

The economic weight of values: Testing the waters of the Top End (NT)

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Abstract

The periphery of economic activity can be characterised as a place of intermittent conflict/compromise over lands and resources, between the profit defined expansion of capital interests (in breadth and intensity) and pre-existing functions. The increasing value of ecological services, in relation to their increasing scarcity, introduces an additional dimension to contest. Economic discourse – predominantly definitions of values and allocation - provides a new terrain on which this contest unfolds.

Northern Australian environments have existed at the periphery of the market economy. They have thus maintained regions of non-capitalised or under-capitalised lands and resources, accommodating (to varying degrees) the maintenance of ecological systems and of Indigenous systems. As increasing southern water scarcity and accompanying national policy increase the perceived and priced value of water, attention turns towards the “under-utilised” resources of the Australian North. In tandem, increased demand for mineral resources repositions the Northern Territory potential for commodity-based growth, and initiates a new range of water concerns. The capacity of cultural/social values and environmental valuations to stand strategically and practically with the potential tangible monetary gains of increased environmental transformation is central to questions of water management.

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INTRODUCTION

The intent of this paper (a work in progress) is to ‘think about the frontier’ of economic expansion as a means to understand the contemporary status of water contest in the top end of the Northern Territory (NT). This paper represents one aspect of a broader project that examines the intersection of a national realisation and policy response to water scarcities, with the development trajectory of the resource based NT economy.

The frontier is imagined through the translation of the ecological economic representation of economic activity, as a sphere of activity embedded within a larger ecological domain, on to the physical landscape. This approach emphasises scale, expansion, and the initiation of conflict. This analysis ‘comes from the margins’ with two conceptual objectives. The first is to illuminate the relationship between expanded market-oriented productions and environmental appropriation, and the initiation of contestation over environments and resources at the frontier of economic expansion. The second is to emphasise that environmental management processes are a point of intervention in a history of land and water use, both framed by an established trajectory of economic development.

This method of analysis provides a framework for tracking the breadth and intensity of the market utilisation of resources and environments across and through the Northern Territory landscape as impelled by the logic of capital accumulation processes. Projected monetary gains are qualified by the need to accommodate the assertion of cultural/social values and environmental valuations.

I. THE TRAJECTORY OF ECONOMIC EXPANSION

The frontier of capitalist economic activity can be characterised as a place of intermittent conflict/compromise over lands and resources, between the profit-defined expansion of capital interests (in breadth and intensity) and the defence of pre-existing functions. Thermodynamic analysis identifies the role of resource appropriation in maintaining economic growth. Articulated on landscape, this physical process involves the perpetual economic colonisation of ecological terrain. The process of capitalist economic expansion makes new resources visible and viable. Multiple and competing claims on ‘unsettled’ lands and resources emerge in response to the claims of economic expansion. The claim on resources for economic use, and defence of prior or alternative uses (social and ecological), initiates a process of contestation.

The expansion of economic space

The Ecological Economics theoretical framework describes and visualises economic activity as a subset of ecological functions. The sphere of economic activity is a process of reordering ecological resources, requiring both material /energy inputs and involving the production of waste. Simultaneously, economic activity is a process of material and energy throughput within a sphere of biophysical activity. Diagrammatically, this is represented as an economic sphere of activity embedded within a larger sphere of ecological activity. The relationship between the two spheres is dialectical, each with a significant role in shaping and reshaping the form of the other. Economic activity reorders the constituent elements of ecological systems, just as ecological systems, including the effects of this reordering, represent parameters to economic activity (Georgescu-Roegen 1972, Boulding 1966).

The increasingly predominant form that economic activity takes is characterised by the reorganisation of natural processes in terms of the logic of market oriented production. The production process involves the social metabolisation of nature, the appropriation and transformation of environmental goods (Martinez-Alier 2005). This is organised in terms of market imperatives, and is coincident with an economic colonisation of space. The articulation of market production on the physical terrain manifests in multiple ways. This ranges from significant transformation of the physical terrain to selective foraging. Market capitalism, articulated on the physical terrain, transforms environments into sites of production for commercial purposes. Natural landscapes become economic landscapes. Agricultural landscapes replace forests. Canals, weirs and dams modify river systems. In conjunction, capitalist economic activity selectively forages (cherry-picks), drawing upon discrete components of ecological systems. Economic activity thus identifies and utilises resources and environmental functions according to its own needs, rather than as components of functioning ecological systems. The isolated utilisation of individual components challenges and undermines the functional integrity of ecological systems, detracting from alternative uses and the ability of environments to meet non-human needs.

The levels of appropriation of economic use need not exceed the capacity of ecological systems to regenerate, if conducted within ecological timeframes (Prigogine & Stengers 1985). However, the links between economic viability and ecological viability are tenuous, with economic systems, in the short term, demonstrating the capacity and motivation to surpass ecological thresholds. Short term market incentives are distinct from ecological imperatives. This is reflected in economic thinking: *“Modern economics lacks what we call an existence theorem: a guarantee that any economic optimum is associated with a stable ecological equilibrium. The Pareto optimality of allocation, for example, is independent of whether or not the scale of physical throughput is ecologically sustainable”*. (Pearce 1990:24)

The scale and intensity of capitalist economic expansion into ecological terrain is subject to economic calculation, based upon the potential for and realisation of profit. The capitalist economy, as the aggregate sum of activity of enterprises /firms, and without restrictions to access, will expand up until the point where the returns from investment diminish and investment costs equal profit¹. The horizontal breadth of an economy in space, and vertical depth of the intensity of scale of environmental and resource use, is defined by the profitability of economic activities at the margin. The location of the boundary is a function of the incentive and of the ability to invest², existing at the point between productive lands/resources and marginal lands/resources, or between economically viable and non-viable environments.

