Investigations of Changing Indigenous Migration Practices for the Northern Territory of Australia: Theoretical and Policy Implications

Thesis submitted by Andrew James TAYLOR

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for the degree of Doctor of Philosophy in the
Faculty of Law, Education, Business and the Arts

Charles Darwin University, 2012
Abstract

This thesis by publications is a substantial contribution to understanding current and anticipated migration practices for Indigenous people in the Northern Territory of Australia. In contrast to existing scholarly knowledge about the relationship of residential migration to Indigenous demographic futures, this thesis argues we should anticipate bifurcations from past flows and patterns in remote areas. The purpose is to explore a range of demographic and social issues for their influence on residential migration. Drawing on parallel experiences in comparable developed nations, a series of investigative studies demonstrate the force of migration for substantially changing population distributions and compositions for small, isolated and dispersed Indigenous populations like those of the Northern Territory. While policy approaches to Indigenous affairs continue to portray remote communities as the ‘rightful’ places for Indigenous people, this thesis argues for more encompassing theories, a broadening of the research agenda, a revision of demographic discourse, and a shift in policy paradigms.

The methodological approach is positivist using a mix of empirical, ethnographic and investigative studies undertaken during the course of the candidature, and as part of a broader research program on changing Indigenous demographics in the Northern Territory and elsewhere. Investigations span a range of themes including: Indigenous population estimation, enumeration and forecasting; women, migration and gendered demography; technology and Indigenous futures; and education. The focus is on describing how changing interrelations between these might alter future migration patterns. Equally the research emphasises the value and relevance of systematic perspectives on Indigenous migration and mobility of all types (permanent residential, short-term and so on).

As a result, this body of work is a call for policy makers to stay abreast of developments proposed by the results presented herein. Even partial fulfillment of the trends anticipated will require planning and program responses to deal with social, demographic and economic consequences. In doing so, policy ‘blind spots’ might be avoided so that unintended consequences and misguided institutional scopes are not permitted to undermine continuing attempts to provide Indigenous Australians with opportunities for generating and enjoying lives of relative abundance which are afforded to most Australians.
Acknowledgements

To complete a doctoral thesis one must not only have extensive knowledge on the topic but also know how to generate and construct further knowledge. Not just any knowledge will do. It must be new knowledge and it must be relevant and contextualised knowledge. For me learning how to get knowledge on the topic of this dissertation came from decades of work in the Indigenous sphere in government and academia. Some of this, fortuitously, was spent helping to generate new knowledge from surveys, Censuses and various research projects. My knowledge on the topic is owed to a large number of people who have encouraged my professional, personal and intellectual development including many people at the Australian Bureau of Statistics, especially the Darwin office. Tony Barnes deserves a special mention for his ongoing support and for continuing to inspire research ideas.

Regardless of the original topic, whenever I have given a lecture, presentation or seminar overseas on the Northern Territory or remote Australia, the topic always turns to the plight of Indigenous people there. The inevitable question is always “How can it still be this way?” I have had the privilege of working with, talking with, playing sport with and being mates with many hundreds of Indigenous people in the NT who are the topic of this thesis. Without fail my observation is that almost all are generous, genuine, caring, funny and talented people seeking, like the rest of us, to establish the best life they can for their families and communities.

I do not stand for racist accusations established from the bad actions of just a few. These are often subtly woven around other things like the politics of inclusion and exclusion; blame and hand wringing. Worse are the opinionated (supposedly) intelligent people who have all the answers in relation to cause and effect about the terrible situation for Indigenous people in remote Australia today. Most have never spent any time getting to know the people they seemingly know everything about. This thesis is dedicated to Indigenous Territorians who I have had the pleasure of working and socialising with and learning a great deal from.

My desire to contribute new knowledge and construct meaning in this field was borne out of my prior life experiences but was ignited and supported by Professor Dean Carson. Professor Carson’s mind never stops working and he seeks to constantly generate new knowledge to make the world a better place. Almost all of what Dean does is for the sake of other people. My career record stands as proof of his commitment to my development. I dedicate this thesis to my son, Finn Harrison.
Statement of Original Authorship

This thesis comprises thirteen chapters of which nine are constructed from fourteen peer reviewed academic articles published between 2006 and 2012. This section documents the contributions of Andrew Taylor (the author) to each of these articles which were either authored entirely by the candidate or were co-authored with colleagues. From 2006 on the author was a full-time staff member with the Population and Tourism Studies Group at the School for Social Policy and Research, and later The Northern Institute, within the Faculty of Law, Education, Business and the Arts at Charles Darwin University. In these roles the author was involved in several research programs and projects which have fed into this thesis. These are outlined below:

- **Northern Territory Treasury demographic research grant** - The Northern Territory Treasury contributes significantly to independent studies on the demography of the Northern Territory and elsewhere through a demographic research grant. This grant has directly funded the author’s position within the School for Social Policy and Research and then within The Northern Institute at Charles Darwin University from 2007 to 2011 and has been leveraged to garner additional sources of research funding. Objectives of the grant include developing and updating population projections for the Northern Territory (NT) and its regions which are disaggregated by Indigenous status, research which enhances our understanding of the causes and consequences of demographic change in remote areas (especially through migration), and a program of Indigenous demographic research. The latter has contributed extensively to the research documented in this dissertation as the author was managing this program.

- **Australian Research Council linkage grant** - “The Causes and Consequences Population Turnover in the Northern Territory” - This multi-institutional and multi-disciplinary research program was managed from within the Population and Studies group at the School for Social Policy and Research. The project included broad level and a micro analysis of: migration patterns into, out of and within the NT and its regions; examinations of the costs associated with the turnover of professionals (dentists, teachers, nurses and so on); research into why people come to and leave the NT; and funding for a PhD scholarship investigating impacts from population turnover on social memory in Darwin.
• **Baseline survey of income management practices in Northern Territory Indigenous communities** - An Australian Government funded project on impacts for Indigenous people from the rollout of the Income Management Scheme (IMS) to remote Indigenous communities in the NT as part of the Northern Territory Emergency Response (NTER) from August, 2007 onwards. The IMS involves ‘holding back’ 50 per cent of some forms of regular welfare payments (for example, Newstart and Family Tax Benefits) and 100 per cent of some other irregular forms of welfare payments (such as advance loan payments and baby bonus instalments) from people residing at prescribed areas in the Northern Territory. These funds must be spent by recipients on specific items like food, clothes and household furniture. The research obtained residents’ views on the effects of these initiatives on their expenditure patterns, management of finances and mobility patterns.

• **Baseline community profile of the Tiwi Islands communities of Nguiu, Four Mile and Wurankowu** - Funded by the Australian Government this project investigated demographic and socio-economic conditions on Bathurst Island, the most populous island in the Tiwi Island group. In conjunction with stakeholders the project developed a basic community profile of essential information for evaluating impacts of changes in service provision, service coordination and facilitates development. Both quantitative and qualitative data were obtained from a variety of sources, including information on migration and mobility patterns, and using a variety of methods.

• **Socio-economic activity and water use in the Tropical Rivers (TR) region** - The TR region is the focus of a multi-institutional research program, the Tropical Rivers and Coastal Knowledge hub (see http://www.track.gov.au). This research produced demographic profiles (age/sex/Indigenous status) of the resident population of each of the TR regions as well as naïve (linear extraction) population projections for a ten year period from 2006. The status of tourism and prospects for changes in tourist populations were also assessed over a similar time period.

• **Demographic consultancy services to the Northern Territory Growth Planning Unit** - In 2008 the Northern Territory Government established the Territory Growth Planning Unit in response to the Northern Territory’s rapid economic and population growth and the need for a significant focus on planning for the Territory’s future. Situated within the Department of Lands and Planning, the Unit includes demographers, economists, planners and other relevant professionals. For its initial two years the Unit utilised the services of the Population and Tourism Studies Group
to research and advise on the social and policy implications from future demographic, economic and socio-economic change in Darwin and the NT

Collaborating Authors

Of the fourteen peer-reviewed journal articles and book chapters incorporated herein, the author was sole author for five and the lead author for six of these. The author has worked with Professor Dean Carson (previously of Charles Darwin University and now Director of Research with the Flinders University Rural Clinical School) on most of the research projects outlined above. Professor Carson was a colleague and my immediate supervisor during the candidature. He directly contributed as co-author to six of the articles incorporated in this thesis. Several other collaborators from universities in Australia and internationally have collaborated with the author on the projects listed above and are outlined below in alphabetical order as recognition of their contributions to the overall research program from which this thesis was derived:

Professor Tony Barnes (previously of)
Charles Darwin University
Principal Researcher/ Chief Investigator
School for Social Policy and Research

Ms. Lauren Bell
Charles Darwin University
Research Associate
School for Social Policy and Research

Ms. Suzanne Campbell (previously of)
Charles Darwin University
Research Assistant
School for Social Policy and Research

Professor Dean Carson (previously of)
Charles Darwin University
Head of Population and Tourism Studies
The Northern Institute

Mr. Bruce Dunn (previously of)
Charles Darwin University
Research Associate
School for Social Policy and Research

Associate Professor Prescott Ensign  (previously of)  
The University of Ottawa  
Associate Professor  
Telfer School of Management

Professor Lee Huskey  
The University of Alaska  
Professor  
Anchorage

Hon. Dr Gary Johns  
The Australian Catholic University  
Associate Professor  
The Public Policy Institute

Dr Silva Larson  
Commonwealth Scientific and Industrial Research Organisation (CSIRO)  
Research Fellow

Ms Petra Mayerhofer  (previously of)  
Charles Darwin University  
Research Intern  
The Northern Institute

Ms Catherine Martell  (previously of)  
Charles Darwin University  
Research Associate  
The Northern Institute

Dr Rasmus Ole Rasmussen  
Nordic Centre for Spatial Development  
Senior Research Fellow

Ms. Malinda Steenkamp  
University of Sydney  
PhD Candidate  
Indigenous fertility

Associate Professor Natalie Stoeckl  
James Cook University
Contribution

This dissertation consists of thirteen chapters, of which ten are substantively reprints or adaptations of published and peer-reviewed articles authored by the candidate. New and original work comprises all of Chapter One (the Introduction to the study), Chapter Thirteen (the Conclusion and Implications chapter) and most of Chapter Two (the Methods chapter). Original work is also interspersed between and within the article-based chapters, primarily but not exclusively within the prefaces of each; these prefaces explain to the reader the purpose of incorporating individual papers, or parts thereof, and to link successive chapters and their themes. The collaborators outlined above have provided invaluable assistance in the conceptualisation and analysis of the research as well as in preparing academic articles. The explicit nature of co-author contributions to the incorporated articles are detailed in the subsequent table.
Declaration of original authorship
I hereby declare that the work herein, now submitted as a thesis for the degree of Doctor of Philosophy with Charles Darwin University, is the result of my own investigations, and all references to ideas and work of other researchers have been specifically acknowledged. I hereby certify that the work embodied in this thesis has not already been accepted in substance for any degree, and is not being currently submitted in candidature for any other degree.

Andrew James Taylor
Table of author contributions to original articles incorporated in this thesis

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<td>Four</td>
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<td>evaluation by Carson.</td>
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<td>Part of the broader research hub project (TRaCK) described in the related projects section. The article was conceptualised by all the authors.</td>
<td>Collaboratively by all authors</td>
<td>Primarily Taylor with significant input from the other authors. Reviewer’s comments addressed by Taylor and revised paper submitted by Taylor.</td>
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<td>Seven</td>
<td>Adapted from:</td>
<td>Conceptualised by Taylor with input from the book editors - notably Carson and Barnes (co-author)</td>
<td>Literature review and comparative analysis by Taylor. Examples of impacts for NT provided by Barnes.</td>
<td>Written by Taylor except for NT examples on impacts of uncertain population numbers written by Barnes. Article reviewed in full by Barnes with alterations made by Taylor. Editor’s review provided by Carson. Final article addressing these written by Taylor.</td>
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<td>a) <strong>Taylor, A.</strong> and Carson, D. (2009) Indigenous mobility and the Northern Territory Emergency Response. <em>People and Place</em>, 17(1), pp.29-38.</td>
<td>This study was within the research project <em>Baseline survey of income management practices in Northern Territory Indigenous communities</em> (described above). Conceptualised by Carson</td>
<td>Taylor managed and conducted the fieldwork accompanied by Rodrigues (noted above). Data compiled by Taylor and interpreted by</td>
<td>Written by Taylor and Carson. Reviewer’s comments addressed by Taylor and revised paper produced by Taylor.</td>
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<td><strong>Taylor, A.</strong> and Dunn, B. (2010) Conceptualising and measuring Indigenous student mobility in the Northern Territory. <em>Australian Journal of Indigenous Education</em>, Vol.39, 2010, pp.88-97.</td>
<td>The article was conceptualised and designed by Taylor. The study was underpinned by several years of work by Dunn who conceived, designing and constructing databases in his role within the Department of Education and Training.</td>
<td>Extraction, manipulation and presentation of data by Dunn. Interpretation of data by Taylor.</td>
<td>Written by Taylor with input from Dunn. Reviewer’s comments addressed by Taylor and final article compiled by Taylor.</td>
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  Designed and conceptualised by Taylor.  
  Fieldwork managed and conducted by Taylor, accompanied by Mayerhofer (who is recorded in the list of contributors provided above).  
  Written by and revised by Taylor. |
| Twelve  | Reprint of:  
  Conceptualised and designed by Taylor.  
  Taylor.  
  Taylor. |
| Thirteen| New work (Conclusion)  
  Taylor.  
  Taylor.  
  Taylor. |
Statement of ethical clearances

This dissertation is constructed from individual studies and investigations sourced from quantitative, qualitative and mixed-methods approaches. Other than the research presented in Chapter Ten, all empirical data was derived from publically available secondary sources and therefore not requiring of ethical clearances for their access and use. Data analysed in Chapter Ten was provided by agreement from the Northern Territory Department of Education and Training under the auspices of the Charles Darwin University and Northern Territory Government Partnership Agreement (see http://www.cdu.edu.au/government/about.html for more information). Under this Agreement, ethical clearance was not required.

Ethical clearances were obtained for qualitative research and data presented in this thesis by formal application to the Charles Darwin University Human Research Ethics Committee (HREC) using the National Ethics Application Form. Details of these applications are as follows:

<table>
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<tr>
<th>HREC project title</th>
<th>HREC approval number</th>
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<td>The influences of ICT on travel patterns and migration into and out of Aboriginal communities in the Northern Territory</td>
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<td>1 September, 2010</td>
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<td>ACMA</td>
<td>Australian Communications Media Authority</td>
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<td>ASGS</td>
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<td>CAEPR</td>
<td>Centre for Aboriginal Economic and Policy Research</td>
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<td>CD</td>
<td>Collection District</td>
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<tr>
<td>COAG</td>
<td>Council of Australian Governments</td>
</tr>
<tr>
<td>CP</td>
<td>Core Periphery (models)</td>
</tr>
<tr>
<td>DET</td>
<td>[Northern Territory] Department of Education and Training</td>
</tr>
<tr>
<td>DEEWR</td>
<td>[Australian Government] Department of Employment, Education and Workplace Relations</td>
</tr>
<tr>
<td>ERP</td>
<td>Estimated Resident Population</td>
</tr>
<tr>
<td>FaHCSIA</td>
<td>[Australian Government Department of] Families, Housing, Community Services and Indigenous Affairs</td>
</tr>
<tr>
<td>FIFO</td>
<td>Fly-in-fly-out (workers)</td>
</tr>
<tr>
<td>HoR</td>
<td>House of Representatives</td>
</tr>
<tr>
<td>HT</td>
<td>Harris and Todaro (modelling of economic drivers of migration)</td>
</tr>
<tr>
<td>ICT</td>
<td>Information Communication Technologies</td>
</tr>
<tr>
<td>IVS</td>
<td>International Visitor Survey</td>
</tr>
<tr>
<td>MAPE</td>
<td>Mean Annual Projection Error</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Government Organisation</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>NSO</td>
<td>National Statistical Organisation</td>
</tr>
<tr>
<td>NT</td>
<td>Northern Territory</td>
</tr>
<tr>
<td>NTPOP</td>
<td>Northern Territory Population Projections model</td>
</tr>
<tr>
<td>NTT</td>
<td>Northern Territory Treasury</td>
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<tr>
<td>NTER</td>
<td>Northern Territory Emergency Response</td>
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<tr>
<td>NVS</td>
<td>National Visitor Survey</td>
</tr>
<tr>
<td>PES</td>
<td>Post-Enumeration Survey</td>
</tr>
<tr>
<td>SAMS</td>
<td>Student Administration and Management System</td>
</tr>
<tr>
<td>SLA</td>
<td>Statistical Local Area</td>
</tr>
<tr>
<td>STA</td>
<td>Survey of Tourist Accommodation</td>
</tr>
<tr>
<td>STCRC</td>
<td>Sustainable Tourism Cooperative Research Centre</td>
</tr>
<tr>
<td>TRaCK</td>
<td>Tropical Rivers and Coastal Knowledge</td>
</tr>
<tr>
<td>UPN</td>
<td>Unique Pupil Number</td>
</tr>
<tr>
<td>OLPC</td>
<td>One Laptop Per Child (philanthropic organisation)</td>
</tr>
<tr>
<td>UCL</td>
<td>Urban Centre Locality</td>
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<td>WWII</td>
<td>World War Two</td>
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Chapter 1: Introduction to the Study
1.1 Background to the study

Sitting on the back veranda at the community arts centre in the middle of a typically hot and muggy September day we casually examined the muddled landscape of rusty old cars, bedraggled trees and brown-tinged spear grass. I asked Mary (pseudonym), a young teenage Indigenous woman about the types of information communication technologies (ICTs) and applications she and other residents in her Indigenous community in a very remote part of the Northern Territory (NT) liked to use. She uttered the words which sealed my immediate fate… “We don’t use the Internet, we just AirG chat.” AirG is a suite of Internet-based (I noted the irony) chat rooms accessed many times each day by young people, and especially women at Mary’s community. Around three quarters use it to make friends and share information with other users across the world. Mass ownership and the widespread use of mobile phones came within just a few months of a new network which supports Internet phones becoming available. We find some people are beginning to develop a yearning for travel to the places they read about, see and discuss with others while they are ‘online’.

For decades the Australian Government and their State and Territory counterparts have attempted to deliver a catch-up in the levels of technology adoption and use by residents of remote Indigenous communities in the NT. Their endeavours are recorded in large investments into infrastructure projects (for example, ACMA, 2008), training (such as Dugdale et al., 2005) and in processes of service rationalisation (DEEWR, 2009), but this has done little to address the long-standing technology divide between these and other Australians (Daly, 2005). The situation was so bleak for so long that many academics and commentators asserted that catch ups in these areas might never occur, citing poor literacy and numeracy skills in particular as a barrier (for example, Desert Knowledge Australia, 2008; Daly 2005). Yet at this community, and more broadly across remote Australia, young Indigenous people are re-envisioning their world and have taken it upon themselves to adopt and embed the technologies of the global world into their daily lives. Mary’s story of technology adoption by remote living Indigenous Australians encapsulates the thesis that:

*Indigenous spatialities in the Northern Territory of Australia - the places people choose to live, travel to and from, and pass through along the way - are being redefined from within by the influences of modernity, globalisation and social change.*

The purpose of this research is a mixed-methods and positivist investigation of changing demographics and social conditions in the Northern Territory of Australia associated with the thesis above. Consequently, this study is a call for policy makers to stay abreast of the developments and of the factors investigated in this thesis to ensure that policy ‘blind spots’
are not permitted to undermine continuing attempts to provide Indigenous Australians with equal opportunities for generating and enjoying lives of relative abundance which are afforded to most Australians. By definition, the positivist approach to analysing and modelling the future demography of any population is subject to the potential for errors in the sense that anticipated outcomes do not eventuate or will eventuate at insufficient scales to be representative of a substantive transition from the past. However, the strength of the positivist approach which is adopted throughout this study is the ability for investigations to lean on the experiences of highly similar (in demographic terms) Indigenous and remote populations in other parts of the developed world. The nature and compositions of these populations are described in various parts of the thesis. Their populations have previously been subject to the sorts of social changes occurring at remote communities in the NT in recent times. The positivist approach allows us to conceptualise and test whether and why similar outcomes might be observed here. In that sense, concerns over the replicability, reliability and validity of the research documented herein can at least be examined, compared and contrasted through a global lens and indeed based on knowledge garnered from the study of changing settlement dynamics in relation to similar populations elsewhere.

In the context of small and remote Indigenous communities in the NT, even relatively minor changes to migration flows will have major demographic effects for both origin communities and the destinations to which people migrate. This is a consequence of their small size and their geographical isolation from major settlements, both of which have historically influenced and determined the characteristics of flows (size, composition and patterns) across the spectrum of human migrations (such as labour migration, residential migration, migration for education, and so on) from, to and between these and other settlements. A handful of people out-migrating from a remote community of just a few hundred, for example, represent a significant demographic ‘dent’, not only at that time but into the future in the form of lost opportunities for natural increase. Other nations, including Greenland and the State of Alaska, failed to detect the out-migration of women from small Indigenous villages before the survival of those villages came under threat (Rasmussen, 2007). The antithesis is that planning for inflows of the initial migrating cohort of women to urban centres was retrospective such that transitioning the diaspora through their ‘careers’ in education, housing and economic participation was not a proactive outcome of pre-conceived policy.

Inherent in the proposition of this thesis is that extant theories for explaining Indigenous migration have limited powers to map out future directions because Indigenous people themselves are enacting a fundamentally different future to that envisioned in the discourse of demographic theory and policy. Two major reasons are woven into the thesis. Firstly,
understanding of the relationships between contemporary Indigenous migration practices and the nexus of policy, sociological change and economic imperatives is poor. Accordingly, in both policy and academic circles, an insistence continues that Indigenous migration practices are problematic and are working in opposition to programs and institutional endeavors (especially from the bureaucracy) designed to improve their wellbeing. Secondly, the extant body of research has tackled many theoretical and technical issues but, in Australia especially, remains retrospective and introspective with an absence of voices on the potential for global and other forces to establish new and fundamentally different migration drivers and practices (Hamilton, 1987). Instead the role of ‘Aboriginal domains’ (Walter, 2008), predicated on individual memberships to culturally defined groups, continues as the dominant philosophy.

