature indicates that the payment of compensation for damage to non-use environmental values, but has difficulty in accepting the application of compensation for any cultural loss suffered by Indigenous people as a result of environmental damage. Yet, in economic terms, there is little difference between indigenous cultural values and environmental non-use values Duffield (1997).

As discussed later, the 'special (even unique) features of native title' are specific to place and to community. In response to this, Lavarch and Allison (1998) go to the crux of valuing native rights when they observe that only the holders of Australian native title rights are in the position to assess the value of these rights. That is, value depends on consumer sovereignty.

The effect of the economic characteristics of native title rights on compensation

Economic value occurs as a result of preferring an item, relative to some other item, and the willingness to go without something in order for more of another item (Lee 1980, p. 12)⁸. While many native title rights are not traded in the market, the lack of trade does *not* preclude Indigenous Australians from treating the benefits of these rights as economic goods (North 1981). For example, members of a family group might decide they prefer more finfish to kangaroo and forego the hunting of kangaroo to spend a day fishing. The cost incurred as a result of this

⁸The existence of relative value between all goods depends on the consumer preferring more to less, being able to rank all items according to preference, and being able to compare the preferences over all items — that is that preferences are transitive. The outcome of agreements made to date indicates that these assumptions might be met, although the institutional framework in which these agreements occur are often to the disadvantage of those holding indigenous rights.

decision is the expected take of kangaroo, while the return is the expected catch of finfish.

A number of economic characteristics important to the measurement of economic value can be drawn from this. For instance, while economic value depends on scarcity, how many and how much there is of an item also depends on the existence and enforcement of legal rights and the resource characteristics. The amount of benefits accruable from these rights can be viewed in economic terms as a budgetary constraint, where the constraint limits the choices available. That is, all the points along the budget line (as shown in figure 1) represent choices that are available to a community. Neate (1999) and Godden (1999) have expressed concern that the low level of an indigenous budget means that indigenous values under native title rights will be low. Both authors appear to be defining indigenous budgets on the basis of cash income. As shown here and discussed later in the paper, command over resources and therefore the value of the budget, also depends on non-monetary components, including those components made available under native title rights. An Indigenous community, wishing to maximize the benefits obtained, will allocate their resources between different uses so that the additional benefit from any one use equals the benefit foregone.

The joint nature of native title benefits

Because of differences in their economic characteristics, the methodology used to value native title rights will differ according to whether the benefits are material or cultural in nature. The intertwining of material uses with a community's cultural, spiritual and customary uses means these values and their valuation are difficult to disaggregate.

From an economic perspective, this jointness in the consumption of material and cultural benefits from the holding of native title rights corresponds to the *joint*⁹ supply of private and public benefits (see Cornes and Sandler 1996)¹⁰. Private benefits occur when the benefits

⁹ When it is not possible to separate the benefits obtained from a right, then the expected benefits from that right can be described as joint benefits.

¹⁰ The literature on impure public goods refers to the supply of public goods as a result of individual supply and consumption of private goods. Because the supply of impure public goods is expected to increase with expenditure on private goods, the supply of impure public goods are likely to increase with increases in an individual's budget. As a result, modelling this relationship can be very complex, because the marginal private benefits enjoyed by the individual consumer do not equal the marginal benefits of their supply. This complexity is circumvented in this case, by

are exclusive to one person and unavailable to another. Within an Indigenous community the direct nutritional value from eating a helping of fish is restricted to the individual consumer. Public benefits might occur as the result of a community's enjoyment of place or the totemic significance of particular species, such as dolphin. In large measure, 'material benefits' are private goods, while cultural benefits are public goods. This intertwining of material and cultural benefits in the utilisation of native title rights constitutes the joint supply of private and public benefits.

While jointly supplied public and private benefits may be inseparable, some cultural benefits might be enjoyed with little or no explicit input. However, many cultural benefits require ongoing investment, such as through the use of ceremonies and the sharing of food. In addition, the proportions in which cultural and material benefits occur, or are provided, may be altered or changed. That is, any preference for increased cultural (public) benefits can be achieved by giving up activities that have more material (private) benefits such as the collection and hunting of food, and spending more time carrying out activities having higher ritual and spiritual significance. The degree to which private and public benefits are enjoyed will depend on the use a community makes of its indigenous rights, with public benefits being most closely linked with cultural uses and private benefits being most closely linked with material uses¹¹.