The role of environmental conditions in determining the viability of economic activity is incorporated within this function. Fertility, or viability, is a market framed construction defined by the ability of capital to draw profitably upon particular elements of environments. Environmental conditions circumscribe the levels of capital required to enable a return from the landscape, and are therefore a significant determinant of the ability to harvest. Where the geographer may identify landscapes that deny the feasibility of agricultural development (eg. Goyder, in Powell 1997), economic interpretation defines investment costs as exceeding returns.

The boundary of the capitalist economy, as the reach of the aggregate sum of private and public investment into the ecological domain, can be imagined as a decreasing continuum of

¹ In Ricardian terms, until economic rent is reduced to zero.

² The language of supply and demand is not utilised in the construction of this point – supply has been presumed as inexhaustible or substitutable. In the face of shortage, the environment itself is not an economic actor, it can not on its own, nor does it have any incentive to do so, produce more in response to increased demand).

use from profitable to marginal activities³. At the periphery of the capitalist market economy, where returns are low, the social organisation of capital (a fundamental division between those who own the means of production and those owning only their labour - Sywngedouw 2000:44) may not be distinct. At any point in space, the boundary will be located between a mix of uses, both profitable and non-profitable, and a mix between use and non-use. Individual time is divided across the boundary, with some uses of lands and resources qualifying within the sphere of market capitalism, and some uses utilising lands and resources in situ. Objects and resources themselves possess a history, some time of which may be spent in the commercial sphere (Appadurai 1986, Kopytoff 1986).

Beyond this edge of profitable activity (in time and place), and as seen through an economic lens, lie marginal lands and resources not (currently) subsumed by market processes. The use of these land and resources may be defined as economic activity in that they provide livelihoods for peoples engaged in economic pursuits that are not organised or defined within the sphere of the market. They do not, at the given point in time, provide a return that would justify the allocation of investment capital, as thus do not possess an economic value to capitalist venture. These lands and resources can thus be defined as existing beyond the investment sphere of market capitalism.

Private ventures continually test the potential for profit. The process of settling land is exploratory (Dovers 2000). The boundary is thus subject to continual negotiation, a process of 'empirical testing' that defines the expansion and retreat of uses (Powell 2000). The viability of lands and resources may increase or decrease over time. Viability is a function of a range of forces that shape effective demand⁴, costs and state support. Increased populations provide both the market demand and the labour for expansionary activity. Technological developments increase the capacity for further harvest both by reducing costs, and by identifying new uses and new resources. Returns decrease as fertility grade decreases or stocks are depleted, and the costs of harvest increase (Georgescu-Roegen 1972). There is no expectation that economic uses will be long term. This is most evident in relation to mining activity, where mines are understood to have a finite life (Maxwell 2006). Neither is there any economic necessity (necessity is defined by the short term return of profit) for farming to be a sustainable/long term endeavour (particularly in the age of corporate agriculture). Mining ghost towns and abandoned homesteads are testament both to the opportunistic and experimental nature of this process.

In tandem, State policy redefines viability through support or assistance to economic projects in terms of subsidy, protection, research funding, and emergency assistance. The capitalist State has demonstrated a concerted husbandry and support of the growth process. In the Australian context, the State has been involved in setting up the physical and social infrastructure to sustain the path of capitalist development. State direct involvement in production, or indirect support of production through investment in infrastructure development and social control, meets many of the harvest costs of private investment ventures. This is funded by access to both extraneous funds and debt capacity, and a related independence from the discipline of markets and the profit rule. The State demonstrates the capacity to push economic systems beyond the line of viability, in the short term. As a member of the economic community, the State on its own is unable to maintain long term

³ Georgescu-Roegen (1972) identifies the increasing costs of accessing further supplies as an impediment to growth. This concept has resonance with Ricardo's identification of the finite and variable supply of land, with movement onto marginal lands increasing costs.

⁴ a function of consumer purchasing power, the availability of alternative supplies, and the desire for the good provided (itself a function of information, the institutional and social definition of wants/needs, and emerging trends/priorities). This interpretation of demand references: NeoClassical economics, where the demand for investment capital is defined by the availability of savings, or of surplus funds; Keynes, who further interrogated demand as a function not only of available funds, but of confidence in the ability to realise a profit from investment activity (thus investment did not automatically follow from the availability of a surplus, but depended upon business confidence) and; Institutional analysis, which further examines consumer demand for goods as a social shaping of wants, (rather than accepting as given as did the NeoClassicists

activity that exceeds the funding threshold. Alternatively, the State may reduce the viability of venture through increasing venture costs, including taxes, restrictions or the legislation of responsibility for the repair of or payment for externalities⁵.

Capitalism is therefore dynamic, both territorially and in levels of intensity of use. The boundary between productive lands/resources and marginal lands/resources, as a function of the ability to harvest and the economic incentive to do so, is restless. The boundary relocates with the expansion or contraction of economic activity. In practice, economic expansion has been constant, albeit uneven. The momentum of this process is influenced by the expansionary nature of capitalism. The market economy is defined by the structural imperative for growth through capital accumulation, depending upon continuing accumulation to remain stable. Increased accumulation creates capital funds in perpetual search of investment opportunity. Profitability is not consistent for all enterprises and places, but capital has continued to find areas of opportunity (identifying commodities and markets).