The basis of the second argument represented here is that the presently young generation (and even more so for coming generations) is being exposed to opportunities, information, networks and images that are and will alter their notion of space as well as their aspirations regarding their position within it. Until, for example, the advent of the Internet and the culture of global mobility associated with the information age, individual expectations about the future were constrained by a lack of information and knowledge of alternatives as a result of physical isolation. The imagining of a life elsewhere, enacted through migration, was constrained to images and representations gleaned from visits to (relatively) nearby and familiar towns and cities. Accordingly information about ways and means of establishing and enacting migration to bring about a new place of residence were likewise parsimonious. Consequently, the perceived choice set for successive generations of young Indigenous people born into families residing at remote Indigenous communities has been limited to remaining at such places.

These arguments establish this thesis as a challenge to the implied theoretical and applied erudition of contemporary research that Indigenous migration and settlement futures in remote Australia will replicate past trends because of the inseparable attachment of individuals to their remotely located lands and communities:

“Attachment to place and community prevail, irrespective of a history of changing government policies. There appears to be no reason to expect that these attachments will change in the foreseeable future” (Long & Memmott, 2007: pg.10).
Intellectual understanding, and thus policies informed by these, in relation to service provision in key areas like health, education and housing for remote living Indigenous Australians have overwhelmingly been informed by research investigating temporary mobility rather than residential choice. Temporary mobility is the collective term for movements which do not involve a change in residence (often referred to as ‘permanent migration’). Most notably the term ‘Indigenous mobility’ is synonymous in the remote context (in Australia at least) with the term ‘short-term mobility’ (for example, Prout, 2008a), a term used in research and policy to describe frequent movements over a short duration and, most importantly, featuring an eventual return to the place of origin. The ‘circular mobility’ (Taylor & Bell, 2004, p.17) is also commonly used to denote this aspect.

By contrast, young Indigenous people are increasingly observing (if only virtually and in visual ways) the differences between their home communities and other settlements across the world, thereby coming to understand the opportunity costs of not migrating. Although in recent times some remote Indigenous communities have seen quality of life improvements for residents (for example, by reductions in domestic violence rates) by and large they still resemble ‘slums’ (Johns, 2011) with perpetually poor socio-economic outcomes for residents (Macklin, 2008; Biddle & Yap, 2010) despite decades of targeted funding and programs to address these issues (Taylor et al., 2011; ABC, 2011a). Rates of violent crimes remain high (Weatherburn et al., 2003), houses are invariably overcrowded (Australian Indigenous HealthInfoNet, 2008), educational achievements remain terribly poor (MCEETYA, 2006) and opportunities for meaningful and sustained employment are largely non-existent (Biddle & Yap, 2010). These ongoing conditions have not escaped the attention of the nation whose social conscience is pricked uncomfortably by media images of life at such communities. Likewise, the United Nations have long questioned how and why a portion of the population of a prosperous nation like Australia, a vocal advocate for human rights elsewhere, remains marginalised (United Nations Permanent Forum, 2010). But the rapidly growing exposure of individuals who were previously technologically isolated and disconnected from the globalised world are poised to fuel desires to engage with economies, people and networks outside of the relatively contained spatial realms attributed to Indigenous settlement and migration characteristics in the existing literature.

As well as technology, this thesis discusses the potential for improving educational achievements by encouraging people, and especially women, to move to urban centres to further their education, begin careers or simply to start new lives. Large political and social efforts for improving educational outcomes continue and technology is playing a substantive part. For example, each child in remote Indigenous communities has been receiving a
complimentary laptop which comes loaded with educational games. The “XO” is a hardy computer designed for the harsh conditions of remote areas. The basis of expectations for educational-led migration have been the experiences of Indigenous populations in remote parts of developed nations elsewhere, and a portion of this thesis is dedicated to investigating likely settlement futures in the Northern Territory based on international analogues. The influence of opportunities from modernity and improved education are layered onto existing long-term migration patterns that feature the (net) permanent movement of Indigenous people from remote communities to urban centres in the NT; a phenomena documented over the past 20 years, such that the equivalent of a medium-sized Indigenous community has moved to urban areas each five years. Little attention has been paid to this by academics and policy makers (Taylor & Carson, 2009a) who instead have concentrated on (or more appropriately blamed) the temporary ‘drift’ of people from communities to towns and urban centres.

These postulations should not be interpreted as an attempt to intellectually challenge the viability nor the significance of Indigenous cultures, or to underplay the importance of these to the histories and future wellbeing of Indigenous Northern Territory residents or those living elsewhere. Indigenous cultures are plural, as are the characteristics of people residing in Indigenous communities. ‘Cultural continuance’, the encompassing term in the literature, is acknowledged by the author as integral and vital in the lives of Indigenous Australians, for communities, and indeed the nation. Noted in this thesis however, are the innovative and ever evolving practices for Indigenous cultures in the face of structural and societal change (discussed in some depth in Chapter Three for example).

Conversely, this thesis is a challenge to the populist notion of there being an unalienable dependency on the maintenance of past settlement distributions for the survivorship of Indigenous cultures (and the rights to express these in languages, arts and cultural norms). Such sentiments are based on assumptions that migration patterns which sustain existing settlement patterns should and will remain consistent with past trends, thereby rendering redistributive effects from permanent migration into the future negligible. In the subtext of this debate, current settlement patterns feature discrete Indigenous communities which themselves are artificial constructs, put in place by missionaries, government overseers and station owners during colonisation of the Northern Territory. Over time these have become embedded and enshrined as places of cultural significance, despite the fact that the traditional lands of many who live there may be some distance away and despite the fact that residents might represent many traditional lands across the NT and elsewhere. By contrast,
this thesis presents arguments for ‘cultural continuance’ in spite of anticipated changes in settlement patterns enacted through migration.

These contentions situate the thesis for the laying out of contradictory paradigms in relation to contemporary approaches to Indigenous affairs in remote areas, and to possibilities for unintended consequences to derive from individual policies which seek to ‘mainstream’ remote Indigenous people in situ. On the one hand governments and society are demanding that remote Indigenous people engage with mainstream economies and organisations, while at the same time, the call for Indigenous people to remain ‘loyal’ to cultural practices remains, such that tangible contact with ‘the land’ and places within are upheld. The argument presented here is that this dichotomy does not sit well in industrialised societies where migration, rightly or wrongly, is a defining feature of the success of individuals according to neoliberal capitalist ideals (International Organisation for Migration, 2008; Adey, 2010).

1.2 Why migration is interesting

In discussing the future of population sizes and their makeup for any location (that is, the nuts and bolts of settlement patterns) the most uncertain influence on change is migration (Wilson, 2007). Humankind has survived and thrived thanks to its ability to adapt to changing environments and to collectively and individually situate to new ones. In general, the place one chooses to call ‘home’ derives from systematic analyses of the relative merits of complex suites of information, drivers and pull-factors at a point in time. Collectively, these individual decision making processes have given rise to human settlement patterns observed today. In the post-industrial era settlements in developed nations are, above all else, organised around the production and consumption of goods and services, in turn influenced by a multitude of other factors. But for places like the Northern Territory, where substantial proportions of the Indigenous population live at remote and isolated communities constructed for them by settlers, the nature of economic and intellectual connections to larger population centres may be different and complex. Knowledge of cause and effect in relation to demographic change and economically induced migration, for example, are weak and understanding about causal factors poor (Taylor & Bell, 1999).

During the twentieth century migration scholars began to place heavy emphasis on economic growth for driving broad patterns of residential migration. Most prominently, the global phenomenon of rural-to-urban migration associated with the development and transitioning of information economies was given top credence as the universal driver of migration flows. Harris and Todaro, for example, developed seminal theories describing individual’s desires
and expectations for maximising net relative earnings through migration (Harris & Todaro, 1970; Petrov, 2007). In simple terms, these and other economic rationalists emphasised the ability of individuals to calculate net economic benefits (including moving costs) in determining the attractiveness of destinations. Other aspects of economic systems have been studied for their roles in making the sources and destinations for migration more or less attractive. These include structural components, like the relative benefits provided by systems of welfare (Kritchel & Levine 1999), and the rise and decline of particular (usually dominant within the region) economic sectors, especially rural farm-based economies.

The highly individualistic nature of economic rationalism as an explanation of complex human migratory behaviours in developed nations is nevertheless at odds with theorems developed by social scientists. These instead emphasise individual and collective wellbeing as well as the satisfaction of basic needs (in similarity to Maslow’s pyramid) as primary motivators for spatial positioning (Haan, 2002). Anthropologists, meanwhile, have stressed the importance of collective belonging and self-fulfilment for driving migration behaviours; ostensibly obtained through a mix and evolution of historical, cultural and social factors (for example, Monsutti, 2007). For these varying perspectives alone, migration is an interesting phenomenon as both the index and documentation of changing human behaviour, and as the force which has bought about and continues to change the demography of communities, societies and nations.

In dealing with future human geographies for small and remote populations, studies in Australia (Wilson, 2007 in particular) and elsewhere (for example, Alaska Department of Labour and Workforce Development, 2007) have demonstrated migration to be a notoriously unpredictable component of demographic change. It is also the case that the smaller the population one is attempting to forecast, the larger the errors (measured by the percentage difference between the projected and the eventual populations) that are attributable to migration (Taylor, 2011). In Australia almost all settlements in remote and regional areas are small by western standards and on overall the more remote the region the smaller settlements are. With the exception of the fringe camps found at the geographic edge of Darwin and Alice Springs, all Indigenous settlements in the Northern Territory are small and are located in remote areas. Anticipating the demographic influences from structural and societal changes, whether these are iterative or enforced through policy or other ‘shocks’, on the future demography of remote populations is consequently a difficult research challenge.
1.3 The problematic history of Indigenous migration in remote Australia

A long historical testimony exists on the problems which Indigenous migration practices have created for both settlers (and now service providers) and for the original inhabitants of Australia (Prout, 2008a). Subsequent to the settlement of remote lands, and in the north of the country in particular, Indigenous mobilities were overtly restricted as people were forced to re-settle into mission-run settlements and reserves (Gray, 2004). In the Northern Territory these are by and large the discrete Indigenous communities we see today; described in very unflattering terms across a range of academic fields and depicted regularly in the media for their squalid conditions. Indigenous migration events in the past, and ostensibly even today, were seen to occur with little apparent patterning, along un-chartered routes and seemingly without forewarning (Petersen, 2004). These uninformed standpoints produced terms like ‘walkabout’ and ‘gone bush’, and under these circumstances Indigenous migration practices became symbolic of what was wrong with the race as well as signifying the need for a moral and material rescue.

But this history of problematisation in relation to Indigenous migration practices is not unique to Australia. The issue duplicates the challenges experienced in remote areas of Canada, Alaska and Northern Europe. In all cases governments and institutions charged with the oversight and development of Indigenous populations dealt poorly with the complexities of Indigenous spatiality and its relationships to both collective and individual elements of cultural identity (Gerrard, 2008). The continued presence of run down town camps (essentially urban ghettos as home to in-migrants from remote areas) at the margins of urban centres were practical testament to some of these difficulties (Hovgaard & Kristiansen, 2008; Gray, 2004, Foster et al., 2005; Karvelas 2009).

This legacy of problematisation has carried forward to the present day. It has encouraged research in the field which is grounded on distinct values about what counts as suitable knowledge for conceptualising and analysing remote Indigenous migration practices. Firstly, cultural continuance ties the drivers, patterns and outcomes from Indigenous migration (in all its forms) in the Northern Territory almost exclusively to the ‘need’ for Indigenous people to always return from migration ‘events’ to their home communities. This need is founded on the historical and perceived role of remote communities as spaces within and around which Australian Indigenous cultural identity was established and should be maintained. There is little in the way of contemplation in the existing literature about whether and how migration practices might alter from subjugations of the relative attraction of ‘the land,’ to attractions found in other spaces as a result of modernity and the structural,
cultural and societal changes which accompany this phenomenon. Secondly, cultural continuance embeds most research in the field as introspective and retrospective, subjecting it to received wisdom. This has created an intellectual vacuum where debate on whether and how the experiences of Indigenous migration and settlement changes in nations with similar Indigenous histories and demographics to the NT might be indicative of changes we can anticipate in the NT and across the north of Australia.

1.4 Current intelligence about Northern Territory Indigenous migration futures

The existing stock of intelligence about future Indigenous migration and settlement patterns in the NT accords with populist expectations that: a) there will be no substantive future net out-migration from remote communities (and from the Territory as a whole to interstate and overseas) and b) the scales and patterns associated with past migration flows (for example, between communities and other communities, communities and cities, communities and interstate) are likely to persist. Official projections by the Northern Territory Treasury (NTT) extend from 2010 to 2040, for example, and factor in a net loss of just 13 Indigenous people per annum to interstate as well as small gains for urban areas and small losses for remote areas resultant from intra-Territory migration (Northern Territory Treasury, 2011).

National projections modelled by the Australian Bureau of Statistics (ABS) and extending to the year 2021, anticipate that natural increase will drive future Indigenous population growth and changes on a regional and Territory-wide basis over this horizon. Net migration is forecast to comprise only four per cent of total annual growth in the urban Indigenous population in Australia by 2021, including the same for Darwin (ABS, 2009a). Nevertheless, the ABS anticipates net inflows of 193 Indigenous people from remote areas to urban areas in the NT each year over the course of the projections (author calculations based on ABS, 2009a). While both fertility and mortality rates (represented by improving life expectancies) for Indigenous Australians are forecast to decline, the number of births is forecast to increase substantially. This seemingly anomalous trend is an anticipated outcome from the already large and increasing rates of mixed-partner relationships where one partner (almost always the mother) is Indigenous and the other non-Indigenous. Mixed-partner relationships (the demographic effects of which are explored in more depth in Chapter Five) increase the demographic ‘pool’ for Indigenous issue by effectively increasing the chance of a baby which might otherwise be registered as non-Indigenous at birth to be registered as Indigenous on account of the Indigeneity of the mother (see Peterson & Taylor, 2002).
Biddle and Taylor (2009) meanwhile have undertaken projections for future Indigenous populations in ‘Indigenous Regions’ and according to a number of scenarios. Part of this research compared and contrasted population changes between a scenario of zero internal migration and continuations of the rates of internal migration which were observed between the 2001 and 2006 Censuses. Basing projections on past Census rates was shown to simply shift higher rates of growth in future from cities to remote centres like Alice Springs where annual population growth rates were shown to double under a scenario of Census applied migration rates compared to zero migration (Biddle and Taylor, 2009: pg.14). Their analysis highlights that past Indigenous migration trends support popular wisdom that no significant changes to the overall distribution of Indigenous people in the NT are forecast. But a key factor not explored in this piece of research was the likelihood that growth in the regional centres identified (like Alice Springs) is likely to result in increased movements to even larger centres, interstate or overseas; known as ‘stepwise’ migration in the literature (for example, Withers & Watson, 1991).

While ABS and NTT forecasts on the surface anticipate very small migration led population redistributions from remote to urban areas and from the NT to interstate, these numbers are not without significance. A number of Indigenous communities in the NT, for example, have around 200 residents (recalling the ABS forecast of net internal migration of 193 per annum to urban areas in the NT) including Mount Liebig and Binjari, and this flow is more than twice the size of very small communities scattered across remote areas, like Wallace Rockhole. Similarly, a net interstate out-migration of just 13 Indigenous people per annum (as forecast by the NTT) would see the NT’s share of the total Indigenous population of Australia fall between 2006 and 2021. These comparisons demonstrate the delicacy and dynamics inherent in remote populations (Carson et al., 2011), especially where settlements are small and highly dispersed. While current demographic intelligence is clearly predicated on the continuance of relatively small flows between remote areas and elsewhere, this thesis questions and contemplates demographic impacts and policy implications should these numbers increase. Experiences overseas have mapped out consequences from relatively small (numerically) changes to migration and other (demographic, social and economic) elements affecting population systems in these areas. The argument in this body of work is that we should expect and plan for similar consequences here in the NT.

1.5 Contribution of this thesis to the stock of intelligence about Indigenous migration futures
The author is enrolled in the Doctoral research program stream ‘by publications’ with fourteen peer-reviewed and published articles incorporated in whole or substantively into this dissertation. These address a number of themes:

- Indigenous population estimation, enumeration and forecasting;
- The historical demography of Indigenous peoples in developed nations;
- Migration data infrastructure and interpretation;
- Women, migration and gendered demography;
- Technology and Indigenous futures;
- Globalisation and Indigenous migration;
- Education and Indigenous futures;
- Indigenous settlement distributions and futures; and
- Transitional migration theory in the remote Indigenous context.

In its entirety this dissertation makes substantive contributions to the stock of research-based knowledge on Indigenous migration practices and their futures in the NT and beyond. Contributions are conceptual, theoretical and applied on a number of levels. Conceptually, this thesis challenges accepted scholarly wisdom and embedded approaches to research on which the methods and materials for researching, analysing and depicting Indigenous migration are based (for example, in Chapter Eight). It also offers alternative paradigms and approaches drawn partly from the experiences of other developed nations in these areas (for example, Chapter Ten). A number of frameworks for understanding and anticipating Indigenous rural-to-urban migration practices in the Northern Territory context (as in Chapter Eight) are outlined.

Theoretically, the universality of the ‘grand theories’ of post-industrial demographic transitioning are challenged in relation to remote Indigenous populations in Australia, as are a number of theories which seek to explain contemporary global migration drivers, trends and consequences in the neoliberal capitalist era (Chapter Three). Regional development and economic development theories, as they apply to remote populations (see Chapter Six in particular), and theoretical approaches to population projections in the remote context, meanwhile, are scrutinised for their diminution of individual decision making and their over-reliance on received wisdom garnered from recognised experts. A contribution to Transitional Migration Theory, as it has previously been applied to Indigenous migration in the Northern Territory, is made in Chapter Twelve.
The articles incorporated throughout are a mix of empirical, ethnographic and investigative studies undertaken during the course of the candidature and as part of a broader research program into the demographic characteristics of remote Indigenous populations in the Northern Territory and remote areas elsewhere. This endeavour was pursued initially by examining Indigenous demographic change (particularly migration) in the NT and comparing outcomes to other parts of Australia. This internally-focused approach limited the potential for the history of Indigenous demographic change in other developed nations to inform the study of the same in the NT. Given the characteristics and histories of Indigenous populations in the remote parts of Canada, Alaska and the Circumpolar North of Europe (Greenland, Norway, Finland and Sweden in particular) and the historical similarities in approaches to Indigenous affairs, the research program was re-engineered to incorporate and be informed by the study of Indigenous migration practices in these and other places. Thus, in Chapter Five, for example, the changing fertility and mortality of Indigenous people in the NT and future outlooks for these are compared and contrasted to the same for Indian Natives in Canada, the Sami in Sweden and Norway, and to North American Indians of Alaska.

Following this introductory chapter and the methods chapter which follows it, the manuscript is divided into two parts. Each chapter (within these parts) is a reprint or adaptation of one or more of the published and peer-reviewed academic articles. The nature of these incorporations and the contributions of co-investigators and co-authors are provided for the reader in Chapter Two, the methods chapter. Methodological approaches undertaken in studies represented by incorporated articles are described in detail in the methods chapter which also broaches overarching methodological issues not fully detailed within the individual articles, but considered as necessary information for the reader. These include central definitions and concepts as well as explanations of geographical classifications and standards used throughout. The final section of the methods chapter explains the sources of all quantitative and qualitative data sets used in the research, including methods for collection, analysis, interpretation and reporting.

Following the methods chapter, Part One of the dissertation (chapters three to seven) aims to establish the demographic and policy contexts for investigating Indigenous settlement futures in the Northern Territory. It commences with Chapter Three which introduces the reader to political, intellectual and philosophical tensions surrounding historical and contemporary understanding about remote Australian Indigenous migration practices, with a focus on the NT. This study establishes the essential context for the thesis by exploring Indigenous migration futures through the lenses of technological change, gendered migration and improved educational outcomes, for their influence on the aspirations and choices of Indigenous Australians. Inter-associations between these for changing migration practices
are discussed, as is the sensitive issue of the survival of Indigenous cultural elements in light of the demographic and structural changes proposed in this thesis.

Chapter Four is a baseline and trend analysis of rural-to-urban migration flows in the Northern Territory and an overview of the characteristics of Indigenous migration using Census of Population and Housing data (herein Census). The analysis reported in this chapter fills a void in the systematic and macro-scale analysis of the available data with a view to describing whether and how the demography of remote Northern Territory is changing through Indigenous residential migration. Most studies have focused on the social issues and impacts for service delivery from transient Indigenous people, especially for their perceived links to anti-social behaviour. The supposition is that the size of that cohort is continually increasing in or at the margins of urban centres in the Northern Territory (Darwin and Alice Springs) and at regional towns (particularly Katherine) as a result of policy initiatives like the Northern Territory Emergency Response.

Chapter Five provides a necessary summary of contemporary trends for Indigenous fertility and mortality (the non-migratory components of Indigenous population change) in the Northern Territory and elsewhere. This chapter provides a holistic context for understanding some of the drivers of Indigenous population change in the modern era and includes contestations about how these might play out in the future. It incorporates discussion on changing propensities to identify as Indigenous in official data collections (or ‘ethnic mobility’) as well trends and likely futures for mixed-partnering (where one partner in a relationship is Indigenous and one is not), both of which have and may continue to dramatically increase the size of the Indigenous population in Australia.

Chapter Six is concerned with the demographic characteristics of remote populations in developed nations, including Indigenous people. These determine that traditional methods and materials, and the ‘grand theories’ of demography for explaining population change anticipated elsewhere, are unlikely to enhance our theoretical, policy and practical understanding about current and future demographic trends in the NT. A case study approach is used to demonstrate the concept of the ‘seven D’s of remote demography’ which are outlined within the chapter. This study critiques a range of theories and approaches to regional development in the context of remote areas in Australia and questions the assumptions of economic development theories as they have been applied there, especially in relation to Indigenous people.

Chapter Seven delves into some of the technical and intellectual issues surrounding current practices in relation to generating demographic ‘knowledge’ about Indigenous people by comparing and contrasting the approaches of governments in developed nations to remote
area population enumeration, estimation and forecasting. The focus is on remote areas in
general but with emphasis on the additional challenges for accurately depicting and
forecasting the size, composition and changing nature of Indigenous populations. This paper
argues that these challenges lead to statistical uncertainties for the use of key data sets,
generating errors that perpetuate through demographic estimation and modelling processes,
the size and sources of which may never be known.