The capacity to increase cultural benefits is limited as the origin of many cultural benefits is unique to place, while the marginal increase in the supply of cultural benefits with each unit of material benefits foregone will get less and less. The situation for material goods is likely to be different, as material substitutes can be readily imported from outside of the communal estate and lower increase in marginal cost.

Consumer surplus

Consumer surplus is the total benefit enjoyed by somebody through the consumption and enjoyment of a particular item or activity in excess of the benefits foregone or costs incurred. The loss incurred as a result

internalising the benefits and decisions concerning the allocation of an indigenous budget, to the beneficiaries (the community group holding the rights). As a result, the beneficiary of private and impure public goods is the decision maker. That is, the community or family group that is the holder of the native title rights.

¹¹ This breakdown is a simplification as some benefits, that are non cultural, such as access to the sea for transport, are public good benefits.

of a diminution or loss of native title rights will depend on the uniqueness of the consumable characteristics of that item or the supply responsiveness and the availability of substitutes. That is, if items of similar consumable characteristics are readily available (such as beef meat for kangaroo meat¹²), there will be little or no loss in consumer surplus. If, however, readily available substitutes do not exist, as is the situation with many cultural icons and the significance of place, much of the consumer surplus is lost. That is, to the degree that the unit cost of benefits increases and consumption decreases with a loss of rights, there is a loss in consumer surplus.

Summing total change in value

How total change in value is estimated will depend on whether benefits are public, private, or there is jointness in supply. A unit change in material benefits may affect only one individual and is likely to include little if any consumer surplus. A unit change in cultural benefits will in different ways affect all the members of a community, including any impact on adjoining communities. The total effect of a loss in benefits due to changes in the rights held is estimated by horizontal summing the loss of private benefits and adding to this the vertical summation of lost cultural or public benefits, including any loss in consumer surplus. When joint benefits exist, each of the types of benefits is summed.

The economic characteristics of compensation

The loss of native title rights results in a decrease in a community's 'budget' and is therefore a loss of the choices and benefits available to a community. While both material and cultural benefits are likely to decrease, the lack of ready substitutes can, all else equal, result in a greater loss of cultural over material benefits¹³.

These relationships are shown in figure 1, where the iso benefit curve I-I is the highest level of satisfaction achievable by a community as a result of their initial indigenous budget Bm-Bc, while enjoying OC and OM cultural and commodity goods. Alienation of part of an estate for mining (say), resulting in a loss of amenity and

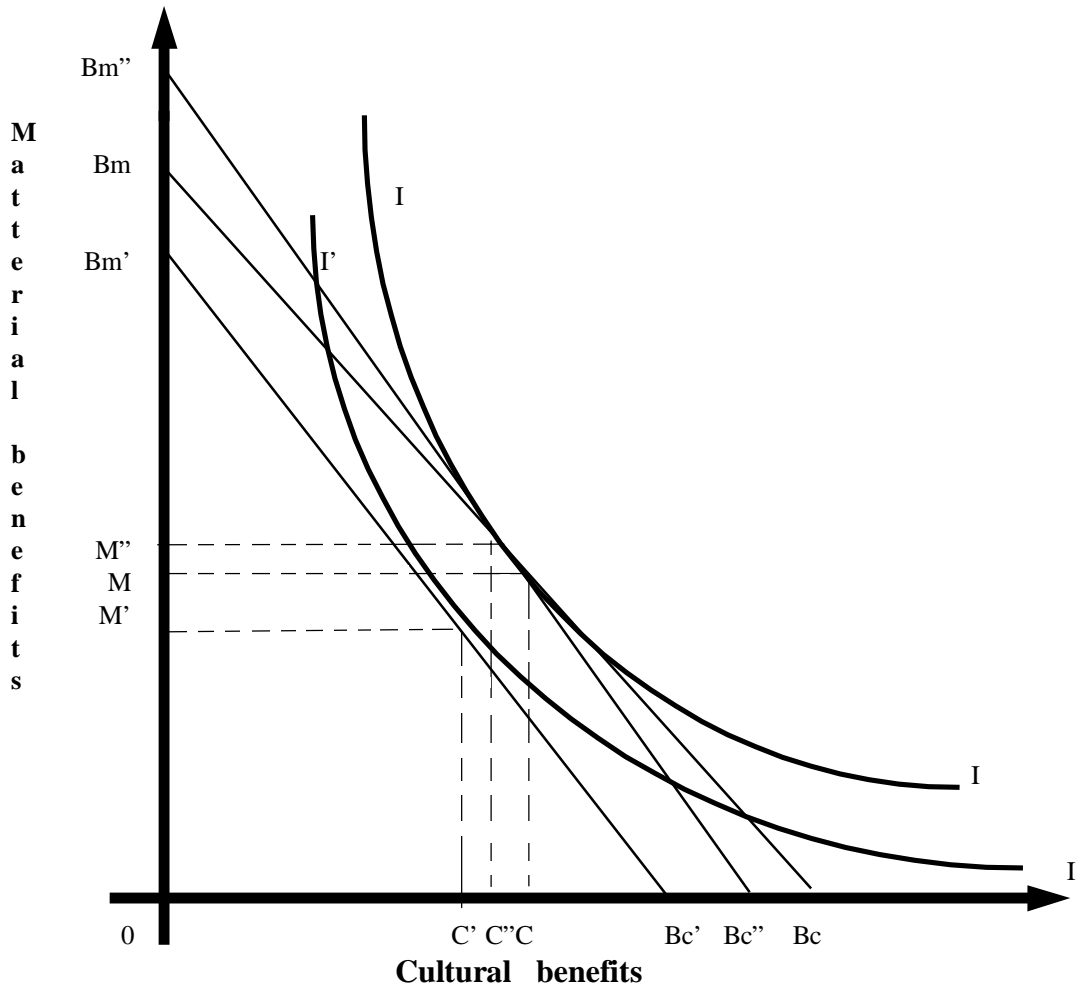
¹² Recognising that there are other elements to the capture and consumption of kangaroo meat to a family or community in addition to the commodity value, that beef can not supply.