The impetus for encroachment beyond the frontier is moved by the demand for ecological resources to fuel the continuing development of the market economy. Boulding (1966) identified the cowboy nature of the capitalist economy and the frontier mentality of economic expansion with economic expansion dependant upon a mining of the frontier. Within the Ecological Economics literature, a number of projects seek to account for the material dimensions of economic growth. Economic activity is dependant upon energy inputs (eg. Constanza 1980, Cleveland et. al. 1984). Biophysical laws prohibit any significant dematerialisation of economic activity and question the ability of growth to reduce environmental impacts (Arrow et al. 1995, Suri & Chapman 1998). The relationship of growth to expansion into ecological terrain is explored in footprint analysis and examination of appropriated carrying capacity (Rees and Wackernagel 1994, Proops et. al. 1999). Accumulation is the result of a process of unequal regional exchange (Muradian & Martinez-Alier 2001, Perez-Rincon 2006). For example, Hornborg provided an ecological focus to the work of Gunder Frank⁶, describing industrial capitalism as a zero sum game: the creation and maintenance of industrial infrastructure requires continuous inputs of energy and thus economic growth depends upon continued appropriation from an ecological hinterland. Spatially represented, this process involves the movement of resources from developed to developing regions (Hornborg 2005).

The initiation of contest

The capitalist appropriation of environments and resources in the process of growth is clearly visible from the other side of the frontier. Conflicts emerge as lands and resources are recruited for economic use (O'Connor 1988, Guha and Martinez-Alier 1997, McCarthy 2005), a process of accumulation by dispossession. (Swyngedouw 2005). Alternative uses of ecological systems are made visible to economic systems only through a process of contestation.

⁵ The effects of the market use of ecological systems extend beyond the recognised domain of economic activity and conventional economic accounting. One of the consequences of economic colonisation is the introduction of non-indigenous plants and animals. The spread of weeds and pests transforms environments beyond the immediate spheres of economic use through ecological takeover (an ecological imperialism identified by Alfred Crosby 1986, in Griffiths 1997), through accident, or by intent (eg. Cook & Dias 2006). The pollution of airways and waterways similarly carries impacts beyond recognised economic domains. Environmental impacts are external to economic calculation (Pearce 1990). Environmental degradations are not considered in national systems of measuring wealth, and when environmental reparations are undertaken, the costs of repair contribute to a perceived economic gain (Jacobs 2003). Economic analysis ends where goods and service drop from market view (Deleage 1994:38). Known externalities have unknown effects and many externalities are unknown (Martinez-Alier 1994:23). Economic activity, in order to maintain profits over costs has an economic (rational) interest in externalising these costs (and thus avoiding the costs of containment).

⁶ Andre Gunder Frank identified the development of the core economies as dependant upon the underdevelopment (or transfer of wealth) from peripheral economies.

Indigenous response to economic expansion has been critical in defining the forms in which economic interests are expressed. The expansion of capitalism as a process of colonialism has initiated a range of conflicts, often violent, with indigenous peoples of the world (Howitt 2001). The European settlement of Australia involved similar confrontation (Reynolds 1981)⁷: Contest is not inevitable, nor necessarily protracted. In some instances, there are degrees of correspondence between capitalist activity and groups within the colonised societies, and economic expansion proceeds with cooperation. Strategic alliances are formed (opportunistically or pragmatically) and the opportunities of proximity to markets and services/resources introduced by economic expansion recognised and exploited (NT examples in following section).

The development/imposition of the nation state, in politically incorporating all peoples resident within a given space, internalises contest over resources. The geographical boundaries of the nation state provide a sense of citizen ownership of or entitlement to a given land mass. The symbolic dimensions of this claim are manifest in notions of citizenship and rights of ownership. The material dimensions of this claim are manifest in rights to exploit lands and resources and in the active State endorsement and facilitation of the exploitation of resources. The State regulation of interaction anticipates and therefore manages or avoids conflict.

There remain environments, as yet 'unsettled' by economic uses, within national borders. Economic claim on 'unsettled' environments initiates defence of specific sites, and a more general challenge to the prioritisation of economic gains at the expense of unaccounted losses. Environmental activism emerges as a project to protect specific sites from development incursions, and to protect environmental quality (Hutton & Connors 1999). These contests are resolved in relation to each site or imposition. The resolution of conflict is framed by policy and legislation, yet serves as much as a process of testing and changing policy and legislation. In this sense, decision making over environmental uses occurs at the margin, at the frontier of expansion.

There are, theoretically and practically, allegiances with Indigenous groups in environmental projects where defended sites are of shared importance. However, the environmental movement alienates Indigenous interests where environments are claimed for protection from human habitation and use, and preservation demands alienate indigenous groups from previously occupied lands and land use techniques (Carruthers 1997). Defending rights over and access to environments is recognised as informing Indigenous activism. Eventually, where Indigenous presence is maintained, social justice questions will confront deep green perspectives in terms of the legitimacy of dictating terms of use to traditional claimants.

The colonisation of ecological systems itself becomes a subject of contest. The increasing scale of economic activity affects the capacity of ecological systems to function, through an ongoing reduction in the components of the system in conjunction with an increasing load upon the absorptive capacity of the system. The scale of economic activity is therefore of crucial importance, with increasing imposition on ecological systems threatening to both deplete the resource base of economic activity and to undermine the ecological services that define known equilibrium (Arrow et. al. 1995).

Ecological Economics, as a theoretical positioning in debate regarding the utilisation of environments, maintains a consistent emphasis on scale of use. This defines the project to constrain total expansion (Constanza & Daly 1987), including a comprehensive critique of the assumed relationship between growth and welfare (Daly 1987). This objective is

⁷ "Frontier conflict was apparent in almost every part of Australia though it varied in duration and intensity. While suffering disproportionately Aboriginal clans levied a considerable toll on pioneer communities – not just in death an injury but in property loss and prolonged anxiety as well. The costs of colonization were much higher than traditional historical accounts have suggested." Reynolds 1981:2

supported by a range of projects that calculate the value of resources and of ecological systems in a strategic project to inform and motivate the drawing of limits (Ropke 2005). This is an attempt to pre-empt physical realisation of final limits, to halt expansion both in territory and in intensity (for example, developing shared use activities that meet economic and ecological goals), before thresholds are surpassed, and nature imposes own limits (Myers 1995).