Part Two of the dissertation (chapters eight to twelve) is investigative studies and
experimental analyses of current and likely future migration patterns. It commences with
Chapter Eight which reports on a suite of qualitative interviews conducted by the author and
a colleague at four large remote Indigenous communities in the NT. Interviews garnered
individual accounts and perceptions about mobility-related impacts from the introduction of
the Northern Territory Emergency Response (NTER), a major and controversial Australian
Government policy initiative commencing in 2006 (Macklin, 2008). The NTER was
purported to have triggered large scale out-movements of Indigenous remote community
residents into regional centres and towns on account of its specific programs. Particular
attention in the media was given to prohibition of the sale and consumption of alcohol at
remote Indigenous communities, outside of the regulated ‘canteens’ which exist in some,
and to the quarantining of half of all the welfare payments of individuals residing there. This
chapter concludes by presenting a framework for re-conceptualising Indigenous migration in
the contemporary setting.

Chapter Nine investigates evidence for gendered migration from remote Indigenous
communities in the Northern Territory. It extends research undertaken in the Arctic Circle
(in Greenland, Sweden and Norway in particular) which found the onset of shifting
Indigenous settlement patterns was first observable in the form of rapidly increasing rates of
female out-migration from small and remote Indigenous communities. Quantitative tests are
applied to existing data sets to examine whether the onset of such patterns are observable for
the NT.

Chapter Ten reports results from investigations of migration patterns and flows for school-
aged Indigenous children in the Northern Territory. It is a quantitative analysis of internal
departmental administrative datasets. Educational qualifications are universally denoted as a
key driver of mobility and an enabler for migration. Conversely, high rates of Indigenous
mobility in remote areas in the Northern Territory have been identified as perpetuating poor
rates of Indigenous educational achievement. The tension between these is discussed in
relation to future educational outcomes and migration patterns.
Chapter Eleven highlights the inter-associations between the rapid and widespread adoption of information communication technologies (ICTs) by young Indigenous people in remote communities and the potential for changing migration practices. It also broaches the sensitive issue of cultural survivorship in light of this and other demographic and structural changes proposed.

Chapter Twelve builds on the practical demonstration of the speed of technology uptake in remote communities demonstrated in Chapter Eleven, and their influences on individual behaviours and aspirations, by presenting a revisionist’s perspective on Transitional Migration Theory as it has been applied to Indigenous migration in Australia in the past.

Chapter Thirteen concludes this dissertation by reflecting on its contribution to theory and practices across a range of disciplines, to policy formulation across a range of portfolios, and to establishing the need for ongoing programs of research.

1.6 Summary

This chapter has outlined the context for the study in this thesis. This thesis addresses both an intellectual gap and a research need in the study of the future migration and settlement patterns for Indigenous Australians in the Northern Territory. It questions the assumptions and received wisdom maintained in existing intelligence on this topic, whereby no substantive changes to settlement patterns as a result of migration flows and patterns are anticipated, since these are held stable by individuals’ unalienable attachments to remote Indigenous lands. These contentions are addressed through a positivist investigation of how and why prevailing circumstances might differ to the extant theoretical and applied depictions from researchers in the field. Examinations of existing intelligence in this introductory chapter signify that even relatively small variations from anticipated movements in relation to remote areas will bring about large downstream demographic and social impacts. This chapter has also described why and how this thesis has leaned on comparisons and contrasts with nations and jurisdictions where similar Indigenous histories and settlement patterns have been observed. These assist in setting the context for the research approaches applied in this body of work and outlined in subsequent chapters.
Chapter 2: Methods
2.1 Introduction

The purpose of this chapter is threefold. Firstly, it provides detailed explanations of the methodological approaches used in the various studies that are represented in the articles incorporated within this dissertation. Secondly, overarching concepts, definitions and classifications are documented and explained in terms of their relevance to the study at hand; and thirdly a detailed account of all data sources as well as the methodological approaches to their collection, analyses and interpretation are provided.

Most of the studies reported in the individual articles forming this study were conducted using mixed-methods approaches. Accordingly, Table 1 summarises the research approach and methods for each article, the sources of data for these as well as the full citation. The table is followed by an augmented methods section in which sources and applications of data are examined under the headings of a) Quantitative investigations: methods, data sources, techniques and limitations; and b) Qualitative investigations: methods, data sources, techniques and limitations.

2.2 Defining migration in the context of the research

The study of human migration involves investigations on the processes surrounding relocations of individuals from a prior to a different location, with emphasis on understanding the causes and consequences of these. In reality, however, migration is analysed and discussed as an aggregate phenomenon which is both a feature of and determinant in the behaviour of and interactions between population systems. The definition of migration adopted in this investigation is consistent with this outlook and with contemporary definitions in the international literature as being:

> The process of moving across an international border or within a state. A population movement of any kind, whatever its length, composition and causes. (Based on International Organisation of Migration, 2008, pg.15 and modified by the author.)

On this basis, migration studies identify three main types of human migration flows according to the origin and destination (collectively the flow): international migration, internal migration and regional migration. International migration involves the movement of individuals across national borders, internal migration occurs across borders (of any type) within a nation, and regional migrations are either movements across regional boundaries (for example local government areas in the same State) or within regional boundaries (like migration within a city).
Studies of migration are highly differentiated by temporal as well as spatial elements, and in particular permanent versus temporary migrations. But in the globalised and increasingly mobile world it is acknowledged that the distinctions between the two are becoming increasingly blurred (D'Andrea, et al., 2011). Permanent migration is usually, including in Australia, defined as a change in the place of usual residence for the individual migrant. In official data collections like the Census of Population and Housing, an individual is deemed to have changed their usual residence if they have or intend to live at their current residence for six months or more and this location is different to the one prior (ABS, 2011a). Consequently, permanent migration in developed nations like Australia is usually called ‘residential migration’ with all other relocations usually labelled as ‘temporary migration’.

The focus of this dissertation is changing residential migration flows in relation to Indigenous people in the Northern Territory of Australia according to the definitions outlined above. By necessity the study of residential migration for this group entails investigations on whether and how other predominant forms of migration might also be changing. As discussed in Chapter One, for Indigenous people in the NT this includes temporary migration, usually labelled as ‘Indigenous mobility’ in the literature. This study posits Indigenous mobility as a sub-set of migration which itself is a sub-set of changing population systems at the source and destination locations. The primary geographic areas explored in this study are the NT as whole, other States and Territories, Remoteness Areas (discussed in more detail in this chapter below) and remote Indigenous communities.
<table>
<thead>
<tr>
<th>Topic / title</th>
<th>Chapter in Thesis</th>
<th>Methods</th>
<th>Data source(s)</th>
<th>Full article citation(s)</th>
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</thead>
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<tr>
<td>Topic / title</td>
<td>Chapter in Thesis</td>
<td>Methods</td>
<td>Data source(s)</td>
<td>Full article citation(s)</td>
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<td><strong>Topic / title</strong></td>
<td><strong>Chapter in Thesis</strong></td>
<td><strong>Methods</strong></td>
<td><strong>Data source(s)</strong></td>
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<td>Topic / title</td>
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<td>Topic / title</td>
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<td>Data source(s)</td>
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<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Information Communication Technologies and New Indigenous Mobilities? Insights from Remote Northern Territory Communities</td>
<td>Eleven</td>
<td>Case study, qualitative interviews, qualitative focus groups</td>
<td>International migration literature, grey literature</td>
<td>• Taylor, A. (In press) Information communication technologies and new Indigenous mobilities? Insights from remote Northern Territory Communities. <em>Journal of Rural and Community Development</em>.</td>
</tr>
<tr>
<td>Topic / title</td>
<td>Chapter in Thesis</td>
<td>Methods</td>
<td>Data source(s)</td>
<td>Full article citation(s)</td>
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</tbody>
</table>
2.3 Indigenous settlement geographies in the Northern Territory

Distinctions are made between settlements of various types throughout this thesis. In general these align with recognised and commonly applied frameworks for the geographical classification of settlements, such as the Australian Standard Geographical Classification (ASGC) provided by the Australian Bureau of Statistics (ABS). Nevertheless, parts of the research are based on custom geographical units designed for particular pieces of research such as the Tropical Rivers (TR) catchment areas outlined in Chapter Six. The thesis was authored during a period of transition from the ASGC to a new geographical framework - the Australian Statistical Geography Standard (ASGS). While this transition has not compromised the research approach or analysis, the reader should be aware that naming conventions reflect the former Standard.

Classifications of settlements of all types, as well as the institutions found within them (including discrete Indigenous communities, schools located in these, remote medical centres, towns and larger centres like Darwin and Alice Springs) as urban, remote or very remote are made according to the Remoteness Areas Classification (RAC). This classification structure is depicted for all of Australia in Figure 1 and in more detail for the Northern Territory in Figure 2 below. Under the RAC all settlements outside of the Greater Darwin region (essentially the Darwin Statistical Division under the ASGC framework) are classified as either Remote or Very Remote. Throughout this thesis these classifications are combined and termed as ‘remote’.
Figure 1 - Aboriginal communities within remoteness areas in Australia (NT highlighted)
Source: Modified by the author from DBCDE (2009).

Figure 2 - Northern Territory remoteness structure according to the RAC
Source: Australian Government Office for the Arts, 2006
The distribution of Indigenous populations according to Remoteness Areas and the settlement types within these is an important delineation in the context of this research. In remote and very remote areas, settlement patterns feature discrete Indigenous communities. These are geographic locations bounded by physical or cadastral boundaries (which have legal status) inhabited predominantly by Indigenous people and usually with housing and/or other infrastructure that are owned or maintained by the community (Australian Institute of Health and Welfare, 2005). A discrete community is considered as ‘remote’ if residents have only restricted access to goods, services and opportunities for social interaction, while communities are ‘very remote’ when residents have little accessibility to these (Australian Government Department of Finance and Deregulation, 2009). Applying the definition above sees discrete communities as home to around 60 per cent of remote or very remote Northern Territory Indigenous residents in 2006 (Taylor, 2011). Indigenous communities are the unit of analysis for a number of chapters in this dissertation including Four, Five, Eight, Nine and Chapter Ten.

The populations of discrete communities range from around 200 residents up to around 2,500, but these numbers vary according to seasons, methods of measurement and other factors.

In Australia discrete communities are also commonly referred to as ‘Indigenous communities’, ‘Aboriginal communities’ or ‘remote communities’ and these terms are used interchangeably throughout this dissertation. The Census of Population and Housing (for Australia) permits the demographic analyses of individual remote communities and they can also be aggregated for higher levels of analysis. There are, however, a number of limitations in conducting such analyses and these are outlined in detail within the text of individual articles included in the dissertation. Outside of remote communities (but still in remote or very remote areas) populations are ‘captured’ in the Census data as residing in (predominantly non-Indigenous) towns such as Katherine, Tenant Creek or Nhulunbuy, or as living in the ‘Rural Balance’. Data for the former can be analysed at lower levels (down to essentially ‘street blocks’) while data for the latter can be compared to any other level of geography, but cannot be disaggregated for more detailed levels of analysis.

2.4 Quantitative investigations: data sources, techniques and limitations

Table 1 indicates that quantitative methods were employed in the research underpinning several chapters in this dissertation, sometimes exclusively (for example, Chapter Four) and sometimes in conjunction with other methods (as in Chapter Seven). In all cases,
investigations of a quantitative nature were either conceptualised as methods and techniques in their own right (Chapter Ten for example) or are new conceptualisations of methods which have been applied elsewhere (for example Chapter Four). Other than the data under the custodianship of the Northern Territory Department of Education and Training (DET) all data sets are publicly available. Some of the research has nevertheless involved methods for the design, construction and extraction of custom data tables. For example, in Chapter Nine the author used the ABS’s proprietary software ‘Table Builder’ to design and extract customised tables of Census data. We now examine the methods, techniques and limitations associated with each data set:

2.4.1 Census of Population and Housing

Census data are the basis for analysis in Chapters Four, Six and Nine. The Australian Census is conducted each five years and provides comparable national data for each of the various levels of settlement geographies (for example Indigenous communities in remote areas, Local Government Areas and States/Territories) on which demographic profiling and modelling can be based. The Census aims to enumerate each person present in Australia on Census night and to allocate each Australian resident to a place of usual residence. But in jurisdictions with significant remote and significant Indigenous populations the challenges in meeting this aim are substantial, as outlined in Chapter Seven.

Census data may be particularly poor when examining the migration of Indigenous people in the Northern Territory. There are conceptual issues; movements from place to place may not always be associated with a ‘change of residence’ by Indigenous people for whom such patterns of movement are commonplace and do not reflect a change of address in the way that they might for other populations (Prout, 2008b). There are also practical issues deriving from a special Indigenous enumeration strategy for remote areas which involves key informants and a shortened version of the Census form (ABS, 2006a). These procedures aim to account for low literacy and poor English language skills that could affect response rates, but it has also been shown to result in under-enumeration because of poor knowledge by Census collectors and their local informants about the intent of Census questions (Martin et al., 2002). Finally there are issues of scale. Measuring movements within the Northern Territory and attaching these to specific rural and urban places is difficult due to small population sizes. The ABS is prevented legislatively from releasing information that could potentially identify respondents, so getting sufficiently detailed data about age and sex and Indigenous status (never mind further characteristics such as labour force status) is problematic at small geographic scales.
Despite these limitations, and in theory at least, the Census represents an individual’s personal and considered response about where they live now and resided in the past, as well as providing information on their socio-economic characteristics, family and household compositions and other important variables. The research in this thesis examines Census data from a spatial perspective over many Census periods in order to capture the nature and composition of changes in relation to migration trends. The methods described in Chapter Four focus on remoteness areas, for example, and at this higher level of geography the issues described above are less disconcerting, or at least, are likely to have had similar effects at each Census such that inter-censal comparisons will detect changes in trends over time. While it is widely recognised that Census migration variables provides one fairly narrow view of migration, the data have been used extensively to model spatial and demographic dimensions of population change as well as to inform estimates of population growth and population projections in this and many other studies.

In Chapter Four data were extracted from the 2006 Census to compare the place of residence on Census night to the place of residence five years prior for residents of the Northern Territory at both those points in time. These data were disaggregated by age (five year age groups), sex and Indigenous status. Those who did not state their Indigenous status or their places of residence one or five years ago were excluded from the analysis, resulting in a study group of 11,727. Persons aged zero to four years were excluded from the analysis, as were respondents who did not state a place of usual residence either on Census night or five years prior, and those who stated their place of residence as offshore or migratory. The geographic basis for analysis separated out the capital city of Darwin and the large Central Australian town of Alice Springs as representative of the urban areas of the NT. The rest of the NT was divided into the horizontal regions of (running north to south) – East Arnhem and Darwin rural, Katherine region, Barkly region and Central region. Apart from Darwin each region contains a mix of remote and very remote localities (based on ABS, 2008a). The analysis was relatively rudimentary in identifying the number of people in age, sex and Indigenous status classes who moved between regions, and particularly those who moved from the more remote regions (East Arnhem, Katherine, Barkly and Central) to the urban centres of Alice Springs, Darwin and Darwin rural.

The regional basis for the case study in Chapter Six is the TR region in the north of Australia which is the focus of a multi-institutional research program - the Tropical Rivers and Coastal Knowledge hub (TRaCK). It includes all river catchments that drain into the Timor Sea and the Gulf of Carpentaria. Stretching from Broome in Western Australia to Cape York in Queensland, the region includes 55 river catchments and covers an area of more than 1.3 million km\(^2\) (Stoeckl et al., 2006). Resident population data were drawn from the 1996,
2001 and 2006 Censuses including age, sex, Indigenous status, location of usual residence on Census night, location of usual residence one year prior to Census night, and place of usual residence five years prior to Census night variables. TR regions were constructed from Census Collection Districts (CDs), the smallest unit of geography in the ASGC. In remote areas, CDs contain fewer dwellings and cover much larger areas. Confidentiality considerations means that some data is not released for some collection districts, and it is more common to use larger geographic entities such as Statistical Local Areas (which are mapped to suburbs or towns in more densely populated areas, but less ‘local’ in more remote regions), and Statistical Divisions and Sub-divisions (See Figures 3 and 4 below). The larger the geographic entity, the less well boundaries conform to TR boundaries, although this problem is largely one at the individual catchment level because the ‘excess’ regions tend to hold very little of the population of the total TRaCK region. Census data is also somewhat limited by the different methods of data collection that apply in remote regions - far more information about individuals is imputed by data collectors, heads of households or other intermediaries than happens in urban areas. Census undercount and non-response to individual questions are much greater in remote areas than urban areas. Nonetheless, the Census remains the most comprehensive and detailed set of information about the population in TRaCK catchments.

Figure 3 - Statistical Sub-Divisions and TRaCK Catchment Boundaries
Chapter Nine examines 30 years of Census data (1976 to 2006) to test for current evidence of ‘female flight’ (female out-migration) from remote Indigenous communities. The geographical level of analysis is Urban Centre/Localities (UCLs, or places with 200+ residents) located in remote or very remote areas, with more than a 50 per cent Indigenous share in the population and with an absolute size of less than 3,000 residents. This places the urban centres and mining towns (such as Darwin, Alice Springs and Nhulunbuy) out of scope. Communities were clustered according to size: large (1,000 or more), medium (500 to 999) and small (200 to 499). Variants of tests conducted for other countries (see Hamilton, 2008; Hamilton & Otterstad, 1998; Hamilton & Seyfrit, 1994) were applied to 2006 Census data to examine for statistical relationships between community size, age and percentage of females in the population across 55 Aboriginal communities. Correlation tests between the per cent female and the logarithm of population size for ages 20-39 years (the age group identified by Hamilton (2008) as most likely to exhibit a female deficit) at individual communities were conducted and extended to include comparisons across other age groups.

There are a number of weaknesses with the methodological approaches in Chapter Nine. First and foremost it lacks detail, a function of poor data and the need to determine the baseline situation in absence of pre-existing work on the topic. Issues with data quality and coverage for remote Indigenous populations are well documented in the Australian context (for example, Ross, 1999) including high rates of Census undercount. Undercounting is thought to be higher for males than females, and this no doubt directly affects the sex ratios.
in some communities (ABS, 2007a). Sex ratios themselves may be misleading at the small area level when examined over time due to changed Census procedures, changing propensities to identify as Indigenous and due to differential life expectancy gains across genders and ages in the NT (Wilson et al., 2007). Finally, the empirical tests say nothing about how reverse (urban to rural) migration in the NT may have impacted on population structures in settlements and this warrants further research.

2.4.2 Population Projections, Australia and Australian Demographic Statistics

Chapter Seven reports on quantitative analyses of projection errors for the Northern Territory including the differences between forecast numbers (sourced from ABS population projections, in recent years various years) and the population which actually eventuated (sourced from ABS population estimates) expressed as percentages. Measures of errors are the Absolute Percentage Error (APE) and Mean Annual Projection Error (MAPE) and trends in these. Projections are compared to published Estimated Resident Population (ERP) data at 30 June for each year. The degree of forecast error is usually expressed as a percentage difference to provide an indication of the relative size of errors between projections made at different points in time and between different projection series (George et al., 2004).

Several measures of relative error are available. Percentage Error (PE) is most commonly used to evaluate forecasts of the total population. For example, the middle series 1981 based ABS projection for the NT in 2006 was that a population of 278,500 could be anticipated. In 2006 the actual population of the NT was estimated at 210,674. The percentage error can be expressed as:

$$PE_t = \frac{P^F_t - P^A_t}{P^A_t} \times 100$$

where $t$ denotes the year, $P$ population, $F$ forecast and $A$ actual. This sees the PE equate to 32 per cent.

Several sets of projections may be in existence for any given year for which actual population estimates are also available. In 2006, for example, there were 41 different projections for the population of the NT in existence. The Mean Percentage Error (MPE) measurement is used to evaluate whether, on average, these were too high or too low. It is an indicator of the type (positive or negative) and extent of bias in a group of forecasts and is expressed as:

$$MPE = \frac{\sum PE_t}{n}$$
where \( n \) is the number of forecasts. The MPE is a measure in which the positive and negative values of errors may offset each other. To examine the absolute error associated with a set of forecasts for the total population (ignoring the sign), Mean Absolute Percentage Error (MAPE) is used. It is expressed as:

\[
MAPE_t = \frac{1}{n} \sum |PE_t|
\]

A hypothetical example for Region A illustrates the MPE and the value of MAPE calculations where the actual population \( (P_t^A) \) in 2000 was 1,862 (Table 2).