¹³ The economic considerations under entry to an Indigenous site are similar to the environmental consideration for an environmental site described by Krutilla and Fisher (1975). Namely irreversibility, substitutability and technical progress. In this case, the material benefits have a high level of substitutability, which can be expected to improve in time with technical progress. Cultural icons however are not readily substitutable, while their loss is not reversible.

cultural benefits, decreases the community's indigenous budget. This is shown by a leftward movement of the budget to $Bm'-Bc'$, and the maximum level of satisfaction attainable by the community is where the new budget line is tangent to the iso benefit curve represented by $I'-I'$, and the enjoyment of OC' and OM' cultural and material benefits. To return the community to their original iso-benefits curve

(I-I) will involve an increase in the material budget. Because of the increase in cultural benefits relative to amenity benefits, the budgetary increase involves a pivoting of the budget line to $B''m-B''c$. As a result, there is a substantial increase in material benefits to OM'' and a small increase in cultural benefits to OC'' .

Figure 1: The Economic Characteristics of Compensation



Just compensation may occur when those suffering a loss of rights are made no worse off to what they were before the loss of rights. It need not require those compensated

to be able to hold the same bundle of goods before their loss of benefits. Indeed, given the nature of many cultural benefits being attached to place, in many cases it is not

possible to return native title holders to their original position. However, as shown in figure 1, it may be possible to return a community to the original level of 'satisfaction' enjoyed prior to the loss of native title rights (Campbell 1999b).

The quantity of material benefit required to carry out compensation will depend on the community's relative preference of cultural¹⁴ over material benefits (Campbell 1999a). This requires a lower level of compensation to that required to ensure a community has or can afford the same mix of material and cultural benefits enjoyed before the loss of rights. To observers unaware of cultural loss¹⁵, the increase in material benefits might appear to be excessive. Such apparent largess can result in claims of unfairness from those outside of the holders of native title rights. However, while there may be an illusion of budgetary increase, in real (utility) terms, there is no budgetary increase.

An important point to note from the above, is that the valuation of indigenous cultural rights does not assume the untwining of cultural and material benefits. All that it is assumed is the much weaker assumption that the marginal rate at which these benefits are enjoyed can be altered.

Estimating compensation

Two approaches that might be used to estimate individual and community values are contingent valuation and the estimation of the opportunities foregone.

The possibility of using other approaches, including hedonic pricing, travel cost, ordinal ranking and use of a non-monetary numeraire of value, are reviewed in Campbell (1999a). Others have suggested bypassing the question of valuation through the use of a Coasian approach (Whipple 1997, Godden 1999). Such an approach is unlikely to be applicable in this instance, as the assumptions for its application to the loss or diminution of native title rights do not exist (Campbell 1999c). Even if Coase's assumptions were met, it is still doubtful whether it is applicable to a situation in which more than two parties are involved (Baland and Platteau 1996, pp. 49-56).

¹⁴ That differences exist between clans in the relative weight given to the cultural versus the material is implicit in the discussion by Sharp (1998, p. 185).