The project to restrain the scale of use remains one position in an ongoing contest over the utilisation of resources and environments. Recognition of ecological perspectives as competing in contest, rather than as defining common goals, initiates a statement of the need for Ecological Economics to consider political and economic power (Gale 1998, M'Gonigle 1999).

Continued economic growth remains the dominant policy goal (eg. Howard 1997). Contemporary statement of State support for economic growth has focused on the deregulation of markets as a stated means to remove the inefficiencies of false economies and identified impediments to economic growth. This agenda includes facilitating opportunities for private investment in expansionary activity as well as in providing opportunities for private delivery of service undertaken previously by the public sector to improve efficiency of delivery/because of limited State finances (Quiggin 2005). Implicit in the rhetorical support for this goal across the political spectrum is the linking of increased economic growth with improved social welfare

The dialogue of sustainable development offers theoretical resolution to conflicting claims on 'unsettled' regions and resources, suggesting the potential to maintain both environmental and economic process. This project has gained a generic agreement (Beder 1995). It would take a level of perversity to argue that development shouldn't be sustainable. Questions remain regarding the capacity to achieve sustainability, and an ongoing dialogue and persistent disagreement about what should be sustained. In effect, the debates between growth and eco-stasis, and the myriad of positions in between, are repeated within the sustainable development framework.

The notion of sustainable development however, condones ongoing expansion into unsettled territory in a sharing out of the remaining unclaimed regions, between the colonising interests and the pre-existing users, rather than questioning the legitimacy of the colonising claim and of ongoing expansion. In this sense it is ahistorical, it does not recognise prior claims or past colonisation. Environmental and ecological claims are subject to a similar questioning of legitimacy where they represent one ethnic group speaking for lands and resources claimed by another: the language of both conservation and preservation serve as a means of claiming lands/space beyond those that economic activity has already colonised.

II. TESTING THE WATERS OF THE NORTHERN TERRITORY (AUSTRALIA)

Water concerns increasingly define an emerging arena of contest in the Northern Territory of Australia. The increasing impositions upon catchments, founded by a new focus on agricultural activities and a reinvigorated engagement with mining, engender a new breach of frontiers. The economic colonisation of water sources, and associated impositions, uncovers Indigenous relationship to water. In addition, the expansion of economic uses initiates responses that defend non-economic uses and/or that value functional ecological systems. In contrast, national water scarcity focuses attention on the comparative abundance of Northern catchments. National water policy engages regional management directly in a process of reorganising water management. The NT government is undertaking a process of water

management planning defined both by its responsibilities as a signatory to the National Water Initiative (NWI) and by the need to effectively negotiate water conflicts.

The project to develop new forms of water management does not begin with a blank slate. Tensions involving water use and management have been driven predominantly by the opportunities and demands of economic development (as a commodity defined process). The historical process of economic development has both 'arrived' the contemporary water contest, and defined the positions of those within the contest. The current water management planning process is a point of intervention in ongoing contest over the use of lands and environments. Water planning occurs at the margins of use, rather than being an opportunity to reconsider water allocations in their entirety.

The trajectory of development across the Northern Territory

The current status of water contest is defined by an expansion of economic uses across the landscape of the Northern Territory has been partial, intermittent, and highly localized. The range in landscape, social characteristics, and timing of events, precludes discussion of a singular process of Northern Territory economic development. Several themes remain prominent and persistent in this trajectory – the limited successes and significant failures of agricultural development, the dominance of mineral exploitation in the economy, and the asserted presence of Indigenous groups on land both defining the form and subject to the expression of economic developments (explored more extensively, unpublished thesis). These themes have melded to shape the contemporary character of the Northern Territory economy and frame the terrain of water contest.

A dominant theme of Territory development has been the advance and retreat of agriculture, both as a process of individual enterprise and government sponsorship. The dialogue regarding Northern Territory potential and failure initiated by McDouall Stuart's 1862 assertion "*I feel confident that if a new settlement is formed in this splendid county, in a few years it will become one of the brightest gems in the British Crown*" (Kelly 1971:19), was tracked by Ernestine Hill ("*I write of the Northern Territory of Australia, problem child of empire, land of an ever-shadowed past and an ever-shining future, of eternal promise that never comes true....*" 1951:1). The process of testing potential was kick-started with the speculative failures of the 1880s, where a land boom that accompanied 'a wild rush to secure pastoral leases', with the 478,567 square miles held under application for lease in 1883 falling to 142,000 square miles within 10 years, and to 108,000 square miles in 1910 - graziers lost heavily on investments (Kelly 1971:20). It is evident in the history of the expansion and retraction of CSIRO agricultural research stations across the North (Basinski et al. 1985). It is illustrated in the history of continued and failed attempts to establish agriculture enterprise in the Daly River Basin (Robin 2007).

The persistent marginality of NT lands has been interpreted variously as a function of environmental factors such as poor soils, weeds, pests and the challenges of unknown landscapes; the costs of remoteness including transport costs and inadequate infrastructure; inadequate capital (investment and labour); poor management; and the challenges in recognising economies of scale (Davidson 1965, Kelly 1971, Mollah 1982, Kilpatrick 1998). The experiences of early experimental plantings of rice at Humpty Doo reveal multiple environmental challenges:

"Heavy rains and floods ruined the 18 hectares planted for the 1952-53 season and water problems were amongst those that beset the experimental plantings made in December 1953; a dry spell of three weeks in February 1954 retarded plant growth, some varieties were infected by a small population of moth stem borer, (Tryporyza), magpie geese fed on the ripening grain which grasshoppers and rats also shared

before a cyclone on 10 April removed any chance of ascertaining yields (Agricultural Section 1954, Appendix B). (Mollah 1982:9)