Table 2 - Hypothetical forecast for Region A - 2000 and 2001

<table>
<thead>
<tr>
<th>Projection year and series</th>
<th>Forecast population</th>
<th>Percentage error</th>
<th>Absolute percentage error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base year Year 2000 (actual population 1,862)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970/ A</td>
<td>1,920</td>
<td>3.11%</td>
<td>3.11%</td>
</tr>
<tr>
<td>1970/ B</td>
<td>1,850</td>
<td>-0.64%</td>
<td>0.64%</td>
</tr>
<tr>
<td>1975/ B</td>
<td>2,000</td>
<td>7.41%</td>
<td>7.41%</td>
</tr>
<tr>
<td>1978/ B</td>
<td>1,800</td>
<td>-3.33%</td>
<td>3.33%</td>
</tr>
<tr>
<td>1982/ B</td>
<td>1,720</td>
<td>-7.63%</td>
<td>7.63%</td>
</tr>
<tr>
<td>1982/ D</td>
<td>1,635</td>
<td>-12.19%</td>
<td>12.19%</td>
</tr>
<tr>
<td>1988/ B</td>
<td>1,780</td>
<td>-4.40%</td>
<td>4.40%</td>
</tr>
<tr>
<td>Base year Year 2001 (actual population 1,907)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970/ A</td>
<td>1,959</td>
<td>2.73%</td>
<td>2.73%</td>
</tr>
<tr>
<td>1970/ B</td>
<td>1,750</td>
<td>-8.23%</td>
<td>8.23%</td>
</tr>
<tr>
<td>1975/ B</td>
<td>2,018</td>
<td>5.82%</td>
<td>5.82%</td>
</tr>
<tr>
<td>1978/ B</td>
<td>1,905</td>
<td>-0.10%</td>
<td>0.10%</td>
</tr>
<tr>
<td>1982/ B</td>
<td>1,855</td>
<td>-2.73%</td>
<td>2.73%</td>
</tr>
<tr>
<td>1982/ D</td>
<td>1,793</td>
<td>-5.98%</td>
<td>5.98%</td>
</tr>
<tr>
<td>1988/ B</td>
<td>1,810</td>
<td>-5.09%</td>
<td>5.09%</td>
</tr>
</tbody>
</table>

Thus, MPE calculations for this example are as follows:

\[
MPE_{2000} \left\{ \frac{3.11 - 0.64 + 7.41 - 3.33 - 7.63 - 12.19 - 4.40}{7} \right\} = -2.52
\]

\[
MPE_{2001} \left\{ \frac{2.73 - 8.23 + 5.82 - 0.10 - 2.73 - 5.98 - 5.09}{7} \right\} = -1.93
\]
The MAPE calculations for the same example are:

\[
MAPE_{2000} = \left[ \frac{3.11 + 0.64 + 7.41 + 3.33 + 7.63 + 12.19 + 4.40}{7} \right] = 5.53
\]

\[
MAPE_{2001} = \left[ \frac{2.73 + 8.23 + 5.82 + 0.10 + 2.73 + 5.98 + 5.09}{7} \right] = 4.38
\]

### 2.4.3 National/International Visitor Surveys and the Survey of Tourist Accommodation

National and International Visitor Surveys are managed and conducted by Tourism Research Australia to produce estimates of tourist activity Australia and selected regions, the analysis of which is documented in the case study in Chapter Six. These surveys interview 30,000-40,000 international visitors and Australian residents respectively each year. From these samples and immigration information (for international visitors), estimates of the number of visitors, their length of stay and expenditure are produced. Publicly available data reports these estimates (and some information about demographic and trip characteristics) at the national, State/Territory and ‘tourism region’ levels. Tourism regions are administrative areas used by State Tourism Organisations for marketing and administration purposes. While there are 88 tourism regions in Australia, only eight include TRaCK catchments (two in Queensland, one in Western Australia and five in the Northern Territory). In Queensland and Western Australia, the tourism regions that include TRaCK catchments also include many other locations (Figure 5).

![Figure 5 - Tourism regions and TRaCK catchment boundaries](image)
The boundary issues are important in one sense because they preclude local level analysis of tourist numbers. However, the region is characterised by two types of trips. The first is single destination, short length of stay trips which tend to take place to the urban centres surrounding commercial airports. The second is longer lengths of stay trips which involve visits to multiple destinations within a tourism region, and usually across tourism regions. In previous research conducted in Central Australia, for example, it was found that 96 per cent of visitors at Uluru had visited, or were planning to visit Alice Springs in the same trip, and 75 per cent of visitors to Alice Springs also visited Uluru. The mobility of tourists across particularly remote destinations (which are far more likely to be included in multiple destination itineraries) means that data at the tourism region level provides insights into various parts of the region so long as it can be established which are the core and peripheral destinations within the region. In this research, for example, while Cairns is outside the TRaCK region but inside the Tropical North Queensland tourism region, it is likely that most visitors to the TRaCK catchments in Queensland also visited Cairns.

The current IVS and NVS programs commenced in 1998, but data is rarely released about the 1998 collection of the NVS and the 1998-2001 collections of the IVS due to issues of data quality and time series comparability. Data was available up to the end of calendar year 2007 at the time of this research. The data items used in this research were estimated number of visitors to tourism regions which include TRaCK catchments, estimated number of nights spent in those regions, estimated expenditure in those regions and the purpose of visit (holiday/leisure or other purposes such as business or education).

Unpublished IVS and NVS data does allow consideration of visits to specific locations (coded to Statistical Local Areas), and may be treated as a sample of tourist activity in these locations. Estimates of actual visitor numbers to these locations cannot be reliably made, but comparisons of lengths of stay and the relative distribution of sampled trips across the catchment region are possible. Because the data collections are rolling ones (data is being continually collected and the reporting cut-offs are a matter of convenience), it is possible to combine samples across multiple years to increase reliability of reporting on lengths of stay and locations of overnight stops. Tourism Research Australia provided unit record data from the 1998-2006 (but not for 2007) surveys which included the SLA of overnight stops and the number of nights spent in individual SLAs. Analysis of the quality of the data revealed high levels of missing or imputed length of stay variables for the period 1998 – 2003, but good data quality for 2004-2006. Consequently, the 2004-2006 sample was analysed to make some estimates of the distribution of overnight stops and lengths of stay in localities across the region.
Information about tourism is even scarcer than information about tourists. The main source of data is the Survey of Tourist Accommodation (STA) which collects capacity and occupancy information from accommodation businesses each month. Data is reported quarterly at the SLA and tourism region level. Data is suppressed when there are fewer than three accommodation businesses in the region or when multiple businesses in the region are owned by a single operator. In these cases, quarterly data (which are the basis of our reporting here) is imputed from what is known (which might be monthly data or annual data or summary data for the larger region). STA data is publically available at SLA level from the March quarter of 2003 to the June quarter of 2008 (at the time of this research). Data from 2003 to 2005 only covered accommodation businesses which had more than 15 rooms. This is the information reported in the time series analysis. Data from 2006 to 2008 covers a much wider range of accommodation businesses (including caravan parks and backpacker hostels) and the 2008 data is used to describe current conditions.

Several attempts have been made to produce estimates of tourism activity that go beyond the accommodation sector. The Sustainable Tourism Cooperative Research Centre (STCRC) produces Tourism Satellite Accounts at the State and Territory level (derived from national Tourism Satellite Accounts produced by the ABS), but not at the regional level. The STCRC has attempted to implement a cross-sectoral monthly data collection, but data has only been collected in a few regions, and where it has been collected (including the Northern Territory) it is not publicly available. The STCRC has also tried to derive estimates of the number and type of tourism businesses in specific locations from telephone directory listings, but the most recent data is from 2003 and is expensive to access.

2.4.4 Student Administration and Management System (SAMS)

The Student Administration and Management System (SAMS) consists of multiple databases owned and maintained by DET. SAMS includes information on all students enrolled at Northern Territory Government (NTG) schools, recording various levels of student information against a Unique Pupil Number (UPN) which remains with them throughout their government schooling and against which demographic characteristics, enrolment and attendance records are notated. A spatial and temporal account of student enrolments and the movements of students between schools are provided by the recording of the UPN at the time a student enrols at an individual school, for which geo-codes are available and are added to the record.
The analysis of Indigenous student mobility presented in Chapter Ten is based on the development of conceptual methods and business rules for the extraction, aggregation and reporting of SAMS data to depict the size and composition of student flows within school terms. Three constructs for understanding and measuring mobility were developed using SAMS datasets: Average Weekly Enrolments, the Cumulative Enrolment Ratio and the Student Replacement Rate.

SAMS databases store information relating to each student and their enrolment sequences and can be used to produce a dataset of enrolment ‘sequences’ or ‘pairs’. Student movement datasets consist of information relating to the student’s enrolment at the school of departure and school of arrival. A student movement occurs whenever a student (identified by his or her UPN) is removed from the current roll of a school and then undergoes the enrolment process again (either at different NTG school or by re-enrolment at the same school). As there may be a lag between the student’s departure from one school and their re-enrolment, a movement is triggered by the arrival enrolment date.

A student movement is between schools whenever a student is removed from the current roll of a school and then undergoes the enrolment process at a different NTG school. On the other hand, a student movement is defined to be a return to the same school whenever a student is removed from the current roll of a school and then undergoes the enrolment process at the same school without attending another NTG school. A student movement is considered to be expected whenever the student transfers at the start of the school year and progresses from primary to middle school, primary to high school, or middle to high school or secondary college. All other student movements are unexpected. A large number of student movements are accounted for by the requirement that administrative staff to remove students from the current roll when they have unexplained absences for four weeks, a policy which was under review at the time of writing.

The Cumulative Enrolment Ratio (CER): The CER provides school level comparisons on the cumulative size of the student cohort relative to average weekly enrolments. Based on the actual number of students enrolled at a particular school or during a given time period, this measure is defined as the ratio of the total number of students enrolled compared to the average weekly enrolment for a specified time period. A student is deemed to be enrolled at an individual school on any particular day if his or her enrolment date was on or before that day and he or she had no departure date recorded (or the recorded departure date was after that day). For this measure, average weekly student enrolment numbers are calculated based on the last day of each school week to smooth out seasonal effects in enrolment numbers.
evident when enrolments are recorded during selected weeks within terms. *Average weekly enrolments* captures enrolment numbers across 40 school weeks per year (occasionally 41) and is defined as the average of the weekly enrolments during the selected time period:

\[
\text{Average weekly enrolments} = \frac{\sum \text{weekly enrolments}}{\sum \text{semester weeks}}
\]

By treating student enrolments as a throughput measure, the total number of students who attended a particular school at any stage during the school year (or any reporting period) can be identified. This cumulative measure of enrolment highlights the manner in which the aggregate number of enrolments at an individual school increases over time as students move into and out of the school. The CER is thus defined as the total number of students who were enrolled at any stage during the specified time period according to the number of distinct student UPNs recorded:

\[
\text{CER} = 100\% \times \frac{\text{cumulative enrolment}}{\text{average weekly enrolment}}
\]

**The Student Replacement Rate (SRR):** This measure indicates the size of student turnover in the school population by quantifying the differences between student *arrivals* and *departures*. A student *arrival* occurs at enrolment and a student *departure* is defined to have occurred whenever a student is removed from the current roll of the school. To avoid situations where student turnover exceeds 100 per cent, which in the past has been misinterpreted as every student in the school changing, an average of arrivals and departures is proposed. This adjusted measure of student turnover is called the Student Replacement Rate (SRR). The SRR is therefore defined as:

\[
\text{SRR} = \frac{\text{student arrivals} + \text{student departures}}{2} / \text{average student enrolments}
\]

The breakdown of arrivals and departures in this way facilitates the important analysis of how many and which students have experienced temporal ‘gaps’ in their enrolment sequences. These are created when students unexpectedly depart from a school during term, are subsequently removed from the enrolment register, and do not re-enrol (at the same or a different school) until a later date within the school term, or in a subsequent school term.
2.5 Qualitative methods: data sources, techniques and limitations

Qualitative research methods underpin studies in Chapters Four, Eight, Eleven and Twelve. Broadly these were in-depth interviews and focus groups conducted at remote Indigenous communities in the Northern Territory. Methods were founded on post-constructural paradigms for gathering subjective and interpretive information from research participants. This approach does not distinguish between the formats of information offered by participants in response to questions and discussions taking place as part of the research. That is, all elements of a person’s life which are offered up to the researcher in order to convey and exchange information are considered to be appropriate as demonstration of their experiences, feelings, opinions and actions (in similarity to the description provided by Piantanida and Garman (2009)). Therefore, stories, photos, cultural artifacts, possessions and documents can be considered as ‘data’ if they are offered to the researcher as such.

Primarily, the aim of the research in these chapters was to garner participants’ ‘stories’ on current and anticipated practices in relation to migration with a focus on thematic investigations according to the themes outlined in Chapter One. The approach of gathering stories means that, while the researchers have a series of questions on the topic in mind, these are not necessarily asked directly or covered in any particular order. Rather, the discussion is guided by the researcher according to the questions pertinent to the topic and the research, but not necessarily confined to these. This approach is considered as appropriate in the Indigenous community context because it maximises the opportunities for information to flow between the researcher and participants in formats that both parties understand (contextually, linguistically and structurally). Importantly, the HREC which has approved these approaches recognises the benefits for participant understanding on the intent of the research and the individual topics and questions being asked of them. Indigenous communications protocols dictate that topics may be required to be discussed indirectly (out of respect for cultural norms) and some information is shared only between certain people and hierarchies within clan groups, families and in the community at large. This indirect approach to interviews may take several forms including holding informal group discussions, discussing in the third voice, and constructing discussions and storytelling via examples.

In the research reported in Chapter Eight respondents were asked about their personal migration habits and whether recent events (specifically the NTER) had affected these. A better design would be detailed quantitative data collection on the migration practices of individuals and groups, but this was considered as unnecessary and undesirable in terms of the added ‘surveillance’ this would have placed on Aboriginal people already exposed to
significant life changing events at that time. A translator accompanied the researchers to help assist with any difficulties in these areas. Respondents were asked to comment on changes in migration patterns they had observed among their friends, family and other members of the community. We were particularly interested in short-term mobility (to address the gaps in Census data), but also sought confirmation of the long-term mobility patterns observed in the Census data. Interviews were conducted between May and October 2008.

Research around the NTER included interviews with around 400 participants at four large communities around the NT. Geographically these included one in Central Australia, one in the Katherine region and two in the Top End of the Northern Territory. It is important to note these communities (which cannot be named for confidentiality reasons) had quite different experiences of the NTER and so a different sample of communities may have produced different results. However, their size meant they represented a substantial proportion (around a quarter) of the total remote Indigenous population of the NT. Most interviews were conducted with heads of families and with other family and community members recommended by those heads. The bulk of the data, therefore, are observations by relatively senior people who have cultural and social responsibilities that include monitoring the flow of population into and out of the community. The research also included key informants: people who have a community-wide (or even Territory-wide) view of the issues in the research. This may include community council members, other senior community leaders, local service providers, store managers, representatives of NGOs and so on. The selection of specific participants was by recommendation from the community leaders with whom the research team were initially connected and from the personal knowledge of local translators and research assistants.

Similarly, research about ICT adoption and ICT use is reported in Chapter Eleven and was conducted in three medium-sized Indigenous communities (populations of between 300 and 500) in remote parts of the Northern Territory. Indigenous people comprise between 80 per cent and 95 per cent of the population at these communities with the remainder being non-Indigenous workers (teachers, sports facilitators and so on). In-depth interviews were conducted using a semi-structured approach with around 40 to 50 Indigenous participants. This number is non-specific given that some group interviews were conducted with varying levels of participation from individuals such that the total number reflects best estimates about active participants. A range of non-Indigenous key informants were also asked for their perspectives on the use and adoption of ICTs at communities where they live. These included school principals, teachers, a council manager, a sport and recreation officer and a health clinic manager.
Indigenous participants were asked about ICTs they currently owned, how often they used these, and for what purposes. Interviews included questions and discussions on types of Internet content and information people viewed and what purposes these were applied to. Questions on use of Internet-based social media applications were also included. Information on the impacts of ICT use on personal mobility and observations on the mobility impacts for family and friends (including for trip planning, trip information sourcing, use during travel and use after travel) were also sought. Themes included the influences of ICTs on decisions about future travel and how travel related information is shared using ICTs. A question was also included about how the use of technology might be shaping the aspirations of the individuals in relation to where they would like to visit, live, work or study in the future and why.

This qualitative approach was preferred to a more structured survey so that individual’s ‘stories’ on the effects of ICT on life aspirations, education and employment could emerge. It was anticipated that complex and rich information would be forthcoming using a discursive approach while indications on the rates of technology use could also be gained by interview, albeit not an unrepresentative scale. This conversational style of gathering information was considered to be more likely to yield meaningful information in the remote Indigenous community context and allowed for group discussions, a key feature of communication in Indigenous settings. Relationships must be established with individual participants for meaningful information to flow and for the intent of the research to be understood by participants, such that they engage openly and actively with the researcher (see, for example, Taylor et al., 2011).

The techniques of interviewing outlined in this section come with limitations. Principally there is the scope for the researcher to influence participant responses by the nature or line of questioning. While open ended questioning helps to minimise these risks, however, it may also introduce topics not directly relevant to the research questions at hand and cause lengthening of overall discussions. There is also potential for the researcher to articulate or introduce information, concepts or conclusions into the interpretation of results of interviews based on personal perceptions or personal bias. The engagement of local residents to help explain the intent of the research and to translate helps to minimise occurrences of these biases. The researcher ensured that clarification and confirmation of participant views were obtained during interviews by repeating back and confirming with individual participants the information (and its intent) which was originally supplied.
2.6 Conclusion

This chapter has documented key methodological considerations in the construct of this dissertation. It has augmented descriptions of methods found within the individual original research articles incorporated into the chapters. Indigenous settlement geographies in the NT have been outlined in order to clarify the classifications and nomenclature applied in the methods for the studies reported here. These are generally spatial units or aggregations of spatial units which form the Australian Standard Geographical Classification. The main settlement or geographical units in this thesis are remote Indigenous communities, the NT as a whole, other States and Territories and remoteness areas according to the Remoteness Area Classification (RAC). It was noted that, outside of the greater Darwin region, the entire NT is classified as either remote or very remote under the RAC taxonomy, with migration of Indigenous people across these units having consequences for the distribution of Australian Government funding to and within the NT.

The investigations themselves involved mixed methodologies tailored to address knowledge gaps in the field. A range of quantitative secondary data sources are sourced, interrogated and analysed including the Census of Population and Housing, the Alaska Permanent Development Fund, Population Projections, Australia and Australian Demographic Statistics, National/ International Visitor Surveys and the Survey of Tourist Accommodation, the Student Administration and Management System and other quantitative data sources. Qualitative methods were used to interview people at Indigenous communities regarding their current and anticipated migration behaviours. These were in line with post-constructural paradigms for gathering subjective and interpretive information from research participants which treats all elements (stories, photos, cultural artifacts, possessions and documents) offered to the researcher as data. Primarily the research was concerned with gathering stories. The approach of gathering stories means that discussions are not necessarily linear according to set questions and this is seen to offer many benefits in culturally specific circumstances. The indirect approach to interviews may take several forms including holding informal group discussions, discussing in the third voice, and constructing discussions using storytelling via examples.

This chapter has outlined overarching methodological issues and techniques and provided the reader with additional important methodological definitions and information. For example, different aspects of migration and migration flows were identified and defined to define migration in the context of this thesis. In line with contemporary human migration studies the definition applied here is quite broad and incorporating of any type of move (spatially) and for any purpose. The specific emphasis in this thesis is on distinguishing
migration according to temporal characteristics, in particular residential migration flows which involve a change in usual address. Importantly, we have established that, under these definitions, temporary Indigenous mobility is best conceptualised as a sub-set of migration and not as a higher order concept.
Part One: Demographic and Policy Contexts for Investigating Indigenous Migration in the Northern Territory
Chapter 3: The ‘Problem’ of Indigenous Migration in the Globalised State
3.1 Preface
This chapter introduces the reader to political, intellectual and philosophical tensions surrounding historical and contemporary understanding about remote Australian Indigenous migration practices. The focus on the Northern Territory and issues are explored through the lenses of technological change, gendered migration and improved educational outcomes for the aspirations and choices of Indigenous Australians in relation to future migration practices. Inter-associations between these and changing migration practices are discussed, as is the delicate issue of the survival of cultural elements in light of the demographic and structural changes proposed in this thesis.

The research documented in this chapter has been published as an edited book chapter as follows:


The version presented in this chapter is adapted from the original. Firstly, specific references to text in other sections of the book from which the chapter is sourced have been replaced with text which posits the discussion within the context of this thesis. Secondly, the three case studies in the book chapter have been omitted for conciseness and brevity.

3.2 Introduction
“For too long, indigenous peoples have been depicted as static and unchanging communities. This mistake has arisen from studies that treat indigenous people separately and as distinct from questions of the ‘modern’ world. It is time that this blind spot is corrected” (International Organisation for Migration, 2008: pg.59).

This forewarning from the International Organisation for Migration embodies the tenuous state of play for the study of Indigenous migration and its influences on the demography of remote places at the early part of the twenty-first century. Two major themes are at hand. Firstly, understanding of the relationships between contemporary Indigenous migration practices and the nexus of policy, sociological change and economic imperatives is poor. Accordingly, Indigenous migration practices have been seen as problematic and working in
opposition to programs and institutional norms designed to improve wellbeing. Secondly, the extant body of research has tackled many theoretical and technical issues but, in Australia especially, remains retrospective and introspective with an absence of voices on the potential for global and other forces to establish ‘new’ and fundamentally different migration drivers and practices (Hamilton, 1987). Instead the role of ‘Aboriginal domains’ (Walter, 2008), predicated on individual memberships to culturally defined groups, continues as the dominant philosophy.

This chapter explores these tensions to articulate the contrasting paradigms in relation to Indigenous migration between, on the one hand, governments and society demanding that remote Indigenous people engage with mainstream economies and organisations, while at the same time, the call for Indigenous people to remain ‘loyal’ to cultural practices remains, and is demanding that tangible contact with ‘the land’ and places within are upheld. The argument presented here is that this dichotomy does not sit well in industrialised societies where migration, rightly or wrongly, is a defining feature of the success of individuals against Western ideals (International Organisation for Migration, 2008; Adey, 2010). Consequently, scholarly questions raised outside of cultural paradigms, long heralded as sacred amongst the explanatory factors for Indigenous spatialities, are rarely raised, particularly in relation to residential migration. Countering these long-held views, Indigenous residents in developed nations are no less likely than others to desire the things on offer from the globalised world (products, experiences, travel, membership to new networks and so on) and to adopt migration practices reflective of new aspirations.

3.3 Conceptualising Indigenous migration

In most developed nations, the term ‘Indigenous mobility’ is the established catch phrase for articulating changed Indigenous spatiality (the places at which people reside, travel to and pass through). Its generic application reflects historically negative connotations about the movement of Indigenous people in the remote sphere which dates back to settlement times. In Australia the carry-over of popularised terms like ‘walkabout’ and ‘gone bush’, for example, showcase a lack of clarity over definitions and concepts and demonstrate the frustrations borne out by settlers from a lack of knowledge about migration practices. These are a reflection of race-based assumptions that all Indigenous people were once nomadic, then and now, in obstinacy to the authority of the dominant culture. Most notably the term ‘Indigenous mobility’ is synonymous in the remote context (in Australia at least) with the term ‘short-term mobility’. Both are applied in literature and policy circles to depictions of frequent movements over a short duration which features a return to the place of origin.

48.
(sometimes also ‘circular mobility’). The extant literature strongly denotes the role of culture and the attachment to lands and water as the driving forces behind such movements.