¹⁵ The possible effects of such loss are amply demonstrated by the willingness of Native Americans to pay a price greater than freehold value for previous tribal lands (Cummings 1991).

Contingent valuation

The use of conceptual markets under contingent valuation is the most widely used approach in the estimating non-use values. One reason for this is the belief that contingent valuation is the only means by which passive or non-use values can be estimated (Adamowicz, Louviere and Williams 1994, Perman, Ma, and McGilvray 1996). This general rule has also applied to indigenous cultural values. Another reason for preferring contingency valuation is non-use data collected with this approach is easier to obtain than data collected using a behaviourally based approaches (Adamowicz *et al* 1998).

Debate continues among economists as to the applicability of contingent valuation methodology. Arrow *et al* (1993), in their review of contingent valuation note that a number of demanding conditions are met. They also question the ability of respondents to fully understand and give consistent responses to questions involving conceptual markets, leading to inconsistencies between their responses and observed behaviour. These conceptual difficulties are likely to be even greater for indigenous people, particularly with regard to the value of their cultural rights. This is because many Aboriginal and Torres Strait Islander cultural values originate in and are specific to place and are mostly located in or are proximate to a community's estate. Such items are not traded between communities¹⁶.

While it is questionable whether contingent valuation is applicable on its own, it might be applied to specific and narrowly defined instances when the conceptual demands on the respondent is less demanding.

Opportunity cost of location

In addition to the material benefits of their estate, Aboriginal and Torres Strait Islander communities forego benefits obtainable from living off their estate. Such benefits might include readier access to commercially provided food, easier access to a broader range of health and other social services, housing, training and employment. By foregoing these benefits, the community suffers a loss, which is a cost to them in remaining on their estate. For a community wishing to optimise their level of wellbeing, the cultural values of remaining in place will equal or exceed the foregone benefits. Therefore, one approach to assess the value a community places on their indigenous rights and responsibilities is to

¹⁶ However, there may be intercommunity responsibilities to protect and maintain items or features that are also important to adjoining communities (McWilliams 1998).

assess the value of the opportunities they have foregone. This relationship is shown in figure 2.

In the example presented, the optimal outcome is achieved at the highest level of satisfaction possible, which is achieved when the budget line is tangent to the highest attainable utility (benefit) curve. This is shown as point 'W'. At this point, the community enjoys material benefits 'OM' and cultural benefits 'OC'. If the community were to 'sell' their estate and move elsewhere, they would increase their consumption of material benefits to OM' (an increase in material benefits of OM' - OM), but would enjoy zero cultural benefits. However, outcome, as shown here, will always result in a lowering of the overall level of benefits enjoyed¹⁷. This loss of benefits is shown in figure 2 by the highest level of benefit attainable (indicated by the iso-utility curve I'I') being beneath II.

The monetary value of the optimal amount of material benefits and the monetary value of the maximum amount of material benefits obtainable can be estimated. In most all cases the absolute relationship, OM' > OM and the relative relationship OM'/OM > 0, occur, and the monetary value of cultural benefits from holding native title rights exceed (OM' - OM)

The additional information required for a more accurate measure of cultural values are to obtain an estimate of the rate at which a community will give up material benefits for cultural benefits at the point of tangency 'W'. This information will provide a measure of the slope of the budget line and can be used along with the data on total material benefits data (the point of intersection of the budget line with the vertical axis) to draw the budget line. This information plus data on the amount of the monetary value of material benefits (OM) is sufficient to estimate the monetary value of cultural benefits. To do

¹⁷ The conditions can also be met by a corner solution where the slope of the indifference curve is less than the slope of the budget line at all points. Or, alternatively, the slope of the indifference curve is greater than the slope of the budget line at all points. As a result, tangency between the budget and indifference curve will occur on the material benefits axis or the cultural benefits axis, depending which of the above two possibilities exist. This will result in a corner solution and value might be estimated using discrete (Freeman 1993). It is highly unlikely, however, whether these conditions will normally apply in regard to a community's indigenous estate, although it might be brought about through negotiation. However, a negotiated settlement might provide a corner solution.

this requires an understanding of the makeup of a community's budget line.