The potential for agricultural development in the NT remains disputed. Kelly, in assessment of the limited fortunes of the pastoral industry in the Northern Territory recognised problems of scale (1971:27), yet saw the history of failure in terms of the combination of ineptitude and mal-administration in land administration (p.45). For Davidson, this history of failure and limited successes represents the demonstration of environmentally determined limits to expansion in the North (Davidson 1965). Other commentators continue to perceive potential for agricultural development, apparent in Mollah's (1982) and Kilpatrick's (1998) conclusions regarding rice farming. Kelly also commits to the potential of the NT: "*With vigorous development of mineral, pastoral, and agricultural resources, combined with industrial processing and sound public administration, the Territory could become self-supporting and fully self-governing before the end of this century*", (although expressed no faith in Commonwealth administration to achieve this) (1971:44). More recently, Stuart Kenny of the Northern Territory Irrigation, Grain and Fodder Association said of the NT's \$20 million agriculture industry "*Within five years, this industry has the ability to be five times the size it is today*" (Tropical Savannas CRC 2005)

The limited extent of agricultural development in the North has preserved the Northern waterways from the over allocation and extensive environmental degradation that has come to characterise Southern catchments. Many of the rivers of the Tropical Region have limited settlement (less than 500 persons) and industry – uses are almost exclusively non-market (Stoeckl et al. 2006:vii). The majority of NT catchments are classified as largely unmodified, with minor or moderate-minor hydrological changes (Stoeckl. et al. 2006:9). While agriculture expansion is limited, the legacy of experiments in introduced crops and species remains. The perception of Northern catchments as pristine is qualified by recognition of the impacts of weeds and feral animals (Northern Australian Environmental Alliance 2006, Douglas 2007)

Paradoxically, while the lands of the NT remain economically defined as undeveloped or underdeveloped, perceived potential will remain for their development. The water crisis facing the Australian south turns national attention towards the waters of the North. The Department of Land and Water identify 70% of Australian freshwater reserves as located in the rivers and groundwater systems of the Tropical North (Land and Water Australia 2005 TRP), and in 2004 identified Australia's tropical regions as a priority area for major investment (Stoeckl et al.2006:v). North Australia Irrigation Futures are positioned to research the potential of irrigation in northern Australia (NAIF 2007). The Commonwealth Government Taskforce, chaired by Senator the Hon Bill Heffernan, looks again to the North. In the context of southern scarcity, opportunity for the further development of northern land and water resources is to be explored (Howard 1997:19). There are two recognised aspects to Northern water, the potential to move and consolidate farming enterprises in the North, and the potential of water transfers to the South.

National policy interest is complemented by an independent and ongoing private testing of the capacities of the lands and waters of the North, reinvigorated by southern scarcities. The most recent testings of potential are perhaps differentiated, in that they are driven by an increasing demand rather than by expressed ambitions for the region. The increasingly formalised economic values of water in the South could effect a reduction in the comparative costs of accessing water in the NT, and the diminishing viability of agriculture in the Murray Darling Basin may inject further interest in the possible profitability of NT agricultural venture. In effect, the degradations and surpass of thresholds in the south become framed as economic opportunities for the North.

Confidence in the potential for agricultural development based on an ostensibly abundant supply of water is qualified. The potential for hydrological developments is limited by high evaporation rates, high rates of leakage into the ground, and seasonal flows (NT Water Controller Ian Lancaster, in Murdoch 2006). The seasonal and highly variable nature of rainfall in the North, with a large proportion of tropical region rivers essentially dry for most of the year, and flowing only intermittently during the wet (Stoeckl. et al. 2006: 6) has defined a “*temporal and geographic scarcity of water that has [almost certainly] acted as a constraint to development*” (Bennett 2005, 1 in Stoeckl et al. 2006:8). In contrast, basins in the north-eastern corner of the NT have relatively abundant supplies of water, classified as presenting perennial water and moderate aquifer productivity (Stoeckl. 2006:13-16). The NT itself however, presents no sites for significant hydrological developments (person. comm. 2006). Equally, monsoonal flooding and occasional cyclones, and the associated cost and interruptions of road and infrastructure damage, regularly compromise the viability of commercial enterprises (“Devastating floods rack up \$5m road repair bill”, “Cattle go missing in heavy floods”, “Deluge damages Aboriginal art works”, “Mother Nature hits ERA U-production” (NT News 2007abcd)

Mineral exploitation has, to date, offered the most potential for economic activity. The mining industry represents 25% of nominal Northern Territory Gross State Product. In 2005-06, the Northern Territory Gross State Product increased by 7.5%, compared to a national GDP increase of 2.8%. The strongest growth was in mining, an increase of 35.5% (Northern Territory Government 2006). The Northern Territory Government seeks to foster the mining boom with \$12 million investment over the next four years (NT Budget 2007). Northern Territory ambitions remain predominantly in mineral resources, with mining promoted as a means to secure the economic future of the Northern Territory.

The contribution of the economic gains of mineral exploitation to regional development is contested. Mining developments are de-linked from local economies, utilising fly-in fly-out labour, and purchasing services and goods externally (Pritchard & Gibson 1996). The pollution of Mt. Todd has provided a recent weighing up of the gains of the mine compared to the longer term repair cost. Promoted as example of successful negotiations between Indigenous land owners and the mining company, Mt Todd provided training and employment for local Indigenous peoples. The mine closed with a fall in gold prices, leaving the government with an environmental bond of only \$900,000 and a clean up project estimated to cost more than \$20 million (Vatskalis 2004). Mining developments continue to initiate conflict, significantly related to their intensive impacts upon water systems (recent examples being fears surrounding potential tailings dam overflows at Jabiluka and Ranger, and the intention to reroute the tropical McArthur River in order to accommodate the expansion of the McArthur River Mine to open cut mining).