This discourse of association between Indigenous people and short-term movements, predicated almost entirely on the influences of ‘culture,’ lacks sophistication and is outdated in the globalised world, pinpointing a need for the field of study to drive new perspectives. Where, for example, does an extended Christmas shopping trip from a remote community to a city belong in the existing dialogue? Should the drivers be conceptualised differently if the shopper stays with extended family at the destination? To avoid such semantics, normalisation of the discourse around Indigenous mobility is required such that, in line with migration studies in general, Indigenous spatial change and movements (independent of their temporal characteristics) are all conceptualized as migration events. In line with international migration literature the term ‘Indigenous mobility’ can be replaced with ‘Indigenous migration’ to include all forms of spatial relocation: short-term and residential; trans-border and within borders (however they may be defined); culturally-driven, or otherwise. Under this paradigm Indigenous migration ‘itineraries’ can be constructed according to the origin, destination and the places visited during a trip. In turn these can be aggregated for describing trends and patterns, in a similar fashion to Holyoak et al. (2009) for tourist itineraries. The observance of changed Indigenous spatialities as migration events avoids muddling acculturative drivers as the embodiment of the wider phenomenon and places ‘short-term mobility’ as a sub-set of broader Indigenous migration practices. This paper now examines why this shift in thinking is appropriate by looking at the history of problematisation around remote Indigenous migration practices.

3.4 The problematic history of Indigenous migration in Australia

Stemming from pre-conceived notions about the relationships of Indigenous spatiality to culture, there is a long testimony to the problems which Indigenous migration practices have created for both settlers and for the original inhabitants of Australia (Prout, 2008b). The denoting of spatial movements in this tone in Australia and elsewhere can be traced to the early days of colonial settlement in remote parts. From the outset, in the north and west of the country in particular, movements by Indigenous people were overtly and subversively restricted by settlers who forcibly resettled Indigenous people into mission-run settlements and reserves in order to nullify connections to traditional lands, around which people were seen to move frequently and without apparent patterning (Gray, 2004). Few attempts were made to truly understand the drivers and characteristics of Indigenous migration by those charged with their care and oversight. Largely through ignorance, migration practices
became symbolic of what was ‘wrong’ with Indigenous people and of the need to ‘rescue’ them from lives devoid of comparative material and spiritual prosperity.

But not all Indigenous people in the remote areas of Australia were coerced into mission-run settlements. As settlers in the Northern Territory subsumed lands for agricultural and livestock production, some employed local Aboriginals on stations and farms. But there too, locals met with settler indignations towards expressions of culture, including when they travelled away. With trips occurring primarily along unmapped tracks and seemingly without notice (Petersen, 2004), stereotypes were fed and negative associations between spatiality and culture reinforced. This history of misunderstanding was not unique to Australia, having been witnessed later in time to other colonised nations like Canada and the remote parts of the United States of America. Indeed the institutions, communities and societies found in remote spaces of what are now developed nations have historically dealt uncomfortably with the complexities of Indigenous spatiality and its relationships to both collective and individual elements of cultural identities (Gerrard, 2008). The continued presence of Indigenous towns and camps found at the fringes of urban areas in developed countries, and noted as places of high transiency, for example, are practical testament to these difficulties (Hovgaard & Kristiansen, 2008; Gray, 2004, Foster et al., 2005; Karvelas, 2009).

Turning to the present day, and leaving aside the relative merits of historical approaches to Indigenous affairs, contemporary policy is clearly predicated on growing the participation of Indigenous people in remote areas (where socio-economic status is at its poorest) in Western forms of education, employment and health (Council of Australian Governments, 2008; Department of Families, Housing, Community Services & Indigenous Affairs, 2009). In Australia, services are delivered to remote areas according to service demand models based on counts of ‘closed’ populations and documented at a particular point in time (usually the most recent Census of Population and Housing, conducted every five years by the ABS). But despite years of toil, Indigenous migration practices continue to challenge the foundations of capitalistic understanding about what makes for a ‘good citizen’. At the heart of the issue, practices of changing spatiality are seen to disengage individuals from the very programs and policies aimed at improving their economic lot (Prout, 2008a; 2008b). Migration establishes a disjuncture between expensive location-based models for service delivery (Foster et al., 2005) and the realities of everyday lives which revolve around meeting daily needs (Taylor & Carson, 2009a). For governments, Indigenous migration practices in remote areas operate outside of bureaucratic norms (for example Northern Territory Department of
While Indigenous migration affects service delivery in remote areas, the reverse is also the case (Prout, 2008b). With the high rates of chronic diseases prevalent in the remote Indigenous population of Australia, for example, health treatments for diabetes, cancers, skin, and heart conditions has become a major servicing issue. Those requiring treatment (and those wishing to visit patients) must transit to the appropriate locations. Indeed, migration for health conditions has been found to be a major driver of temporary movements from more remote to less remote places (Taylor & Carson, 2009b; Memmott & Fantin, 2001). Often movements for health purposes are combined with other purposes on trips, both positive and negative (Taylor & Carson, 2009a). A small body of literature proposes these necessary movements as negative insofar as remote residents are coerced into movement through an absence of services in situ (as described in Prout, 2008a). The embroilment of Indigenous movements of these types into the debate on remote service provision is of interest since the alternative is neither affordable nor rational and this espouses the complexity of the debate on servicing remote Indigenous populations. Should, for example, sufficient numbers of kidney dialysis machines to service the burgeoning demand be placed at remote communities when residents of (largely non-Indigenous) towns elsewhere must travel large distances to access the same service?

Self-evident from the discussion thus far is that Indigenous populations have neither theoretically nor conceptually conformed to neo-classical models of migration (Kinfu, 2005). Throughout the developed world high rates of urbanisation have resulted from economic development through extensive rural-to-urban migration. The study of rural-to-urban migration has been greatly influenced by the ideas of Harris and Todaro who, in the early 1970s, proposed that labour market conditions arising from the transition from agrarian to industrialised economies served as the driving force for internal migration (Harris & Todaro, 1970). In essence, urban centres were seen to be able to out-bid rural areas in the competition for labour. These models have nonetheless been criticised as over simplistic for reducing the forces of migration to “…worker’s estimates of the probability of acquiring … employment” (Ranis & Stewart, 1999: pg.286). It is clear that there has been no universal pattern of Indigenous movements from remote to urban centres in the developed world on the basis of improving incomes, although pockets of such movements have been observed (Hamilton & Otterstad, 1998).
At least part of the cause of the misunderstanding and misinterpretation of Indigenous spatialities has been the inability of scholars in the field to provide concise and accurate statistical accounts of Indigenous migration through time. Data sets do not capture the full force of migration in changing the compositions of populations on a regular basis. Census data in Australia, on which migration analysis to a large extent depends, is limited to measuring differences between two points in time, either one or five years apart (Gray, 2004) while at the other extreme, the register based population systems in Scandinavian countries do not have an Indigenous identifier at all. In addition, assessing the contribution of changes in the composition of socially constructed populations has impeded understanding about migration practices, particularly in the Australian context (Smith, 1980; Gray, 1985; Taylor & Bell, 2004), but also in Canada and Alaska (Guimond, 2003; Gionet, 2009).

While precise statistical measures may be ideal, it is far too easy to forget that at the centre of any aggregated data are individuals living out their lives. Migration decisions are made on the basis of individual circumstances, but the perpetual theme for Indigenous migration is of a collective and universal problem. Establishing how present day life is affected by a history of racism, hurt, and abuse is a valid but further complicating consideration for the study of Indigenous migration (Atkinson, 2002). In reality, therefore, Indigenous spatiality is a multi-faceted and complex phenomenon subject to historical, global, national and local influences, in much the same way as for other populations. Whereas the global study of migration has leaned heavily on known relationships between economic and other drivers, these links are tenuous for Indigenous people in remote areas. Consequently, gaps in our knowledge about individual forms of migration (short-term, residential, cross-border, cross-national, urbanisation, counter-urbanisation, cultural, circular and so on), and an inability to piece these together for understanding the aggregate picture, create a continued space for the emphasis of cultural drivers. This, as Hovgaard and Kristiansen (2008) have expressed for Faroese villagers on the islands between Iceland, Norway and Scotland, reflects an unwillingness, in demographic and other circles, to contemplate Indigenous spatialities which might be detached from embedded and revered historical notions:

“Even so, we maintain that the perception of the [Faroese] villages as something stable, something authentic, a particularly secure way of living […] Seen from the perspective of technological and institutional modernization, these perceptions of village life may be rather romantic, and evidently do not correspond with the social and economic realities of today” (Hovgaard and Kristiansen, 2008: pg.61).
As a result there are misgivings about attributing Indigenous spatial change in remote Australia to factors other than those rooted in culture and derived from ties to ancestral lands. While the spiritual, social and economic significance of lands remain pivotal to Indigenous lives, and for many determine the places they live and the places they move through (Mazzullo & Ingold, 2008), more inclusive perspectives are warranted.

3.5 Indigenous migration in a changed world

Towards the end of the Twentieth Century, Indigenous migration in the northern parts of Alaska and Scandinavia heavily featured rural-to-urban migration where young women and those with a relatively good education were over-represented in the flows to towns and cities (Hamilton & Otterstad, 1998; Rasmussen, 2007). While the experience overseas has been of female led residential out migration from remote Aboriginal communities to larger towns and cities resulting from, and in the search for, improved education (Janovicek, 2003), Indigenous males have been less likely to mobilise. Rauhut and colleagues (2008) have suggested that Indigenous males in the Arctic were socialised into path dependency whereas females were more accepting of the requirement for change, adjustment and new life courses.

Movements of women to larger centres in the Arctic were observed in times prior to the widespread reach of the globalised economy into remote communities. Instead, education and employment opportunities enticed women to leave and, for most, not to return. In Australia there is no compelling evidence of rural-to-urban flows to anywhere near the extent witnessed in the Arctic Circle and elsewhere. But with the rolling out of information communication technologies to remote Aboriginal communities, it may be argued that changed migration behaviors might be an imminent result of the co-contribution of technology and of concerted policy efforts towards connecting remote people to new networks and places, and towards improving Indigenous educational achievements.

The potential role of technology as an influence on remote Indigenous migration practices has already been demonstrated in Australia. Post-WWII, for example, welfare payments to Indigenous people in the NT were progressively made directly to individuals in a shift away from the prior arrangement where they were managed by wardens (Petersen, 2004). Concurrently, advances in technologies delivered new models of motor vehicles with the ability to travel greater distances and to traverse rough terrain with relative ease compared to their predecessors. The Toyota Land Cruiser, for example, first became widely available in Australia during the 1960s including the ‘Troop Carrier’ model capable of transporting large
groups (Toyota, 2009). The more widespread acquisition of motor vehicles for use by remote Indigenous residents changed forever the nature and composition of migration by enabling larger groups to travel, by increasing the catchment areas for travel parties and by expanding the spatial reach of migration events (Petersen, 2004). The motor vehicle also opened up regular travel to urban centres, helping to enhance the ‘pull’ of these (Altman, 1987).

Moving forward in time, the globalised world is characterised by mass consumer technologies that have enabled the growth of virtual forms of communication and information sharing. Even in the immediate past, remote residents were not afforded comparable levels of access to information communication technologies that were available elsewhere. In 2006, for example, less than ten per cent of Indigenous households in very remote parts of the Northern Territory had Internet access compared to two-thirds of all households in Darwin (ABS, 2007b; 2007c). Despite this, a number of technologies are finding their way by design and by desire into remote Indigenous lives. The roll out of a mobile phone network which supports Internet-based technologies (called ‘3G’) commenced in the mid-2000s in the NT, with phones permitting the use of Internet-based social forums, and downloading of music, games, news and event information. Early studies suggests that the rate of uptake of new generation phones in remote Indigenous communities has been extremely high (Dyson & Brady, 2009), albeit from a low base.

Meanwhile, across remote Australia, small and hardy laptops are being distributed to Indigenous children aged from four to 15 years. The One Laptop Per Child Organisation is aiming to distribute around 20,000 of its XO laptops to remote communities in priority order according to those with the lowest Socio-Economic Index for Areas score (see ABS, 2008b for definitions):

“The XO laptop is best used as an agency for engaging children in constructing knowledge which is based upon their personal interests. Furthermore, it provides the tool for kids to share and critique these constructions. We believe that this will invariably lead them to become both learners and teachers – empowering them to solve the problems that are relevant to them and their community” (One Laptop Per Child Organisation, 2009).

The purpose of the laptops is primarily to engage children in new processes of learning, but inevitably children will grow up more accustomed to global forms of communication and learning on offer via the technology. They will also learn different ways of gathering information to the generations prior.
The spread of new methods of communicating and learning will inevitably have impacts on settlement choices and migration, but predicting where and how these will occur is problematic. On the one hand, the role of face-to-face contact, relied upon in the past for communicating information and conducting Indigenous ‘business’, may diminish (Petersen, 2004: pg.266). Many reasons for people to be on the move will of course remain, including cultural drivers like ceremonies and cultural events. But it is likely that, as virtual technologies are more widely adopted, remote lives will become increasingly organised around specific events, appointments and gatherings. Short-term travel itineraries may condense across space and time and the composition of travel parties may become more specific according to the purpose and destination for the trip. Hence, travel previously undertaken within a temporal ‘buffer’ around events (because specifics were not communicated in sufficient detail or because purposes for trips were combined) may be condensed to within a small time period either side of the event. These are speculative suggestions, but nevertheless are in line with the experiences of developing nations and with global trends.

Improving Internet access in remote Australia is one element of Australian and Northern Territory Government policies and is likely to translate into growing individual and household use over time. Young people in particular will learn about distant cities, countries and cultures. They may increasingly yearn to travel or to experience places and events they have become aware of through virtual means. With air travel currently cheaper and more accessible than at any time in history, opportunities will arise, despite the remotesness of everyday life, to explore the physical world having obtained a taste for it in the virtual world. The Internet also provides opportunities for virtual partnering, as witnessed by the boom in Internet dating services. Any increase in the rates of mixed partnering (remote with non-remote partners or Indigenous with non-Indigenous partners) will immediately affect the spatiality of remote lives. Online forums not only place people in touch but also provide users with new forms of self-expression and feedback from interactions with other users (Yurchisin et al., 2005). Social networking sites (Facebook, MySpace and so on), meanwhile, have been found to reduce the uncertainty around developing friendships and acquaintances by face-to-face contact by offering non-threatening forms of communication and network development, thus promoting interests for the individual outside of the immediate social and physical domain (Stern & Taylor, 2007). Any impacts from the enhanced uptake of these services will be observed initially as those currently aged less than 15 years move into and through their adulthood.
At the same time, virtual communications have made possible the showcasing of Indigenous cultures. In 2007 a video of the ‘Chooky Dancers’ from Elcho Island in the NT performing ‘Zorba’s Dance’ became the most watched video on YouTube at the time (The Australian, 2007). The group was subsequently transported to southern Australia and to Greece to perform the dance (Barker, 2007). In addition, Indigenous art works and the stories behind individual pieces, their artists and their communities can be viewed and purchased online from community art centres or collaborative art houses (for example, Aboriginal Art Online, 2008; Tiwi Art, 2009). This unraveling of previously mysterious aspects of Indigenous culture for public consumption is in line with the growth of global experiential travel and may facilitate small tourism and other business ventures, although the bulk of evidence suggests that Indigenous tourism products are subsidiary in the desires of tourists to visit remote areas (Ryan & Huyton, 2000). These contemporary means of ‘cultural outreach’ have the potential to engage remote Indigenous people (artists, website designers, accounts people, and so on) with mainstream business practices and to link them into business and social networks outside of their immediate geographic sphere.

But given the experiences outside of Australia, the most important consternation from the diffusion of information communication technologies into remote Indigenous communities in Australia is their potential to improve educational outcomes. Literature from around the world highlights the role of education as a migration enabler, particularly in driving rural-to-urban migration from places where employment and economic conditions are depressed (Pedraza, 1991). Whether or not complete closures of socio-economic gaps between Indigenous and other residents is forthcoming according to current targets (see Department of Families, Housing, Community Services and Indigenous Affairs, 2009), progress towards them may produce new mobilities.

The reaching of global technologies into remote spaces means that we can no longer be sanguine about a continuance of what J.Taylor and Bell (2004) have noted as the ongoing influences of the customary (cultural) and State (essentially political) for Indigenous migration:

“… decisions regarding mobility have been and are constantly shaped by a combination of the persistence of the customary, and change due to external relations with the encapsulating state” (Taylor & Bell, 2004: pg.13).

A focus on culture and the State suggests delineations exist between internally (ethnic) and externally driven forces in the contemporary setting. This ‘intercultural’ perspective (Taylor & Bell, 2004: pg.13) highlights the potential for a complex and shifting nexus between the two but omits the influence of forces outside of the direct control of either. The breadth of
the complexity in theorising about the relative impacts of individual drivers on the force of migration, even at this broadest of levels, is also demonstrated by considering the potential for changing and often contrasting roles of the encapsulating State. In the NT, at least, conflicting ideologies between different levels of governments have had the trickle-down effect of generating frequent and rapid changes in policy and governance for remote communities. On occasions policy from the outside is permitted to drive unintended results from within. Pressure is mounting for the Northern Territory and Australian Governments to yield results from the massive injections of program funds, staff and infrastructure into remote communities at the same time as arguments for the maintenance of traditional life and culture is maintained. Balancing the outcomes of progress with cultural maintenance has always been a highly complicated and sensitive pursuit for remote jurisdictions and the incursion of global technologies to remote spaces is likely to further complicate these issues.

3.6 Conclusion: Global issues and future possibilities

This chapter provides insights on the extent to which the settlement patterns and demographic composition of Indigenous populations can be influenced by global forces. Industrialisation has already re-shaped the Indigenous demographic landscape through migration, and new waves of out migration resultant from the reach of new technologies into remote communities might drive further changes. For Australia and Canada, technologies may begin the processes already observed in the former. For the Northern Territory in particular, sustained and concentrated fiscal pump-priming by governments, with the intent of closing socio-economic gaps (Council of Australian Governments, 2008) may at least be partially effective in delivering improvements to education and socio-economic status. Should this be the case, out migration from communities may be an unintended consequence.

In light of this, three critical questions arise for the Northern Territory and other regions in similar circumstance:

1. What will be the relationship of economic and socio-economic progress to the size, composition, and swiftness of migration to urban centres?
2. Can we expect the comparatively small net redistributive effects of Indigenous migration between remote areas and other States and Territories in Australia to remain so?
3. How will bifurcations from past forms of dominant migration practices feed back to influence those which are culturally rooted within Indigenous domains?
The first two questions can be partially addressed in light of the remarkably similar settlement patterns and paralleled history of Aboriginal affairs elsewhere. Out-migration from rural regions across the Arctic coincided with the decline of the agricultural sector, growth in the service sector and an increased emphasis on technology (Rauhut et al., 2008). Given that the dominant pattern of residential migration in the Northern Territory is clearly towards urban centres (Taylor & Carson 2009a), questions arise about whether and when a ‘tipping point’ might be reached where the currently small but consistent net inflow of Indigenous people to urban centres becomes substantively larger. Technology may deliver a push in this direction and growing urban diasporas may generate larger flows in both directions.

But the relative strength of technology and other global influences in the emergence of new types or a new mix of migration drivers is far from clear cut. This is symbolic of ongoing difficulties which scholars have encountered in discerning and expressing the drivers of Indigenous migration. It is not possible, for example, to predict whether technologies will trigger changed migration practices or whether their incursion into the remote sphere will be the result of the push for modernisation and ‘gap closing’ by governments. Similar uncertainties around cause and effect have long been a dominant thread in discussions on Indigenous migration (for example, Taylor & Bell, 1999). In the interim, even some successes in closing socio-economic gaps will see more Indigenous families entering the real estate market. Existing research by Gray (1985) and others has demonstrated the influence of housing in discouraging migration to relatively expensive places (large urban centres) and of substitution to cheaper peri-urban areas. A mirroring of these migratory trends in the Northern Territory would see a shift in the demand for appropriate housing both spatially and according to dwelling types.

Crucially, sustained migration away from remote Indigenous communities will result in an increased rate of mixed partnering and, dependent on the fertility behavior of the urbanised cohort, the potential exists for the urban share of the Indigenous population to grow quite rapidly because the pool from which Indigenous babies can be produced is enhanced. Studies of mixed partnering in Australia point to rapid and large improvements in the socio-economic status of the Indigenous partner in the relationship (Peterson & Taylor, 2002) and should a growing middle-income class of Indigenous families emerge, similarly to urban areas in Canada (Cooke & Belanger, 2006), there will be pressures on those who are progressing by Western standards to balance their work demands with personal, family and community commitments.
Perhaps the most important consideration in this discussion is the implications of possible changed migration patterns on those remaining at remote Indigenous settlements (the third question above). While an air of inevitability is presented in the arguments for technology-led urbanisation, this is not suggestive of the death of cultural continuance because Indigenous people have sustained their resilience and adaptability through time and across a diversity of circumstances. But discussion of the potential for global influences to bring about migration practices that are fundamentally different to those in existence provides a good basis for redressing the continued problematic view of Indigenous migration by recognising the potential for drivers outside of the Indigenous domain. New migration patterns will no doubt impact more on some communities than others because of the diversity in demographic ‘starting’ conditions, and these may indeed translate to cultural ‘gaps’ between individual communities. Again, complex questions of cause and effect will arise from the outcomes of any such changes.

This discussion, unfortunately, provides little more than some pointers to the range of possible outcomes from global influences. Questions here, and many others, are pertinent for the positioning of the study of Indigenous migration in the globalised era. For the study of remote populations, instead of freezing theories around spatial zones centered on ‘home’ communities with fluid, regular and circular patterns of movements surrounding them, the task for researchers in the twenty-first century is to examine how the reach of the globalised world into these spaces might influence their demographic composition. There have been insufficient efforts to invigorate different public and political perspectives which are grounded in the knowledge of outcomes elsewhere in the world. This in turn reflects the tenuous status of Indigenous affairs. On the one hand, scholars support hefty government investments aimed at economic development for remote communities, while at the same time forewarn of grave consequences for the maintenance of cultural practices and norms.