Construction of an integrated indigenous-monetary budget

Anthropologists, such as McCarthy and McArthur (1960) and Altman (1987) and economists, such as Smith (1975), North (1980) and Butlin (1992) assumed indigenous communities optimise their economic welfare according to a time budget. That is, on the assumption that time is allocated between activities such as catching finfish or hunting kangaroo or partaking in a cultural activity so as to maximise the level of benefit attained by the community. The budget in this case can be represented as:

$$B = f(T).$$

In this relationship, 'T' is the amount of working time available to the community, the functional term 'f' accounts for the effect of exogenous variables, such as technical and institutional change, natural resource availability and variation in environmental conditions.

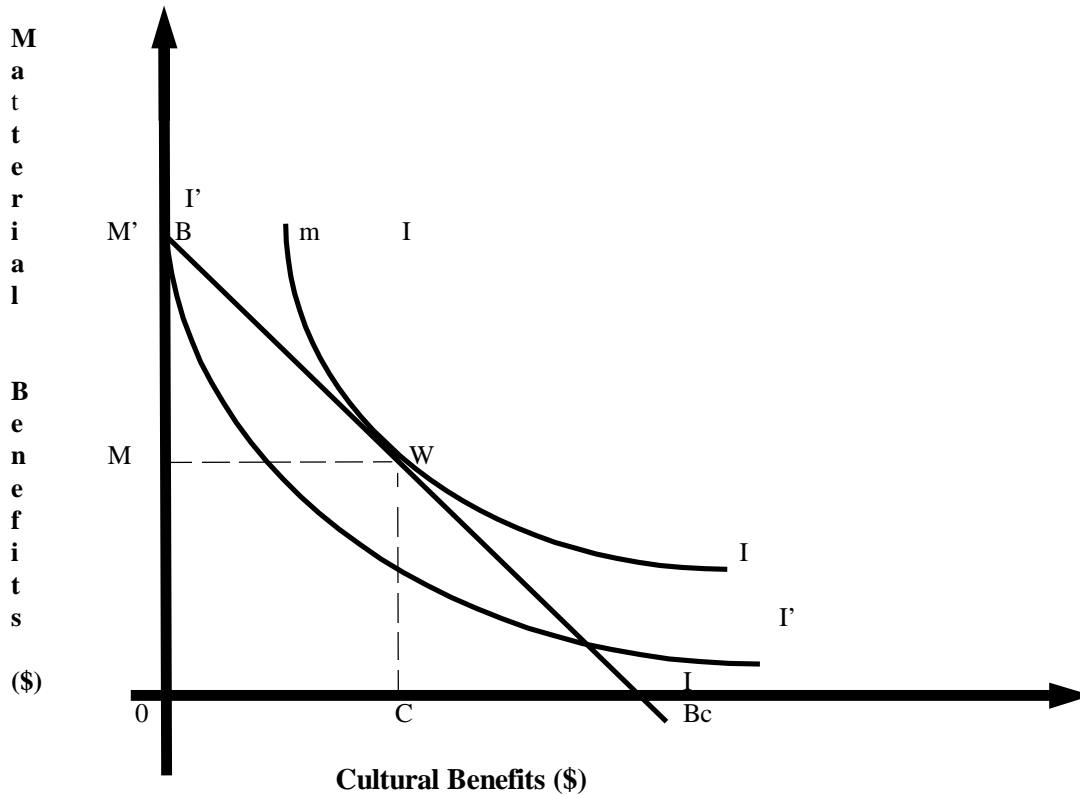
Because the indigenous estate is managed by the community, it is endogenous to the community and should be included in the community's budget as a function of time:

$$B = f(T(N)).$$

Although cultural and commodity assets may be supplied and consumed jointly, Aboriginal and Torres Strait Islander communities will make choices in regard to the proportion of cultural to material benefits enjoyed. That is, on the margin, it is possible for a community to carry out activities that differ in the proportion of cultural to material benefits. That is, some activities may be primarily cultural in nature with little or no direct material benefit. Other activities, such as hunting, will, by comparison, result in a greater material benefit. Because these choices are available to the community, the possible flow of benefits from an indigenous estate can be represented as separate material benefits 'Nm' and cultural benefits 'Nc':

$$B = h(T(Nc, Nm)).$$

Figure 2: The Effect on a Community's Welfare in Maximising their Material Benefits