Mining represents the expansionary edge of economic enterprise in the region. The expanding sphere of Asian demand and investment (the commodities boom) has a significant role in driving the mineral sector. The recent change in uranium policy, at the federal level, and as supported by the Territory labour government, presents as of crucial relevance to the Northern Territory economy where the NT Minerals Council advise that 40 exploration licences have been granted (NT News 2007). Mining interests are discreet in water planning processes, yet prominent in localised contests over catchments. Mining and petroleum activities are exempt from conditions of the NT Water Act (2004) related to interference with waterways, and pollution and waste disposal (Rea, undated).

The expansion of the economic settlement of lands as a contested process of Indigenous dispossession and colonial appropriation of land (with uncertain outcomes) is a pervasive theme of Northern Territory development. In turn, Indigenous defence of land use has

provided ongoing challenge to non-Indigenous claims of settlement, land use and ownership, and operates as a significant consideration for further expansion. The defence of waterholes marked conflict between agricultural expansion and Indigenous uses, with introduced animals degrading the waterholes that were a prime focus of Indigenous economy and society (MacGrath 1987). The essential conflict between water was recognised as a central focus of tensions: “*Natives and stock will not thrive in one place. The squatter wants the water for his cattle, and the natives cannot do without it.*” (Report of the Inspector of Police of the Northern Territory 1922:14 (Rose 2004)).

The Indigenous response to indigenous presence on land, as Reynolds stated for the history of Australian settlement, has been “positive, creative and complex” (1981:198). Indigenous peoples of the Northern Territory have maintained a physically and politically significant defence of indigenous rights to decision making over land. European movement onto NT lands initiated a range of frontier conflicts that have been explicitly, if sporadically, documented (eg. Hill 1951, Trudgen 2000). In areas such as Arnhem Land, the effective guerrilla warfare of Indigenous residents inhibited European expansion across a difficult terrain (Hill 1951⁸ Trudgen 2000). The political activism of the bark petition in response to mining at Gove (Howitt 2001) and the Wave Hill pastoral station walk offs (Hardy 2006) were precursors to the political recognition and public mood in support of land rights that saw a Land rights Bill of the Whitlam Labour government passed, with some reductions, by the Fraser led Liberal government replacement. Territory Traditional owners share in the joint management of the National Parks, following award and lease-back agreements. Recognition of Native Title has provided a forum for further claim to land and participation in negotiations over land uses. Indigenous people maintain a significant presence in the Northern Territory, at 29% of counted population (ABS 2007)⁹, and with title to an estimated 50% of land (ABS 2006a). In contrast to non-indigenous settlement in the Northern Territory, where populations are concentrated in the main towns, the Indigenous population is dispersed across the Territory.

In tandem, Indigenous peoples of the Northern Territory have responded to opportunities for participation in economic activity proffered by the expansion of the capitalist land uses. Indigenous people participated in buffalo and crocodile hunting, and provided labour for the pastoral industry. These activities supported continued presence on country, and the seasonal nature of the work suited responsibility to fulfil obligations in relation to land and community. Commercial activities themselves benefited from, depended upon, the low awards returned to Indigenous labour (Hardy 2006). Indigenous people also responded to opportunities for trade of made and harvested goods through the missions, their trading links with the Macassans having come to an abrupt conclusion with the enforcement of the white Australia policy and trading links with the indigenous South undermined by white settlement (Drysdale & Durack 1974, Trudgen 2000, Reynolds 2003,). Older Indigenous Territorians have had broad work histories (Beadman 2004).

Indigenous groups maintain a lifestyle on land that contains traditional and contemporary elements¹⁰, identified by Altman as a three sector ‘hybrid’ economy including the customary, the market, and the state. Community economic life incorporates government payments, commercial work, and subsistence hunting and gathering activities. Indigenous customary economies are a significant part of indigenous lifestyle, with an increasingly recognised

⁸ “*even if the place was another Broken Hill, you couldn’t run it out there – the blacks too bad, and too far way, no tucker*” Alf Brown describing his trail across Arnhem land in 1910, In Hill 1951.

⁹ This regional situation contrasts with the conventional understanding of Australia (combined with America, Canada and New Zealand) as a land of demographic takeover (eg Griffiths 1997) This situation itself demands a spatial rethinking of the notion of demographic takeover – while ongoing immigration expands the non-Indigenous population of the urban centres, remote and regional Australia continues to support a significant and often locally dominant ratio of Indigenous to non-indigenous Australians).

¹⁰ “*Most Belyuen families use cars, trucks and dinghies to get to hunting grounds, shotguns and axes to hunt there, and use buckets, bags, ice chests, and cloth sacks to carry the products back*” (Povinelli :173)

contribution to Indigenous well-being (Altman 2003, 2004a). The importance of Indigenous harvesting activity can be suggested economically by reference to Indigenous health and nutrition levels. Less quantifiable are the general welfare considerations that are supported by Indigenous people being able to live on their own lands, and the overall benefits to society of protecting Indigenous rights. Individually, Indigenous people operate successfully in the mainstream as politicians, public servants, artists, actors. The land councils are a significant force in Territory politics. Collectively, however, Indigenous peoples are excluded from the socio-economic gains of the Australian mainstream and from the economic gains of Territory development (ABS 2006b): health, employment, housing and income indicators distinctly less than those for mainstream Australia¹¹. As is, the welfare payments directed to Indigenous groups through Commonwealth payments represent an important component of regional economies as do mineral royalty payments (Pritchard & Gibson 1996).