The main ‘problem’ with Indigenous migration in the remote context therefore, is not in the ‘practices’ of migration per se. Instead, there is a lack of willingness by scholars and governments to consider whether and how forces other than those associated with cultural continuance might fundamentally alter the very nature of remote settlements. Individuals, no matter how remote or seemingly sociologically isolated, are increasingly engaged in the virtual and physical attributes of a globalised world, a world dominated by new forms of communications, expanded horizons for travel and mass consumerism on a scale never before seen. To deny the potential for these to influence Indigenous migration practices is to imply that modernistic economic development will not eventuate and that Indigenous people may somehow desire less the trappings of globalisation afforded to others. While debate
continues on whether migration is more a cause or a symptom of the disengagement of Indigenous lives from mainstream activities, in some respects this is irrelevant. Through a combination of expanded choice sets and from the intentional or unintentional impacts of policy, lives are already changing. The onus is on theorists and practitioners in the field to accurately portray any changed conditions in time for Indigenous people to be afforded opportunities to react in ways in which they see fit.
Chapter 4: The Internal Migration of Indigenous People in the Northern Territory: A Baseline Analysis
4.1 Preface

The previous chapter suggested that in coming decades Indigenous migration practices will bifurcate from those commonly described by scholars and in policy. In order to more holistically postulate on future trends and outcomes for Indigenous migration in the Northern Territory, it is necessary to examine and understand recent trends in terms of rural-to-urban migration flows and characteristics. This chapter reports on the substantial analysis of long-term inter-regional migration patterns in the NT using Census of Population and Housing data to depict macro-scale migration flows as well as the characteristics of movers into and out of regions within the NT.

The majority of text for the chapter is lifted from a published journal article and a peer-reviewed conference paper. New text has been added to the introduction and conclusion sections to ensure the combined text adequately summarises the theoretical and conceptual issues underpinning the research originally reported originally in separate articles and to ensure coherence and the flow of the chapter:


These studies were undertaken to fill a void in the analysis of and discussion about residential migration patterns for Indigenous people in the Northern Territory. Very little systematic and macro-scale analysis of the available data has been undertaken with a view to describing whether and how the demography of remote Northern Territory is changing through Indigenous residential migration. Most studies have instead focused on the social issues and impacts for service delivery from transient Indigenous people, especially for their perceived links to anti-social behaviour. The supposition is that the size of that cohort is continually increasing in or at the margins of urban centres in the Northern Territory (Darwin and Alice Springs) and at regional towns (particularly Katherine), as a result of policy initiatives like the NTER.
4.2 Introduction

Australia’s Northern Territory is a remote, sparsely populated district covering nearly twenty per cent of the continental land mass but housing just two per cent of the population. Population mobility is a central feature of the demography of the NT, but most academic research in this area has focussed on the movements of non-Indigenous people into and out of the jurisdiction (particularly interstate migration), with little attention paid to internal migration overall and even less to analysis and discussion on long-term migration patterns for Indigenous people, the majority of whom live in remote communities.

The small body of literature concerning Indigenous residential migration in Australia includes some simple descriptions of Census data (Condon et al., 2004), and selected localised case studies (Warchivker et al., 2000). The most comprehensive example of the former is a review by J.Taylor and Bell (2004), but this work examined only migration between regional areas and state capitals, and included data only to 1996. The latter works tend to be informed by anthropological traditions that regard Indigenous people as the rightful inhabitants of remote Australia (Wilson & Peters, 2005) and as having cultural and political imperatives to demonstrate continuous occupation of ‘country’ (Burgess et al., 2005). In this way, mobility patterns are seen as circular and seasonal, but essentially embedded in a pattern of short-term population exchange between various locations which provide economic, social and cultural inputs such as health and education services, access to alcohol and gambling, performance of cultural rituals and so on. Carson and Robinson (2008) have summarised the motives for mobility and the welcome and unwelcome consequences they might bring to the individuals involved and the populations in the origins and destinations.

The sentiment in much of the work on Indigenous migration in the NT is that people should want to stay ‘on country’ in remote areas as far as possible but seems at odds with what is known about patterns of migration among Indigenous people and rural dwellers internationally. From a theoretical perspective, the pull of ‘country’ (Burgess et al., 2005) may be contrasted with the widely observed tendency for people with a new found capacity to travel to do so (Mansoor & Quillin, 2006) and a universal attraction of the cities (Tas & Lightfoot, 2005). A lack of access to individual economic resources can restrict the distance travelled and the economic outcomes of migration, but may actually encourage mobility, particularly amongst the young (Rye, 2006). Similarly, apparently poorer conditions encountered in new (urban) locations have not deterred immigrants, nor have improving conditions in (rural) origins stymied the flow of out-migration from these areas (Van Wey, 2005). In the Northern Territory Indigenous context, increased capacity to travel has
emerged from legislative recognition of Indigenous rights, closures of some missions, the expansion of welfare programs, exposure to popular media, and prioritising of education, training and employment (Hart et al., 2008). This is in addition to global mobility facilitators such as improved transport networks and access to information and communications technologies. Just how Indigenous people, including the young, in the NT have responded to the increased capacity to travel over recent decades is unclear.

By contrast, internal migration, and particularly the mobility of Indigenous people, are high priority issues for policy makers in the NT. Indigenous mobility has long been conceived as a ‘problem’ resulting in undercounting at Census time (and hence under-allocation of Commonwealth funds to the NT), and difficulties in population monitoring (see for example, Taylor & Carson, 2009a). In a similar way the movement of Indigenous people from rural and remote areas into urban centres has been labelled a ‘problem’ and seen to manifest in anti-social behaviour, homelessness, and substance abuse (ABC, 2006; The Age, 2008a). In 1999, for example, a Northern Territory Government review of Indigenous education (Northern Territory Department of Employment, Education and Training, 1999) highlighted the potential for student mobility to impact on the educational outcomes of the mobile student cohort.

In early 2008, the Northern Territory Department of Justice convened a workshop to examine the rural-to-urban migration of Indigenous people under the banner of ‘urban drift’. Participants spent their time describing why urban drift was a problem, who for, and how it might be managed. It became clear that only fragmented information was available to describe the extent of ‘the problem’, and a priority action from the workshop was to identify what information was available for understanding the broader context. Inherent in the nomenclature was a belief that residential migration has been and will continue to have little impact in any redistribution or changed characteristics for the remote Indigenous population.

Internationally, economic factors have formed the basis of academic endeavours for understanding emerging patterns of rural-to-urban migration in developed nations. These have been greatly influenced by the ideas of Harris and Todaro who, in the early 1970s, proposed that labour market conditions arising from the transition from agrarian to industrialised economies served as the driving force for internal migration (Harris & Todaro, 1970). In essence, urban centres were seen to be able to out-bid rural areas in the competition for labour. The Harris-Todaro (HT) models have been refined over time with the core assumption shifting from the assumed existence of higher returns for labour to the expectation that better conditions would ultimately be available in urban centres (Petrov, 2007). This shift is significant, because it allows models to consider trade-offs made by
migrating individuals including sacrificing secure employment in the rural location for uncertain employment outcomes and remittances in the urban destination (for example, Fields, 1975; Kritchel and Levine, 1999; Raimondos, 2003). An important aspect of HT research has been the finding that urban centres are attractive not just because of the expectation of increased rewards for the same unit of labour (such as using the same job skills), but because they provide alternative employment options. Rural areas, on the other hand, are perceived as providing restricted choices even if some skills are highly valued (Rhoda, 1983).

HT models have, among other things, shown themselves able to predict who will migrate, when they will migrate, and where they will migrate. These models have been able to explain circular and seasonal patterns of migration, and have identified how origin and destination communities may benefit from the process. More recently, HT models have proven able to deal with internal migration patterns in developing and under-developed nations, and have been able to explain counter-urbanisation trends emerging in some places. HT models link prevailing (largely economic) conditions to the probabilities of migration. They have been criticised, however, as being too simplistic in reducing patterns of migration to “…worker’s estimates of the probability of acquiring… employment” (Ranis & Stewart, 1999: pg.286).

More recent research has attempted to incorporate factors other than employment probabilities and wage differentials into HT models, including the role of informal networks in facilitating moves that, in the short or medium term, may provide limited access to formal employment and increased wages. Haan (2002), for example, emphasized the role of family and cultural factors for drawing Indian citizens to cities and then, that the same reasons generated return migration to the rural towns of origin. More and more post-productivist literature is emerging in support of non-economic rural-to-urban push factors. In Latin America, Morrison (1993) has proposed that the fear of political violence is a major push factor. Meanwhile Bhattacharya’s (2002) identification of the existence of two streams of rural-to-urban migration with different incentives led him to question the carte blanche application of HT models and their derivatives to the analysis of labour migration.

Acknowledgements of shortcomings in HT models have lead researchers to add components to their HT functions rather than to look for new explanatory models. Expectations become tempered by spatial, social and cultural factors, but are still at the heart of the models. An interesting example of how this plays out is found in the work of Petrov (2007), who examined rural-to-urban migration in the northern frontier regions of Canada. He found that less than one third of the migration of Indigenous people that he observed could be
accounted for by labour market conditions as expressed in the HT models (even when he included tempering components). However, his approach was to investigate the migration which could be so explained, and assume that the remainder was prompted by familial and cultural drivers. No attempt was made to explain what these family or cultural conditions were or how they influenced migration decisions and outcomes.

The conditions that apply in Australia’s Northern Territory bear strong resemblance to those observed for remote Canada by Petrov. There are significant Indigenous populations, significant populations in remote areas and high levels of mobility (interstate for non-Indigenous people and short-term for Indigenous people). Increasing rural-to-urban migration has been a characteristic of all industrialised nations, and has also been observed in a diverse range of developing countries like India, Mexico, Africa, and China over the past few decades (Arizpe, 1971; Bryceson, 1996; Rozelle, et al., 1999). While the prevailing conditions have differed in jurisdictions where rural-to-urban migration has been studied, there have been some consistent patterns observed in the research. Notably, rural-to-urban migration has been described as the domain of the young, and particularly of young males (for example, Agesa & Agesa, 1999). Young males have traditionally been seen as representing the more valuable units of labour for both rural and urban areas. Young females have been seen as likely to accompany young men who move, rather than being the instigators themselves, although this gender divide has been less pronounced in some of the recent literature (Hamilton & Otterstad, 1998). Rural-to-urban migration has been shown as occurring for highly skilled/ educated and poorly skilled/ educated people. The migration of skilled people is explained by expected higher returns for their labour in urban centres that have more competitive economies and more opportunities for advancement. These conditions may also attract unskilled people, with the view that urban unskilled labour is remunerated more highly than rural unskilled labour. The literature remains relatively quiet on the issue of who does not move, but it can be inferred that these are the old and the very young, and people with lower levels of skills and education (however that might be defined in the context of the origin community).

The literature is in broad agreement that rural-to-urban migration tends to occur firstly between locations that are relatively close to one another (Conway, 1980). The most common move is from a rural enclave or hinterland to the nearest urban centre, although there is little agreement on what constitutes the tipping point between a place considered rural and one considered urban in this sense. As migration becomes more widely practiced, people who have moved to small urban centres tend to move to larger ones, and the dispersal of the rural population increases. However, the relationships between rural and urban locations intensify over time as they become socially coupled through migration processes.
The explanations for short distance moves include reducing the cost of travel in the initial instance, but also the need to maintain links back to the rural location, particularly in cases where the move to the city is seasonal (Li, 2006).

Cities become increasingly attractive to rural populations over time for reasons beyond employment of the migrating individuals (Ma, 2001). Institutional economics argues that moving to the city at a particular life stage (be it for education, entertainment, employment or some other reason) can become a rite of passage for people from rural communities (for example, Horvth, 2008; Monsutti, 2007). This has been observed where migration over time has resulted in positive feedback either through remittances from urban workers to their rural families, or through the esteem attached to families whose young people have ‘achieved something’ in the urban environments. In this way, rural-to-urban migration is supported by rural communities. There have been some studies of how migrants returning to rural communities are received. The evidence suggests that they are well supported, even if they have made minimal remittance and failed to achieve as expected (Cassarino, 1980). In this way, the risk of departure from the rural community is minimised. There is also some suggestion in the literature on return migration that those likely to return are either those who have failed to achieve (and so need the support networks ‘back home’) or those who have achieved very highly and return to invest in the rural community (King, 1978).

Generational effects of rural-to-urban migration also play out in the urban destination centres. Studies of the formation of ‘ghettos’ or ‘cultural enclaves’ or ‘clan corridors’ highlight the support structures that emerge in urban destinations when they become linked to particular rural origins (for example, Laurence, 1998). Family members, friends and other known people can reduce the costs of the next wave of migration by providing information, housing, access to food and other resources, introductions to potential employment, and even direct employment in the formal or informal sectors. Thus develops chain migration which is undertaken at reduced cost (real or opportunity) to successive migrants (Caldwell, 1966; Andersson, 2001).

What has been observed as fundamentally distinguishing urban destinations from rural origins is the extent to which urban areas provide choice and easier access to resources (O’Stark, 1985). There is the potential for more jobs in urban areas (even when rates of unemployment are similar to or greater than those in the rural areas) and a wider diversity of jobs. Urban areas have more shops, more entertainment facilities, more education and training opportunities, and a greater selection of potential marriage partners. Interestingly, attempts to make rural areas more attractive by increasing facilities, employment and education opportunities have been shown to lead to increased out-migration (Bilsborrow,
This apparent paradox is explained by the improving conditions in the rural area reducing the risks associated with urban migration. As people become more aware of what opportunities might lay elsewhere, they develop a broader set of skills for accessing those opportunities, and they become less fearful of the unknown and the risk of change.

While increasing the attractiveness of the rural origin does not serve to decrease the attractiveness of the urban destination, the value attached to rural amenity can serve to attract urban-to-rural migration. This phenomenon is beyond the purview of this paper, but the literature suggests that urban-to-rural migration is most commonly associated with different populations than those who left. A prime example is the phenomenon of ‘sea change’ and ‘tree change’ undertaken primarily by resource rich urban residents (Walmsley et al., 1998; Burnley & Murphy, 2004; Costello, 2007). Or, where return (urban to rural) migration occurs there may be substantial time lag (people moving back to their rural origins many years after leaving to raise a family or to retire). The issue of seasonal or circular rural-to-urban migration has received attention in the literature again largely as a function of labour. The most common explanation is of rural farmers moving to urban areas to supplement their farm income, and the returning to their rural origins to continue to farm and attend to family commitments (Zhao, 2001).

Non-labour based explanations for rural-to-urban migration are less well developed in the literature than the HT approaches. Such approaches are often considered simply as ameliorating conditions within HT frameworks. Several descriptive frameworks have emerged following the work of Lee (1966). The fundamental observations in these frameworks are that there is a set of push factors encouraging people to leave their existing residence, and a set of pull factors encouraging people to move to particular places. Finally, there is a set of intervening obstacles which raise the costs of migration and temper the push and pull factors. Unlike the HT approaches, these ‘social’ migration models do not assume that the same factors come into play for all populations. Rather, the significance of individual factors changes from person to person and the complexity of the interactions between these varies over time.

Non-labour considerations tend to be identified in the literature only at the broadest level. Cases are cited of migration arising from family responsibilities, military service, and the desire for improved health and education. Irrespective of the motives, the dominant pattern observed remains as rural-to-urban migration. But what these non-labour approaches (whether they be descriptive in the tradition of Lee, or explanatory in the tradition of Harris and Todaro) suggest, however, is that conditions in the origin and destination affect the experience of migration. This includes the impacts felt by individuals (whether they find
work, their social status and so on), the destinations (whether they experience labour surplus, for example) and the origins (whether they experience a diminishing of social, political and cultural capital, for example). Similar patterns of migration may be predicted under a range of different conditions, but the outcomes for migrants and for origin and destination communities depend on knowledge of the local conditions. Attempting to manage outcomes likewise requires sensitivity to local conditions.

This sweep of the prevailing literature on the drivers of and outcomes from rural-to-urban migration in a changing world demonstrates just some of the complexity for examining issues of cause and effect in relation to Indigenous migration in the NT. In some sense, depicting broad trends is relatively simple since aggregate migration data is the sum of individual actions to ‘vote with their feet’. Yet little has been done to date to begin to chip away at the void in knowledge at even this broadest of levels in the NT. Instead research has continued to focus on just one aspect – the issue of urban drift and its perceived negative outcomes. Consequently, discussions about possible future scenarios are in absence of these types of baseline analysis. The research presented here goes some way to describing the baseline situation with a view to supporting the theories in this thesis on what has occurred in recent times and, more importantly, what might occur, corresponding to rural-to-urban migration for Indigenous people in the NT.

4.3 Methods

The most commonly used data to describe patterns of migration in Australia is from the quinquennial Census of Population and Housing (herein Census) administered by the Australian Bureau of Statistics (Australia’s National Statistical Agency) and most recently conducted in 2006. The Census requests information about the current (usual) address of respondents, and their address one year before the Census and five years before the Census (but not about movements in between those times). It is widely recognised that this provides one fairly limited view of migration, but the data have been used extensively to model spatial and demographic dimensions population change as well as to inform estimates of population growth and population projections.

Census data may be particularly poor when examining migration of Indigenous people in the NT. There are conceptual issues – movement from place to place may not always be associated with a ‘change of residence’ by Indigenous people for whom such patterns of movement are cultural norms and do not reflect changing address in the way that they might for other populations (Prout, 2008a). There are also practical issues derived from a special Indigenous enumeration strategy for remote areas which involves key informants and a
shortened version of the Census form (ABS, 2006a). The procedures aim to account for low literacy and poor English language skills that could affect response rates, but it has also been shown to result in under-enumeration because of poor knowledge by Census collectors and their local informants about the intent of Census questions (Martin et al., 2002). Finally there are issues of scale – measuring movements within the Northern Territory and attaching these to specific rural and urban places is difficult due to small population sizes. The ABS is prevented legislatively from releasing information that could potentially identify respondents, so getting sufficiently detailed data about age and sex and Indigenous status (never mind further characteristics such as labour force status) is problematic at small geographic scales.

Nevertheless, the Census does provide some insights into broad patterns of intra-Territory movement to inform this paper. Data was extracted from the 2006 Census to compare the place of residence on Census night to the place of residence five years prior for people who had been in the Northern Territory at both those points in time. The data were disaggregated by age (5 year age groups), sex and Indigenous status. Those who did not state their Indigenous status or their place of residence one or five years ago were excluded from the analysis, resulting in a study group of 11,727.

The geographic basis for analysis separated out the capital city of Darwin and the large Central Australian town of Alice Springs as representative of the urban areas of the NT. The rest of the NT was divided into the horizontal regions of (running north to south) – East Arnhem and Darwin rural, Katherine region, Barkly region, and Central region. Each zone apart from Darwin contains a mix of remote and very remote localities according to the current version of the Australian Bureau of Statistics Accessibility Remoteness Index of Australia (ABS, 2008a). Darwin is considered ‘outer regional’ and even Alice Springs is considered ‘remote’ on the ARIA+ index.

The analysis was relatively rudimentary in identifying the number of people in age, sex and Indigenous status classes who moved between regions, and particularly those who moved from the more remote regions (East Arnhem, Katherine, Barkly and Central) to the urban centres of Alice Springs, Darwin and Darwin rural. It is recognised that this provides an indication of rural-to-urban migration only, but the results were still informative, particularly when comparing Indigenous and non-Indigenous populations. Persons aged zero to four years were excluded from the analysis, as were respondents who did not state a place of usual residence either on Census night or five years prior, and those who stated their place of residence as offshore or migratory. At each Census, this resulted in about 80 per cent of the Indigenous respondents to the Census being in scope (see Table 3). In the results section,
‘population’ unless otherwise noted refers to the pool of potential movers for the relevant region (NT and the sub-regions) in the Census data.

4.4 Results

4.4.1 Inter-regional migration

At the time of the 1996 Census one in four Indigenous people in the Northern Territory (11,790) stated they lived in urban areas as defined in this research, with 68 per cent in Darwin (8,030 people) and 32 per cent in Alice Springs. From 1996 to 2001 the Territory’s urban population grew by 14 per cent and by just under 10 per cent in the subsequent five years, taking the urban Indigenous share to 28 per cent by 2006. The populations of rural areas also grew, but at the substantially lower rates of eight per cent from 1996 to 2001 and five per cent from 2001 to 2006.

Between 1991 and 2006 some 7,126 Indigenous people changed their region of residence within the Northern Territory, at an average turnover rate for the three periods of seven per cent. Regional migration was at its highest during the 1991 to 1996 period where eight per cent of Indigenous people migrated and lowest during 2001 to 2006 at six per cent.

In gross terms, as shown in Table 3, migration from rural areas to urban areas accounted for some 50 per cent of all intra-Territory migration from 1991 to 2006. Migration in the opposite direction from urban to rural areas made up a quarter (1,729 people) and the net outcome of population flows between rural and urban areas was therefore an increase of the urban population by 1,799 people.

Table 3 - Indigenous inter-censal migration, 1991 to 2006

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Flows ( % )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural-to-urban</td>
<td>1,244</td>
<td>1,088</td>
<td>1,196</td>
<td>3,528</td>
</tr>
<tr>
<td>Rural-to-rural</td>
<td>520</td>
<td>394</td>
<td>361</td>
<td>1,275</td>
</tr>
<tr>
<td>Urban-to-rural</td>
<td>766</td>
<td>569</td>
<td>394</td>
<td>1,729</td>
</tr>
<tr>
<td>Urban-to-urban</td>
<td>195</td>
<td>225</td>
<td>174</td>
<td>594</td>
</tr>
<tr>
<td>Total</td>
<td>2,725</td>
<td>2,276</td>
<td>2,125</td>
<td>7,126</td>
</tr>
</tbody>
</table>

Absolute numbers for rural-to-urban migration have remained quite consistent over time while urban-to-rural (and rural-to-rural) movements have declined. A particularly large decline of around a third in urban to rural migration was recorded from 2001 to 2006. Urban
to urban migration numbers have remained relatively small having comprised eight per cent of all migration over the 15 year period. Nevertheless, on a net basis, for every 100 people who left Alice Springs for Darwin, only 70 arrived and during 2001 to 2006 this ratio reached its lowest point at 54 per 100. Meanwhile migration between rural areas accounted for 18 per cent of all migration but its influence has declined over successive Censuses. The Barkly and Katherine regions were the most prominent pairing for rural-to-rural migration accounting for 21 per cent of this type of migration.

4.4.2 Inter-jurisdictional migration

Less than six per cent of the total population had moved from one region to another between 2001 and 2006. The greatest number of migrants moved into Darwin from the other regions (3,194 movers) and Alice Springs town (1,237). The next largest cohort was migrants out of Darwin to other regions (1,694 movers). However, as shown in Figure 6, Darwin received the second lowest proportion of its 2006 population from movers from other regions (5.2 per cent) next to Central (3.4 per cent), and lost the lowest proportion of its 2001 population to other regions (2.9 per cent). The largest proportional in-migrations were to Alice Springs town (8.6 per cent) and Darwin rural (8.0 per cent). The greatest proportional out-migrations were from Barkly (13.9 per cent) and Katherine (11.7 per cent). All regions lost the most population to Darwin, but they also gained the most population from Darwin.