Aboriginal and Torres Strait Islander communities have contact with the monetary based market economy¹⁸. Members of a community may obtain employment on their estate or go off their estate for employment, in addition they may receive social transfer payments. Because social transfer payments can vary depending on the level of monetary income, they are not necessarily a constant and need to be considered in conjunction with other sources of monetary income:

$$B = k(T(Nc, Nm, I)).$$

However, income may be allocated to cultural as well as material benefits, such as with the sharing of income or the goods purchased with other community members, and:

$$B = k(T(Nc, Nm, Ic, Im)).$$

Changes in the total amount and the mix of commodity and cultural benefits enjoyed by a community will vary according to the allocation of time between different activities. The optimisation problem for Aboriginal and Torres Strait Islander communities, then, is to allocate their time resources between different indigenous and market activities so as to maximise the benefits from their budget 'B', subject to their time constraint 'T':

$$\begin{aligned} &\text{Max } U(B) \\ &\text{s.t: } tNc + tNm + tIc + tIm \leq T, \end{aligned}$$

where 'tNc', is the amount of time allocated to cultural activities; 'tNm', is the amount of time allocated to the production of commodities; 'tIc', is the amount of time allocated to money earning activities used for cultural

¹⁸ Altman provides one of the earliest examples in which the choices of an indigenous Aboriginal or Torres Strait Islander community between market and non-indigenous goods are documented. See Brown and Burch (1992) and Duffield (1997) in regard to the 'mixed subsistence-wage economies in Alaskan Native American villages'.

activities and 'tIm' is the amount of time allocated to money earning activities used for material activities.

In a partial equilibrium analysis, the allocation of time will be optimal when:

$$U'/(Nc'/t') = U'/(Nm'/t') = U'/(Ic'/t'), = U'/(Im'/t').$$

The slope of the budget line shows the rate of transformation between cultural and material benefits¹⁹ and, therefore, the opportunity cost in units of time. As time can be used to earn income, it has a monetary value. That is, the slope of the budget line provides the relative amount of time and therefore the relative price of cultural and material benefits. The question is how might this be done?

Allocation and valuation of time

Jointness in consumption infers there is no immediate and readily definable answer to the question of how to measure the allocation of time to marginal material and cultural benefits. However, it is doubtful whether this question is insurmountable. For instance, economists, with the advice of Indigenous people and the assistance of anthropologists might isolate those activities that are solely or overwhelmingly for the purpose of obtaining cultural benefits or those activities that are solely or primarily for material benefits.

Alternatively, the relative marginal importance of cultural and material benefits might be obtained using contingent valuation methodology. Use of this approach in this context would provide data that is more robust than which could be provided if addressing the broader question of value. Alternatively, respondents need not be asked to hypothesize a market nor to estimate willingness to pay or accept monetary compensation within that market. Instead, members of a community might be asked to provide an estimate of the importance of cultural benefits relative to material benefits in allocating time. If this approach were to be used, the answers provided could be checked against observed behaviour rather than according to a hypothetical circumstance.

Discussion and conclusion

A number of difficulties in assessing the value of compensation from the loss or diminution of native title rights on the basis of opportunity cost are not addressed in the paper. A major shortcoming of the proposed approach proposed is that valuation is in terms of loss of

native title rights, rather than the diminution of native title rights. Locations within a community's estate will differ in the cultural benefits provided and the material benefits provided. They will also differ in the cultural benefits provided relative to the material; benefits provided. Estimation of loss or diminution of native title rights needs to accommodate these aspects.

Questions of consumer surplus would need to be brought into the analysis. However, once information on the overall value of a community's native title rights to their estate is obtained, questions of relative value of different locations might be addressed. While there is a possibility of strategic behaviour by respondents, information on the relative value over a range of sites will allow responses to be monitored for internal consistency within the cap of overall value.

However, one circumstance where the overall approach provided here might be particularly useful is in instances where Indigenous people are prevented from carrying out and meeting their cultural responsibilities. This is likely to be particularly relevant to any loss or diminution of native title rights that may have occurred as a result of the passing of the 1998 amendments to the *Native Title Act 1993*. How the approach would be applied, and what is included in the summation of material benefits foregone, however, would depend on the circumstance at the time.

In concluding, the paper provides a means by which the value of loss due to the diminution or loss of native title rights might be estimated according to the behaviour of Indigenous communities. Insights are provided into the economic characteristics of the benefits obtained from native title rights and how such rights will affect a community's budget and the choices available. In particular, the paper shows that, because of the particular relationship Aboriginal and Torres Strait communities have with their estate, and the nature of community management of the estate, behavioural based methodologies may be applied to the valuation of native title rights to non-use cultural values. While it is clear that additional work is required in the application of economic methodologies to valuing the rights of Aboriginal and Torres Strait Islander peoples, what is offered here will broaden the scope of this work.

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¹⁹ The implicit assumption is that the production possibility frontier is linear over the range of valuation.

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