Indigenous land holders are faced with conflicting expectations and pressures regarding how they should use their lands. A focus on the economic potential of land holdings dominated the Reeves Land Rights Review (Reeves 1998). Opportunities for Indigenous economic participation are being explored/promoted in relation to mining (mining agreements), pastoralism (Indigenous Pastoral Program), tourism, and commercial development of traditional harvesting activities although opportunities for this are recognized as limited (Altman & Whitehead 2003). The marginality of the un-alienated (economically unclaimed) lands awarded to Indigenous groups both limits opportunities, and emphasises the role of mining as potential means of development for Indigenous communities. At the same time, there exists a distinct social expectation that Indigenous ownership of resources will include environmental interests, and that Indigenous peoples will use their lands in a manner that emphasises sustainability, in keeping with perceived traditional imperatives in land management. In 2005, the Executive Director NT Department Natural Resources, Environment and the Arts implied that the limited amount of land in Northern Territory devoted to Parks could be offset by Indigenous land holdings, stating that it was not a concern that only an approximate 3% of the Territory was Territory Parks because of the significant land holdings of Indigenous groups. Options are being explored for payment to Indigenous groups for land management in recognition of the important work they already undertake on country (weed control, fire management and carbon offsets, border control) (eg. Morrison 2007). Opportunities are provided for Indigenous ranger groups in land management through CDEP schemes, and a number of funding bodies.

The Indigenous response to mining has been multifaceted (and beyond the scope of this paper to explore). The recent dispute regarding the McArthur River mine expansion provides example of alliances with environmental interests and groups (eg. NTEC 2007), the divisive role of mining within communities, the critique of Indigenous protest as anti-development and against national interests, and an Indigenous response to mining activities that is defined both by concerns and experiences regarding environmental impositions and destruction of sites, and recognition of the income and employment opportunities offered by mining activities (“...we’re fighting for – our rights and our country. We live off this land”/ “ “We’ve got a whole lot of young people that want to work...The dole is going to stop in July. The mine has to keep going to keep people in work” – in Stewart 2007). Much mining exploration and development occurs on Indigenous lands with the consent of traditional owners. Recent research on the socio-economic impacts of mining and mining agreements both question the contribution of mining to community development, and identify the impositions of mining on socio-economic status (Scambary 2007).

¹¹ “Yolnu are now dying in their early to mid-forties or even younger, and at such a rate that life seems to lurch from one funeral to another. ‘I am tired of standing at the edge of an open grave, week in and week out!’ Djiniyini told me in 1996. ‘Why are so many of our people dying so young?’” (Trudgen 2000:7)

Challenge to Indigenous access to and rights to use resources, is an ongoing and persistent process. Successive NT governments have opposed claims under the Land Rights Acts, an entrenched style of reaction (Fletcher 1998:viii) that effectively positioning Indigenous rights to lands and resources as outside the constituency of the Territory interests. The recent Commonwealth approach has been to define limits to the recognition of rights. The ten-point plan eroded long established, but often disregarded, rights to co-exist on pastoral properties recognised by the Wik decision (Behrendt 2003). Rights under Land Rights legislation to control access to communities are under challenge. In turn, ongoing development interests in Indigenous lands require resolution with Indigenous Native Title interests, whether Indigenous rights entail prevention of development, defining the terms of development, or share in the gains from development activity. Native title legislation has most recently been tested in relation to rights to the inter-tidal zones of Blue Mud Bay (Wilson 2007). The question of rights and ownership is far from settled.

Indigenous utilisation of flora and fauna remain constrained by Territory and national priorities. Market and customary economies are clearly delineated in government policies that allow Indigenous resource use for subsistence activity, defined as traditional activity, rather than for commercial purposes. This definition neither recognises past indigenous commercial activity nor easily allows Indigenous development of natural resources. For example, Section 122 of the Territory Parks and Wildlife Conservation Act 2000 provides for the traditional harvest (otherwise than for the purpose of sale) of crocodiles and crocodile eggs. This encompasses food gathering, ceremonial and religious activities. Recent Indigenous interest in the promotion of crocodile safaris (by Murwangi Community Aboriginal Corporation and the Bawinanga Aboriginal Corporation-Djelk Ranger Program, and supported by the Northern Land Council), in effect an Indigenous petition to use resources for activities of an economic breadth wider than a narrowly defined traditional or subsistence use, failed to gain Commonwealth consent.

More recently, Indigenous organisations and representations of Indigenous interests, have responded both to the potential opportunities presented by the state of flux in water management and to the identification of potential further erosion of their access to lands and water. Water and river systems are integral to the support of customary economies (Jackson 2004, 2005). In many catchments, Indigenous groups are the dominant users, and cultural values are therefore predominant (Stoeckl. 2006). Economic activities may conflict with Indigenous interests and livelihoods in situations where the health of river and hydrological systems is threatened by damage to the river system from agricultural land use, tourism impacts and recreational harvesting of resources (eg. Daly Region Community Reference Group 2004), and mining (McArthur, Jabiluka). The NT commitment to the NWI provides opportunity to recognise and explore the special character of Indigenous interests in water (Jackson, Storrs and Morrison 2005). Indigenous organisations and representations of Indigenous interests have used water-planning processes to assert Indigenous uses of water, the sustainability of traditional practices, and interests in water management (eg Daly Region Community Reference Group 2004). Jackson emphasise the need to differentiate environmental allocations from cultural allocations, and signals the potential for Indigenous commercial allocations (Jackson 2005). With development opportunities for regional Indigenous communities limited, the health of river systems as potential sites of economic activity is important. The legislative basis for Indigenous freshwater allocations remains untested. The potential for Indigenous rights in water is being examined (Langton 2002, Altman & Cochrane 2003, Altman 2004b, Rea 2004, Jackson et. al. 2005, Craig 2006).

Water contest

The interplay of these forces has produced a contemporary water situation that contrasts to that of the southern States of Australia (specifically the States of the Murray Darling Basin).