![In and out migration by jurisdiction, 2001 to 2006](image)

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72.
The overall pattern of Darwin receiving roughly twice as many in-migrants as it produced out-migrants was repeated in its relationship with each of the regions. For example, 760 people moved from Alice Springs to Darwin while 368 moved from Darwin to Alice Springs. And while 181 people moved from Barkly to Darwin, 90 moved from Darwin to Barkly. For Alice Springs this broad pattern was similar with the exception of its relationship to Katherine where it lost more than it gained. The only regions other than Darwin and Alice Springs which received more in-migrants than it produced out-migrants was East Arnhem, which received 14 more people than it sent out. At the surface, then, and with the exception of East Arnhem (which experienced substantial growth in mining activity in the period), a pattern of movement from the rest of the NT to Darwin and Alice Springs and from Alice Springs to Darwin is apparent.

These broad patterns of movement can be summarised by identifying the proportion of migrants who moved from more remote to less remote regions (according to ARIA+ index scores) and vice versa. Some 4,155 people (60 per cent of migrants) moved from more remote to less remote regions, with 2,748 (40 per cent of migrants) moving in the other direction. The percentage of Indigenous and non-Indigenous people moving from more remote to less remote regions was equivalent at 60 per cent. However, as shown in Figure 7, the patterns of movement between individual regions were quite different for Indigenous and non-Indigenous people.
Figure 7 - Difference between in and outmigration by Indigenous status, 2001 to 2006 (per cent)

The above figure indicates the difference between the percentage (as a proportion of the 2006 population) of in and out-migration by Indigenous status and region. For Indigenous people there were noticeable differences between in and out migration for Darwin and Alice Springs with these centres being the only regions to record a positive net difference (around eight per cent and 10 per cent respectively). The remaining regions recorded net losses of in the order of one and five per cent, although the proportion of Indigenous people moving is lower overall than non-Indigenous. For non-Indigenous net movement, only Darwin and East Arnhem experienced increases in population (1.8 per cent and 2.6 per cent respectively).

The patterns of in and out-migration for Indigenous persons are shown below to highlight the net contributions of intra-Territory migration.
As shown in Figure 8, Alice Springs and Greater Darwin gained the largest percentage of its Indigenous population from other regions (16.7 per cent and 13.1 per cent respectively) during the period and lost only 7.1 per cent and 5.4 per cent. More than half of the loss from Alice Springs (54 per cent) was to Darwin. Meanwhile for non-Indigenous persons Darwin and East Arnhem gained population, outer Darwin and Alice Springs lost some, while the remaining regions (Katherine, Barkly and Central) experienced large net losses (Figure 9).
For both Indigenous and non-Indigenous persons the results for Katherine, Barkly, and Central are particularly interesting, reflecting a substantial out-migration of Northern Territorians from those regions. The overall impression provided by these statistics is of relatively small movements of Indigenous people, but with a definite concentration of movement from throughout the NT to Darwin and Alice Springs. In contrast, non-Indigenous people were more mobile, with the general trend of moving to Darwin concealed in a more volatile overall migration system.

4.4.3 Migration compositions by age and gender

Figure 10 demonstrates that the age profile of migration was consistently young with around 45 per cent of all migration since 1991 undertaken by those aged less than 20 years. In each of the three intercensal periods, the 10 to 14 years cohort comprised the highest proportion of migration (at 17 per cent of the overall total). Also of note is the consistency in the age profiles of migration where there are only one or two (age-group-specific) examples of the shape of the curves differing between one Census and another. The age-sex profiles of migration were largely consistent between males and females across the entire period, however, a greater proportion of female migration was undertaken by those aged 25 years or more. Most of this difference was accounted for by the 25 to 29 year cohort who comprised 11 per cent of female migration but only nine per cent of male migration from 1991 to 2006.
The Census data results show the sex ratio (male to female ratio) for all Indigenous people who migrated between regions during the period from 1991 to 2006 at 91. Hence, for every 100 females who changed their region of residence during this period, there were 91 males who also did so. And at each individual Census within this period the sex ratio was under 100, having fallen from 95 in 1996 to 89 in 2001, and then to 87 in 2006. There is evidence, therefore, that the ratio of female to male inter-regional migrants in the NT is increasing, at least as far as Census reporting would indicate.

Disaggregation of the overall sex ratio for migrants during the 1991 to 2006 period results in a ratio of less than 100 for all age cohorts other than the five to nine year age group where it averaged 116 during the 1991 to 1996 period. A noticeable decline in the sex ratio is evident for the 25 to 29 years cohort which may reflect Census reporting issues.
An analysis of age and gender in relation to those who moved from more remote to less remote areas are provided in the following figure. The proportions represent the percentages of persons in each group who moved from a more remote to less remote region as denoted by the ARIA scale.
Overall 68 per cent of moves were from more to less remote areas. The ratio was highest for Indigenous females (73 per cent) and lowest for non-Indigenous males (66.5 per cent). As shown in Figure 12 the greatest proportion of movers to less remote areas were Indigenous people aged less than 25 years (75.2 per cent) followed by Indigenous females (73 per cent). Non-Indigenous persons were less likely to have moved than Indigenous persons, with those 60 years or older least likely to have moved (61.2 per cent).

Further analysis of Indigenous persons showed that, of the 714 Indigenous females who moved, 27.7 per cent (n=198) moved to Greater Darwin from Darwin rural and a further 18.2 per cent (n=130) moved from Katherine. The pattern was similar for Indigenous males as two thirds of them also moved to Darwin from Darwin rural or Katherine (27 per cent and 12.9 per cent respectively).

In relation to the 703 Indigenous persons under 40 years of age 40.9 per cent (n=288) moved from Darwin rural to Darwin, 23.7 per cent (n=167) from Katherine to Darwin and a further 19.2 per cent (n=135) from the Central region to Darwin. There were much smaller numbers of persons in the 40 years of age or over group, however they were also likely to have moved from remote to less remote areas.
4.5 Discussion and conclusion

The Census data points to a net loss of Indigenous people from the remote regions of the NT to its urban centres of Darwin (in particular) and Alice Springs; a relatively consistent pattern of rural-to-urban migration since at least the early 1990s. These patterns are consistent with the literature which indicates that the dominant global migration flow is from rural-to-urban centres and generally this tends to occur between adjacent regions, in this case Darwin Rural to Darwin and Katherine to Darwin, and, to a lesser extent, Central to Alice Springs.

What is interesting from the age and gender breakdowns of Census data are the high proportion of females in the migrating population and the relatively young age structure of migrants. The high proportion of people aged 10 to 19 years who migrated indicates education might be a strong motivator. It may also say something about how different Indigenous populations are captured in the Census. Data about females are more likely to be accurately captured than data about (particularly young) males. These patterns are broadly what would be expected having considered the international literature, with young people, and especially females, ‘leading the way’. Despite the steady overall net movement to urban areas, the size of these remains relatively small in comparison to the overseas experience.

This baseline analysis demonstrates that the increasing urban diaspora, consistently couched as resultant from ‘urban drift’ is, at least in part, being bolstered by net residential migration of Indigenous people who formerly lived in remote areas. Despite the consistency of these broad trends and their close match to the experiences of other nations (both developed and developing) in relation to rural-to-urban migration, public, academic and political discourse has little to say about the possible causes and consequences of these. Importantly, only minimal work has been done to develop theoretical and conceptual models which might help anticipate future trends and therefore guide policy makers on the needs of a population into the future according to settlement patterns.

The domination of post-colonial anthropological perspectives about remote dwellers and their attachment to culture and community have precluded broader, and probably more relevant, attention to more robust demographic migration models, particularly of rural-to-urban migration in the context of remote Australia. But this research demonstrates it is difficult to argue that we should expect the patterns observed in remote Indigenous Australia to be any different to those which have emerged in other developed and developing nations struggling with issues of regional development and the attraction of the cities. Those who remain focused on population re-distributions of a temporary nature along with those who
call for the reversing of provisions in major policy initiatives, like the NTER, might consider broadening their purview.

Finally, while the demography of remote communities is diverse (some are ageing, some have relatively high employment, some have high or low sex ratios), they share a number of commonalities not just with each other but with remote populations in general. These are conceptualised and described more fully in Chapter Six as the ‘seven D’s’ of remote demography. Better informed intellectual and public debate on future settlement patterns for Indigenous people in the Northern Territory would recognise this broader history of migration as being inclusive of all the patterns now being associated with movements for cultural activities and blamed on ‘urban drift’. In doing so, we would be able to develop better models for testing the specific impacts of policy and interventions and provide better advice to communities about how to manage the effects.
Chapter 5: Indigenous Demography: Convergence, Divergence, or Something Else?
5.1 Preface

Understanding the force of migration for reshaping populations requires knowledge about trends and impacts from the other components of population change, namely fertility and mortality. This chapter explores the post-WWII international history for Indigenous fertility and mortality in developed nations. Together with migration, the component with the greatest capacity for internal change, this review provides a holistic context for understanding contemporary and likely future changes to the structures and compositions of Indigenous populations. The chapter is a reprint of a published edited book chapter:


Also discussed are Indigenous population growth from non-demographic factors including changing propensities for people to identify as Indigenous in official data collections (or ‘ethnic mobility’) and rapid growth in rates of mixed-partnering (where one partner in a relationship is Indigenous and one is not). These have dramatically increased the pool from which Indigenous children can be produced and grown the size of the Indigenous population in southern urban areas in particular, and it is important to consider these trends in the remote context.

Many of the transitions in fertility and mortality investigated here have occurred at earlier times for nations outside of Australia. This facilitates opportunities to learn from these to generate knowledge about possible trends for remote living Indigenous Australians. Moreover, examining approaches to modelling demographic change elsewhere is a necessary step in contemplating the efficacy of such approaches, and their elements, to understanding the remote Australian situation.

5.2 Introduction

Australian Aboriginals are thought to have occupied remote spaces on the Australian Continent from as far back as 60,000 years ago (Thorne, 2005); ancestors of the Inuit migrated across the Beringia Land Bridge some 5,000 years ago (Bjerregaard et al., 2004); Alaskan Natives have lived in the remote subarctic forests, the tundra and arctic coastal regions for 8,000 years (Weeden, 1985, Anchorage Convention and Visitors Bureau, 2009); and the Sámi are the original inhabitants of the Fennoscandian Shield dating back at least 2,500 years (Lund, 1947). Despite the ravages of colonisation, and its enduring legacies, at
the turn of the twenty-first century these peoples constituted a high proportion of the remote area populations in their respective nations. In Greenland and Denmark, the remote Indigenous population share was around 90 per cent. In Canada, it was around half (Bogoyavlenskiy et al., 2004), in the Northern Territory around one-third (ABS, 2009b), and American Indians and Alaskan Natives comprised around a fifth of the Alaskan population at that time (Ogunwole, 2002). Most Indigenous people are dispersed into small communities, a legacy in many cases of forced re-settlements under colonial directives. The Inuit, for example, number just 170,000 but are scattered across the lands of five nations – Greenland, Denmark, Alaska and other parts of the USA, Canada, and Russia (Bjerregaard et al., 2004).

The primary aim in this chapter is to compare and contrast changes in key components of the demography of these populations from post-WWII into the first decade of the twenty-first century. The emphasis is on changing patterns of Indigenous mortality and fertility, and factors which have influenced these, since they are at the heart of describing and understanding how Indigenous people and their lives have changed and continue to change. We then describe and discuss non-demographic issues which are common to the study of Indigenous mortality and fertility in the remote space. As part of that discussion, we go on to question the net contribution of demographic and other research conducted in situ in remote communities, an outcome of the much increased requirement for evidence based Indigenous policy, via a case example from the NT of Australia. Finally, there is a broad discussion about demographic issues and likely future scenarios for Indigenous people in the globalised world.

Unavoidably, the chapter covers some controversial ground because of trenchant and wide ranging views held on Indigenous affairs. These have formed from the mixing of diverse and complex philosophies that continue to reach into and reflect the psyche of twenty first century societies as they grapple with questions of ‘what have we done?’ and ‘what should we do next?’ in relation to Indigenous affairs. Meanwhile Indigenous people themselves struggle to pursue their own life projects in ‘post-settlement’/’post-colonisation’ nation states (Blaser, 2004) and develop new ways of living at the intersection of Western and traditional life. Demographic research is at the heart of these concerns since it is charged with informing the debate both in retrospect and as governments, Indigenous people and others seek to alter the future for the better.

5.3 A potted history of remote Indigenous demography
5.3.1 Mortality

Reconstructive studies on the socio-cultural histories of Indigenous people in what are now remote parts of developed nations have provided many insights into the remarkable similarities of the post-war Indigenous demographic experience. The aggregate picture subsequent to settlement, for example, was dramatic depopulation through the dispossession of land, the violence of colonial policies (Rogers, 1971, Weeden, 1985, Gray and Tesfaghiorghis, 1993) and from the impacts of infectious diseases and changed diets (Kunitz, 1990, Sköld & Axelsson, 2007). In spite of common experiences shared across nations, historical diversity in the demographic impacts of colonialisation is recorded (Walter, 2008). The Torres Strait Islander people of north-east Australia, for example, initially experienced positive relations with settlers, based largely on trade, and did not experience the massive scale of depopulation documented elsewhere (Mullins, 1992).

After reaching population low points at different times, Indigenous numbers recovered, or at least stabilised, following moves towards restitution which were accompanied by new models of Aboriginal administration and featuring, on the surface at least, more concern for Indigenous welfare. During this period however, both fertility and mortality remained at high rates (Taylor, 1997). Subsequent to WWII, similarities in the directions of fertility and mortality within Indigenous populations of developed nations continued to be observed.

“Although the data are incomplete, the trajectory of mortality decline seems to have been roughly comparable in all these indigenous populations.” (Kunitz, 1990: pg.649)

Most notably, mortality rates transitioned from very high levels to much lower rates (for women and infants in particular) through a combination of factors. In the Arctic, large declines in Inuit infant mortality rates were achieved by the eradication of tuberculosis and other communicable diseases unique to the Arctic ecology (Weeden, 1985). The result was a pushing-up of at birth life expectancies for the Inuit in Alaska, Canada and Greenland (Bjerregaard et al., 2004). In remote Australia, death rates from infectious diseases declined for older age groups in particular as improvements in the prevention and treatment of these were forthcoming, as health care was offered to remote populations on sufficient scale to influence overall health outcomes, and from improved maternal and nutritional conditions (Condon et al., 2004a).

Nevertheless, data across all countries has been affected by incompleteness in the recording of deaths and in the definitions and geographies of Indigenous populations and changes in these (Kinflu & Taylor, 2005). Guimond (2003) has noted the plethora of issues with the
Canadian Indian Register including late and under-reporting of deaths, the nil recording of deaths prior to birth and missing births and deaths from records. These issues impact on our ability to detect and explain trends as well as to confidently compare and contrast the international experience. Nevertheless, there is now a sufficient intellect on paper to validate the history of consistency in the downward trend for mortality rates and trajectories.

But non-epidemiological factors too have influenced the decline of Indigenous mortality in the post-WWII era. Firstly, bursts of growth in the size of Indigenous populations were experienced in Australia, Alaska and Canada as a result of non-demographic components of change. These are thought to be caused by an increasing propensity for individuals to identify as Indigenous in official data collections (notably Census forms) and by improvements to Census coverage and accuracy (Gray, 1997; 2002). While much of growth via the former is dented as an urban phenomenon, remote area life expectancies at birth were also affected by the burgeoning of the denominator in rate calculations. Secondly, there has been a growth in the incidence of mixed partnering in these nations and this has effected epidemiological rates, particularly where, as is pre-dominant in such relationships, the mother in such partnerships identifies as Indigenous (Birrell, 2000).

Despite these drop-offs and downward trends, mortality rates have nevertheless remained, and continue to be, unacceptably high in comparison to non-Indigenous populations and, in remote areas, these contrasts are most stark. Part of the cause has been the widespread increase in deaths from chronic diseases (for example, Dempsey & Condon, 1999). Excepting the Sámi of northern Sweden, who have achieved parity in life expectancies at birth with non-Indigenous residents (Sköld & Axelsson, 2007), diseases such as cancers, heart, kidney and primarily lifestyle-related ailments such as diabetes (Thomas et al., 2006; Blackwood, 1981) have offset gains from the reduction of mortality from communicable diseases. The manifestation of social pathologies like high alcohol consumption, the use of other illicit substances, obesity, accidents and suicides have also emerged as critical modern day issues for resolving disparities in the well-being of native and non-native populations (Bjerregaard et al., 2004). From 1977 to 2001 annual changes in mortality rates from ischemic heart disease for Indigenous people in the NT, for example, were 2.5 per cent (an 81 per cent growth over the period) and 6.4 per cent for diabetes mellitus (a 338 per cent increase) (Condon et al., 2004a) such that:

“There are too many funerals; too many Aboriginal and Torres Strait Islander men and women die too early.” (Thomas et al., 2006: pg.145)
Life expectancy gaps also remain because, while Indigenous at birth life expectancies have increased, so have those for non-Indigenous populations in developed nations. Thus, while at birth life expectancies for Indigenous people in the NT rose by around eight years for Indigenous males and by 14 years for Indigenous females from the late 1960s to the middle of the first decade of the twenty-first century (Wilson et al., 2007), non-Indigenous at birth life expectancies rose by just under ten years for males and just more than eleven years for females (ABS, 2008c; ABS, 2009c).

The work of Wilson and Condon (2006) and Condon and colleagues (2004a) have laid out changes in and the continuance of age and sex specific gaps in Indigenous to non-Indigenous life expectancies at birth for Australia and the NT. During the post-war period, mortality gains for Indigenous people broadly mirrored those for the other jurisdictions covered in this chapter. That is, almost all the gains for males from the 1960s to the end of the century were due to reduced infant mortality rates as a result of better provisioning of health services, health education and changes to environmental health conditions (Taylor, 1997; Condon et al., 2004b). While absolute life expectancies at birth rose by eight years for males during that period, large gaps remained for those aged 25 to 55 years in particular. These contributed to a widening in the overall male life expectancy gap between Indigenous and non-Indigenous males from 15.5 years in the 1960s to around 17 years at the turn of the century (or 59.9 years versus 76 years respectively). Nevertheless, the absolute size of life expectancy gaps have been shown to be highly sensitive to errors around population estimates and cannot be taken as literal (Wilson et al., 2007). For Indigenous females, a significant 14 year life expectancy increase occurred from the 1960s in Australia and this reduced the differential with non-Indigenous females from 20.8 years to 15.2 years by the turn of the century (Wilson et al., 2007).

Compared to the non-Indigenous population, large reductions in mortality rates for older people were replicated only for Indigenous females. And compared to Indigenous people right across Australia, NT Indigenous life expectancies at birth remained lower, with the greatest gaps between that jurisdiction and Indigenous people in Australia overall in 2004 showing for males aged 35-44 years (3.77 years), closely followed by males aged 45 to 64 years (3.32 years) (Wilson et al., 2007). These findings re-affirm the contemporary picture of a poor scorecard across a range of socio-economic and health indicators. Perhaps nowhere is this more so than for the NT of Australia where ongoing disparities are so entrenched that the interest and attention of the United Nations has been drawn (for example, Sharp & Arup, 2009; Glélé-Ahanhanzo, 2001). Indeed, at birth life expectancies for Indigenous Australians has been suggested by Gary Banks AO, the Chairman of the Australian Productivity
Commission as ‘... arguably the most important, and certainly most symbolic, indicator of Indigenous disadvantage’ (Banks, 2009). Consequently, demographic analysis has a strong role to play in distinguishing, articulating and adding meaning to the great diversity of social, economic and demographic circumstances within which Indigenous people in remote places live out their lives (Kunitz, 1990). Meanwhile political attention is at a peak and the demands on demographic investigation to explain baseline conditions and indicate progress against societal, policy and institutional (especially for individual government bureaucracies) ambitions are intense.

The rolling of large at birth life expectancy differentials into the twenty-first century is symbolic of both past injustices and the failing of successive governments to comprehend and address the complex and sensitive issues for the ‘modernising’ of Indigenous societies. This is a goal which, while rarely articulated as such, has been at the heart of almost all contemporary Indigenous policy enacted by governments of developed nations. In light of a new wave of political attention drawn to the issue, the absence of discussion on intra-jurisdictional variability in the starting demography (essentially, but not limited to, age-sex compositions) is of concern. Hence while ‘closing the gap’ is now a stated political aim in Australia (Council of Australian Governments, 2008; Department of Families, Housing, Community Services and Indigenous Affairs, 2009) there appears to have been little consideration about how the available ‘dividends’ represented by life expectancy gaps across ages can be ‘cashed in’ as a means to achieving gap closing. Historical demography tells us that directions of changes will not always follow our expectations, nor occur systematically across age-sex cohorts. A top down ‘one size fits all’ policy approach may fail to account for variable trajectories in fertility and mortality so that even subtle differences might create bifurcations between the anticipated policy impacts and actual outcomes. Consequently, closing gaps will impact differentially across space on the demand for services and infrastructure of different types (for example, aged care versus particular types of housing). Robust and local level monitoring of changes are needed as the push to achieve what might be best described in the Australian context as ambitious epidemiological reformations gains momentum.

5.3.2 Fertility

Meanwhile, fertility rates have remained relatively high for remote Indigenous populations of developed nations despite declining substantially in the post-war era. In the Northern Territory, the General Fertility Rate (GFR, or annual number of births per 1,000 women of childbearing age) for Indigenous people has halved since the 1960s (Condon et al., 2004b), but was still almost double that for non-Indigenous people by the end of the twentieth
century. GFRs for Indigenous women were generally lower by the mid-2000s than was anticipated by demographers (for example, Wilson and Condon, 2006). On the other hand, the Total Fertility Rate (the number of live births per woman completing her reproductive life) for non-Indigenous women rose (against demographers’ expectations) from 1.9 in the 1990s to 2.1 in the 2000s. For the NT, continuing high rates of Indigenous fertility and increasing non-Indigenous fertility have underwritten a period of relatively high (beyond two per cent) population growth and helped to smoothed the effects of volatile interstate migration rates during the 2000s.