Emphasis on growth, combined with statement of the need to recognise Indigenous disadvantage, promotes exploitation of water resource: “*Certainly I think it’s a national disgrace that as we sit here today there’s 7,000 somewhere near 7,000 kids in the Northern Territory for instance who have no access to high school. By putting in infrastructure and development and opportunity will overcome a lot of that disadvantage*”: (Heffernan, in Alberici 2007). It is expected that Northern rivers will face increasing pressures, with increasing populations¹², intensification of agricultural practices (both as a process of growing interest in pastoral enterprise and of the conversions of pastoral land use to intensive agricultural use), participation in the minerals boom, and the encouragement of tourism (Stoeckl et al. 2006:vii). Environmental interests identify the ecological integrity of catchments as threatened by “climate change, invasive species, excessive stock grazing, altered fire regimes, mining, broad scale land clearing and water resources development” (Australian Tropical Rivers Group 2004:4). Interpretations of limits, and notions of scarcity and abundance, remain contested. The environmental challenge for Territory catchments is to pre-empt environmental thresholds, rather than the project of restitution that faces southern catchments. The statement of the need to avoid the degradation and over-allocation of southern rivers is emphasised (Daly Region Community Reference Group 2004, Scrymgour 2005, Northern Australian Environment Alliance 2006, Howard 1997:19, Heffernan in McLaughlin 2007).

Currently, NT waters are the responsibility of the NT government (NT Water Act). The question of who has rights to water, and what constitutes these rights, becomes a central consideration for water management. The question of rights to use water remains an ongoing process of negotiation. The dialogue of planning and allocations, and the associated petition for recognition in the planning and allocation process, emphasises valuation processes. A range of projects have been undertaken to formalise the ‘non-economic’ values that people hold in relation to water. Environmental/ecological valuations include research on the identification of terrestrial conservation values (Kennedy 2004), aquatic conservation values (Blanch et al. 2005), and the economic values of wetland ecosystem services (Mabire 2005, Van Dam and Bartolo 2005). The social values held in relation to the Daly River catchment are explored by Young (Young 2004). Indigenous cultural values in relation to water are explored by Jackson (2004, Rea 2004, Straton 2007) (works that complement an emerging field of investigation into defining, interpreting and documenting Indigenous cultural values).

The valuation process is eclectic. Processes of valuation have theoretical bases emerging from environmental and ecological economic frameworks (Straton 2007), heritage concepts of value (Jackson 2004) and ecological services valuations (Blanch et al. 2005). The use of values has gained a much broader interpretation, as a means to express what is valued about water, (rather than the more narrowly defined what is the value of water to you) or as a means to express the ways in which water contributes to human wellbeing (eg. Stoeckl et al. 2006:v). The term ‘values’ has gained currency in discussion (eg. Scrymgour 2005). For its own sake, valuation is recognised as such a narrowing of relationships as to be both limiting and distorting as a mode of representation of anthropological or economic reality - for example, how Indigenous lives are interwoven with ecosystems (Jackson 2005 & 2006, Straton 2007). Alternative valuations offer instead a means for non-economic claims on water to be heard in debate, an ongoing contestation of what constitutes value, and a continual reiteration that, and identification of where, economic expansion does not meet all human needs/wants and may indeed impinge on the realisation of these needs/wants (and thus a continuing interrogation of the assumed links between growth and welfare). The task of assessing values has assumed a gravity (*‘a non-trivial task’* – Stoeckl et al. 2006:91¹³), seeking truth in value. This contrasts

¹² “more than half of the basins in the TR region had populations that increased by more than 10% between 1996 and 2001 – and the population of one basin grew by almost 76%.” Stoeckl et al. 2006:vii

¹³ “Within conservation biology Toussaint (2005) and others (eg. Jepson & Canney 2003; Syme et al 2004) encourage the identification, acknowledgment and incorporation of the emotional, subjective, humanitarian values in resource or conservation conflicts” (Stoeckl et al. 2006:91)

to the status of economic value which in essence is temporary and of no more practical importance than representing the ability to pay, and determining the criteria for exchange.

The ability to realise 'values' from water use becomes a means to petition water allocation decisions. Valuation projects adopt the stated objectivity of economic/scientific method in seeking to measure values expression and comply with the emerging economic management criteria that water allocation should prioritise high value uses. They are however inherently politically motivated projects with intention to interrogate and challenge current systems of prioritising water as an economic resource. The claim of value represents a claim to water, a means to claim an interest and a right in water management.

Framing water management as a question of allocations legitimates the presence of all claims at the allocation table. It risks disguising the historical dimensions of water contest and the processes that have led to current water uses and distributions. Water management is not a discrete task of divvying up resources between a range of interests, but a task that is potentially prompting a considerable reformation of the trajectory of economic growth. Considering the expansionary nature of the capitalist economy, and its demonstrated appetite for continuing resource inputs, it is to be expected that the 'undeveloped' status of the Northern Territory will undergo continual challenge. Uncontested, it would be expected that the availability of investment capital and the sense of opportunity associated with the Territory will finance a continued process of empirical testing of opportunities of the frontier, both by individuals and by the State. Northern waters will have limited scarcity value within catchments in the short term. The economic value gained from Northern Territory water use may increase as national scarcity and the associated formalisation of value is realised.

The potential of alternative constructions of value (of continuing an emphasis on deriving a positive from resource utilisation) to strategically challenge quantifiable monetary outcomes is defined by a number of considerations. The prioritisation of achieving instrumentally defined economic value from environment/resources provided an initial (and moral – Wolfe 2006) justification for the appropriation and development of landscape. The marginalisation of indigenous water interests to 'cultural' values' (Jackson 2005) may be a default framed by the above. Indigenous 'rights' to water are potentially threatened both by economic claims and by environmental claims. Equally, in the same way as mining companies accommodate Native Title frameworks, the legitimacy of ecological claims will be framed by their recognition of Indigenous water uses and water rights.

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