Changes to age-specific birth rates for Alaskan Natives (Blackwood, 1981) provide some insights into the drivers of Indigenous fertility changes in post-war times. There, rates for older women fell dramatically, by three-quarters for those aged 35-39 years and by more than 90 per cent for women older than 40 years, from 1959 to 1978. Conversely, rates for young mothers remained at 80 per cent of the 1959 rate. Blackwood supposed that the introduction of birth control combined with acculturalisation processes were the main drivers for specific ages in Alaska.

Turning to the twenty-first century, major differences in fertility rates can still be seen between Indigenous and non-Indigenous rates for specific ages and consequently there are large differences in the median ages of mothers and fathers. In the NT, for example, Indigenous age-specific fertility rates in 2008 for 20-29 years were 51 births per 1,000 higher than for non-Indigenous rates while for all ages they were 39 per 1,000 higher than for the entire NT population (ABS, 2009c). Meanwhile, both Indigenous mothers and fathers were on average four years younger (24.4 years and 27.7 years respectively) than mothers and fathers for all births (28.1 years for females and 31.4 years for males) (ABS, 2009c).

5.4 An Indigenous epidemiological transition?
As a consequence of continuing relatively high fertility and lower death rates, the foremost story for Indigenous demography in the post-war era is of continued high growth and of a growing population share in remote areas. Sköld and Axelsson (2007) proposed this transition for the Sámi of northern Sweden to be akin to Omran’s three staged model of development (1971) for the general population, which he termed the ‘epidemiological transition’. Likewise, Blackwood (1981) in relation to Alaskan Natives has viewed their mortality transitions as being highly similar to pre-industrial nations on pathways towards modernised states. Nevertheless, differences were observed in the timing of this transition for Indigenous populations. In Australia, the population low point is thought to have been reached during the 1930s, while the Canadian Aboriginal population bottomed out earlier at
around the turn of the twentieth century. From the early 1960s to the turn of the century, the Indigenous population of the NT grew by an annual average of 2.6 per cent (Condon et al., 2004a) and high rates have sustained into the early part of the twenty-first century. Firstly Nations populations in Canada, 83 per cent of whom lived in Ontario and the Western Provinces, grew by 3.5 times the rate of the non-Aboriginal population of Canada between 1996 and 2006 (Gionet, 2009) and in the south-central region of Alaska, Native Alaskan populations grew by an average of 3.8 per cent per annum from 1950 to 1960, increasing to 5.8 per cent during 1960 to 1970 (Rogers, 1971).

But high remote Indigenous growth rates in remote areas have been overshadowed by massive growth (once again over different time periods) in the urban Indigenous population of developed nations, at rates exceeding those which are possible through demographic forces. Smith (1980) was amongst the first to broach this subject by suggesting that in Australia conscious decisions were undertaken to omit groups of urban Australian Aborigines from the population counts until the 1960s. This was later supported in Smith et al. (2008) as being a result of the concealment of the true numbers present at the time of colonisation so as to hide the extent of impacts from colonial injustices (notably genocide).

Moreover, Indigenous growth rates have to an extent proven to be ambiguous as a result of ethnic mobility and fuzziness around the definitions of population constitution, as well as the differential means in place to establish the size and compositions of Indigenous populations at different points in time (Rogers, 1971, Guimond & Kerr, 2004). In Canada for example, Guimond (2003) observed the growth rates for Aboriginal people between 1981 and 2001 as being in excess of those theoretically possible given rates of natural increase. Meanwhile Kinflu and Taylor (2005), Gray and Tesfaghiorgis (1993) and Ross (1999) were amongst those who quantified similar issues for assessing the true increase in the number of Indigenous Australians. The latter found that up to 50 per cent of intercensal growth from 1991 to 1996 was accounted for by the ‘error of closure’ (the proportion of growth not attributable to demographic components of change), while the former stipulated this was almost a third of the growth for the period 1996 to 2001.

These and other studies have provided invaluable forensics on the issues of data availability, robustness and consistency over time for the rigorous study of Indigenous population change. They have also generated a positive impetus for efforts to tighten the methods used in the collection of Indigenous responses in Censuses and surveys, particularly surrounding definitional aspects on the composition of Indigenous populations. But for some remote Indigenous populations, data issues are more immediate. The lack of clarity in the
definitional boundaries for the Sámi population is so critical that it “… is not clear who constitutes the Sámi people today.” (Petterssen, 2006: pg.3). A key question for remote Indigenous demography is whether we can discern the influence of non-demographic factors on the trends observed in the available data. By definition, this is difficult to establish since data for remote areas are generally less consistent and less readily available in terms of geographical levels and decompositions of populations. Evaluations of Census data do not permit localised studies on the potential effects of ethnic mobility, nor is there the capacity to compare non-demographic effects over time between remote and non-remote places. However, while non-demographic factors cannot be ignored for remote Indigenous populations, they might be less of a concern in comparison to urban areas. Broadly, the reasons are found in what are thought to be the major causes of the phenomenon. Firstly, studies by Kinfu and Taylor (2005) for Indigenous Australians and Guimond and Kerr (2004) in relation to Canada’s Aboriginal populations draw attention to the effects of a lack of clarity about Indigenous population compositions and associated changing definitions:

“In light of the legislative and self-identification changes, interpreting change in the demographic and socio-economic characteristics of this population is extremely difficult. While the federal government has a clear definition of who is ‘Indian in a legal sense’ (i.e. Status Indian), it is argued that beyond this definition there is no dominant definition for the remainder of Canada’s Aboriginal population. There are at least two primary reasons for this situation, including (i) the concept of ethnicity (and Aboriginality) is far from straightforward, and has been quite variable over time, and (ii) there are currently several stakeholders (often with competing interests) that are very much concerned with how this population is delineated.” (Guimond & Kerr, 2004: pg.62)

Counterbalancing this, efforts by (for example) the Australian Bureau of Statistics and Statistics Canada towards improving Indigenous enumeration (that is, reducing under enumeration) in remote areas are long standing and continuing.

A second major impetus for observed ethnic mobility has been supposed as owing to the gradual process of acculturisation and the associated changes in race relations (Taylor, 1997). The drivers include a greater social consciousness about, and interest in, Indigenous issues as well as the onset of financial ‘rewards’ for jurisdictions with large Indigenous shares in their population as a means of meet their higher costs for servicing remote and Indigenous people. Growing cultural acceptance, at least in an institutional sense, is a feature of modern societies and this has likely encouraged individuals previously averse to formally
recognising their ancestry to do so. Public interest in the injustices of the past and ongoing
gaps in comparative wellbeing has facilitated a repositioning of Indigenous peoples as
important to the national heritage and identity. For these reasons, remote Indigenous cultures
and societies hold a special, but complex place in the national psyche. Consistency in the
incorporation of Indigenous identifiers in both survey and Census-based enumerations has
improved and national statistical organisations (NSOs) have played a key role in meeting the
ever growing demand for Indigenous identified data by improving methods for its collection,
enumeration and estimation (See Chapter Seven).

Discerning the size of non-demographic impacts in remote areas relative to other places is
clearly made more difficult by other factors like high rates of under enumeration and non-
response in the Census and inadequate fertility and mortality data. Nevertheless, lower rates
in the error of closure might intuitively be expected in places where Aboriginal people form
a majority of the population. This proposition is supported by the data, including in Wilson
and Condon (2006) who reported a relatively low error of closure for Indigenous people in
the NT. Errors of closure are thought to have been much higher for urban Indigenous
residents in Australia in the second half of the twentieth century in particular ( Ross 1999).
Similarly for the American Indian population, Passel (1997) found much higher rates in the
error of closure for urban areas than for more remote areas within states. But despite the
hypothesis of lower errors of closure in remote areas, very little in the way of concrete
evidence exists and the task of its quantification will require cooperative efforts between
NSOs and researchers from a variety of fields.

In response to the political and social issues represented by the changing demography of
Indigenous populations in developed nations, governments and their agencies have driven a
large push for evidence-based information drawn in situ from remote communities to
support Indigenous policy and program initiatives. Accordingly, the volume of research and
data collection activities has grown exponentially in recent times. We turn now to discussing
the potential for negative consequences from these developments by discussing the ‘rituals’
of Indigenous research in the NT. These relate to all demographic research at and relating to
communities and not just the topics primarily at hand in this chapter (accounting for
Indigenous demographic change).

5.5 Contemporary issues for Indigenous demographic research:
Perspectives from the Northern Territory
In a review of contemporary Australian Indigenous demography, J.Taylor (1997) summarised the contributions of the extant research as (paraphrased):

- Laying bare the extent of problems with Census and administrative data stemming from changing ethnic self-identification and enumeration issues;
- Emphasising the importance of indirect estimation techniques for Indigenous demography;
- The provision of population projections;
- Proposing changing ethnic identification in urban areas as a revision to previous ascriptions to high levels of rural-to-urban migration; and
- The confirmation of four stages of demographic transition in which the fourth was a trend down from high to lower (but still high comparatively) rates of growth.

In the NT of Australia, it is fair to say that these issues remain at the core for Indigenous demographic research.

But despite the passing of time, it is arguable that research in the remote context has not improved the quality of knowledge around Indigenous demography. As a field of study, its scope has not become more systematic, nor of greater intrinsic value in explaining demographic relationships and changes. And while notable improvements to data collection methods and the application of data to resolving research based questions are evident, the ‘enclave’ of Indigenous researchers, as Taylor labelled the field (J.Taylor, 1997: pg.104), has turned their attention to highly specific studies in order to develop transitive theories. Indeed an escalation of in situ or ‘dirt’ research has been observed in the literature. Such studies are by definition, localised and representative of a highly acculturative account of the world based on participant-researcher interactions. While the preference for in situ research is indicative of the definitive need to better understand and apply localised demographic trends and to use localised studies to overcome deficiencies in surveys and Censuses, there may be significant drawbacks to the burgeoning of these approaches to research.

Research-based enquiry into Indigenous people in the NT has received a boon from unprecedented numbers of grants and consultancies, and especially since the inception of the NTER in 2007. Interest has been fuelled by the need for the Australian and NT Government policies and programs for redressing socio-economic disparities between Indigenous and non-Indigenous Australians (for example, Council of Australian Governments, 2008; Northern Territory Government, 2009) to be underwritten by ‘independent’ research. At the core is a desire for accountability in the face of emotive and sensitive views on how to bring
about change, as well as trenchant opinions about what place the first Australians hold in contemporary Australian society. Concurrently, the global trend is firmly towards evidence-based and particularly statistically-based information for the ‘proper’ grounding and evaluation of policy. Together, these factors have generated an obsession for numbers and great weight is now given to providing statistical accounts of the baseline situation and of changes brought about by the investment of tax payer funds into rectifying Indigenous disadvantage.

The search for statistical truths within this climate has encouraged government departments to be wedded to three stages of policy implementation and review. Firstly, there is a need to develop baseline understandings of pre-existing conditions from which the effects of policies and programs can be plotted and assessed. Secondly, programs require monitoring towards their targets and outcomes and, finally, programs require evaluations and statements which locate them within the history of official inquiry in the remote Indigenous sphere.

Under these conditions, it is easy to envisage the central role for demographic data across a broad range of services and programs relating to health, education, housing, land use, employment, business development, and so on. And along with the demand for data has followed money for research-based consultancies. Within the contemporary landscape of higher education funding and administration in Australia these have been drawn on to help support research and individuals through their careers, including, it might be added, the author. And attached to these are requirements for ‘independent’ (that is, conducted by non-government people) research. Collectively, these developments have bought about a major problem for demographic and other forms of research on Indigenous peoples, perhaps almost unnoticed.

The ‘interventionalist’ Indigenous policy era is evidenced by streams of government workers and researchers arriving and departing from discrete remote communities on a daily basis. They arrive in processions of chartered planes and hired 4WD vehicles to conduct research at remote communities, outstations and town camps. Their task is to gather data, ‘talk’ to people and plot the present and the future according to their interpretation of participant’s responses and based on the intent of the particular policy they are engaged with. While the motives of individual researchers and program managers are generally altruistic, there is little doubt that much information gathering occurs without comprehension by the researcher or hiring agency about the possible effects on community members (the subjects of the research) of non-residents who have visited before them. Essentially, growing and persisting volumes of outsider visits to communities may be impacting on the robustness of research
by effecting standard responses at the individual, household and family levels to research-based lines of enquiry.

Visiting researchers subject local residents and others to inquisitions about every aspect of their lives from health to houses; alcohol consumption to breast feeding; feelings about government initiatives to mobility patterns. Lines of enquiry are very personal and often overlap across studies, either in reality or by perception. Moreover, entrenched protocols for the conduct of research in Aboriginal communities dictate a predictable process. The basis of this is the temporary employment of a community figurehead to espouse the virtues of the research, to put up posters, wear a T-shirt, and then to recruit temporary helpers from within the community. This person typically then assists with recruitment of study participants, helps coordinate the field work and helps with language translation where necessary. Given the small size of communities, it is often the same person or groups of people who are engaged over time with different projects and sometimes on a number of research projects at the same time:

“In discrete communities, Australian Bureau of Statistics (ABS) interviewers were accompanied wherever possible by local Indigenous facilitators who assisted in the conduct and completion of the interviews. The Indigenous facilitators explained the purpose of the survey to respondents, introduced the interviewers, assisted in identifying the usual residents of a household and in locating residents who were not at home, and assisted respondents in understanding questions where necessary.” (Webster et al., 2005: pg.8)

Meanwhile, national research agencies and university ethics committees rightly demand local participation in research projects on the assumption that local engagement will help to deliver high quality research and ensure that correct intercultural protocols are followed.

The potential is real, therefore, for residents of remote Indigenous communities to become numbed and desensitised to both the processes and intentions of research and of the wider programs they are supporting. Worse still, public understanding about the fundamental role of the Census (the most important data collection activity undertaken in Australia) for determining funding and infrastructure provisioning may be lost as a consequence of the sheer number of other surveys and research projects being conducted at local levels. It may be viewed as just another set of visitors asking yet another set of questions. At the very least, participants might become confused about who the researchers represent, what their purposes and intents are and how the research relates to them. A grave threat exists that participants will adopt coping mechanisms in the face of persistent and repeated questioning from strangers and, as a courtesy to the visitor and out of respect for the researcher and any
locals they may have employed, participants may feel obliged to answer questions in the ‘appropriate way’. Consequently, research from the ‘coal face’ may essentially be staged sets of information provided by individuals to cope with ‘today’s’ visitors and their sets of questions. That is, if the last lot of researchers left seemingly happy with the outcomes of their endeavours, the likelihood is that the same or similar answers will be supplied and deemed appropriate, if only for maintaining the aura of pleasantry.

Research participants may, therefore, have learnt to manage their levels of participation and the content of their responses to ensure that the armies of outsiders asking (what might seem like similar) questions leave with the ‘right’ answers. Of course this is a danger with any form of participatory research, but at Indigenous communities only a small number of respondents are available as subjects of research, particularly where the researchers are aiming to dig deep into the complexities of culture in the face of modernity. Unwittingly, a new and subversive form of respondent burden may have already caused adaptive behaviours amongst research subjects through tailored coping strategies. These have the potential to subliminally affect the results of research since their impacts do not show in measures of standard errors, response rates and the other trophies of research successes. These issues overlay the already difficult intercultural challenges for researchers in conveying the meaning of research within a context of partial familiarity. Pressures may be increased for ‘right answers’ when a community figurehead is promoting the importance of the project and there is the danger that they themselves may be passing misinterpreted ideas about the intent of the research.

Corollary to impacts on research subjects, another unintended consequence of the rising dependency on research in situ for feeding the validity of policy and programs has been to pedestal demographic and other researchers as those who ‘know’ the real situation in relation to Indigenous people and are able to offer evidence-based suggestions on what to do about it. Researchers are effectively the gatekeepers of knowledge and are credited with received wisdom because they follow the ‘right’ processes on the ground, processes which are now enshrined and ritualistic. This situation is akin to the Heisenberg Uncertainty Principle (Busch et al., 2007), which states that the more intense the study of one element of a system is, the more uncertain real knowledge about the elements of the system becomes. For research at remote Indigenous communities, there is so much focus on getting answers that we may have lost our ability to obtain and observe accurately the real situation and how it has changed. Unfortunately, the immediately obvious solution, to withdraw from in situ studies, is not feasible unless we are content with edicts from outside for remote Indigenous policy. The onus is therefore firmly on researchers to ensure their studies do not report
constructed realities, based on the researcher’s presence in the community, and to clearly identify and articulate where this may be the case. Executing these responsibilities is neither easy nor encouraged in the research environment within which Indigenous demographic studies operate.

5.6 Critical future questions: Convergence or divergence?

What of the future for remote Indigenous demography? More than a decade ago, Taylor (1997) proposed, in his summary of likely Indigenous demographic futures for Australia, that the distinguishing feature both in Australia and elsewhere would continue to be divergence from the mainstream; the extent of which would continue to be dictated by relations with ‘the State’ (Taylor, 1997: pg.104). In many respects, this prognosis was realised because, although convergence was evidenced in some indicators like infant mortality, wide divergences remain and for some age cohorts may be expanding. Relations with the State have indeed continued to be at the forefront and national efforts to rectify Indigenous social and economic disadvantages have doubled and re-doubled, albeit through the engagement of controversial policies in some nations and jurisdictions. But positioning the State as pre-eminent is contentious insofar as it ignores the potential for change driven from within through the adaptation and application of cultural and social capital, and through the determination of individuals to develop their skills for engaging in the global economy in a range of scopes. And while internal capital might be perceived as being in limited supply compared to the ideals pertaining to developed economies, adaptation and innovation has long been a feature of Indigenous societies in the modern milieu (Sahlins, 1999). The State has also played an ever increasing role in academic and institutional efforts to improve the range and quality of the available data. But the deep incursion of the State into the very processes of demographic research has established the potential for negative impacts on the robustness of research in the remote setting, as has been discussed above.

The clear emphasis in the current policy environment is on delivering an Indigenous demographic and socio-economic ‘catch up’, as evidenced in Australia. On the presumption that equivalence in at birth life expectancies would require raised incomes, increased participation in the labour force, improved rates of education achievement, higher rates of home ownership and so on, the future of remote Indigenous demography must be considered in light of the possible migration effects of ‘closing the gap’, and the tenet of this thesis is that this proves to be the case.

Emphasising prospects for change which is driven by influences outside of the direct control of the State are the potential demographic impacts of climate change. For Indigenous
populations who presently occupy marginal and remote lands and who rely on the land for resources, the dangers are self-evident. An apparent case is that of the Sámi who stand to be seriously affected should the permafrost retreat across Scandinavia. The nature of the threats are twofold; a loss of land on which traditional and income generating activities like reindeer herding and fishing are conducted, and the likely incursions of industry and non-resident populations for oil and gas exploration, mining and logging (Morris, 2009). The issue demonstrates the fragility of life ‘at the edge’ and while Indigenous people may find the means to adapt and cope as they have in the past, it is likely that a migration response may prevail and at least some impacts on mortality and fertility will be felt. Contingent rapid cultural assimilation, or at least cultural shocks, may eventuate and these have been shown to cause negative psychological and health impacts for Indigenous people (for example, Walter, 2008). Alaskan Natives may be forced to confront similar issues to the Sámi in the not too distant future and in Australia climate change could conceivably lead to further depopulation in arid regions as well as placing the sustainability of some communities at risk.

Implicit in the examination of future Indigenous demography are questions about whether and how a rise in mixed partnered families will alter settlement patterns. The immediate impact of the increase in intermix observed in Australia from the 1960s onwards was to further drive down fertility rates (Taylor, 1997). Although somewhat counterintuitive, even under conditions of reduced fertility, rates of population growth may still remain relatively high or even increase since a larger cohort is contributing to the ‘pool’ of Indigenous Australians and because most intermix features the mother as the Indigenous partner (Birrell, 2000). Currently rates of intermix are high in cities compared to remote areas and are relatively higher in some nations (Australia, in particular) compared to others like the USA (O’Loughlin, 2009). A large gap persists in the rates of intermix between capital cities and the balance of States and Territories in Australia (Birrell, 2000), but all evidence points to continuing growth in both types of regions over time. Should rates for remote areas begin to converge with those in urban areas, the demography of remote Indigenous populations may undergo a quantum shift to a more ‘mature’ population structure, characterised by unprecedented low levels of fertility, but nevertheless, continued population growth.

Discussion about intermix, of course, returns us to the deep seated socio-political issue of cultural maintenance in the face of modernity and as Indigenous cultures meet and become part of the global world dynamic. The breadth of discussion in this chapter is wide and demonstrates that the study of Indigenous demography is far more than demographic in its roots and its implications. Historical and spatial differences in past and current Indigenous
population compositions should re-enforce to demographic scholars and others that Indigenous populations are far from amorphous and culturally homogeneous, despite evidence of collective universality in the public discourse. The aggregate view continues to be almost always negative, if not directly then by connotation, and reinforcing of long held, misguided and often racist beliefs and attitudes about the original inhabitants of remote places.

The true picture of Indigenous societies in the new century is of adaptation in the face of complex challenges. Consequently, developing understanding about the relationship of demographic trends to lives of adaptation will remain as necessary and challenging tasks (Sköld & Axelsson, 2007). The field of demographic research has largely failed to deviate from the application of Westernised notions of demographic change and consequently has been guilty of retro-fitting models to improve our understanding of how ‘primitive societies’ came to be or could become essentially reflections of capitalistic norms. Paradoxically, Western perspectives on cultural maintenance have on occasion bordered on extremist with the result that Indigenous voices in support of anything to the contrary (perceived or real) are met with disdain and seen as a poor reflection on people who are deemed to have abandoned their ‘old ways’ (for an excellent discussion on this demographic-anthropological intersect, see Sahlins, 1999). Such perspectives deny the possibility for elements of the globalised world to play a hand in facilitating an escape from the ‘Indigenous domain’ of poverty and exclusion, which unfortunately persists despite large and ongoing fiscal and political interventions from successive governments (Walter, 2008: pg.29). Ultimately, it is the difficult but necessary role for demographic research to identify where and how things might be changed for the better and to listen to Indigenous voices who, above all else, are qualified to comment on the literalness of statistical indicators which, in remote spaces, share with us only part of the story.
Chapter 6: Perspectives on Demography at the Edge: The Case Study of Australia’s Remote Tropical North
6.1 Preface
This chapter is concerned with the demographic characteristics of remote populations in
developed nations, including Indigenous people. These characteristics determine that
traditional methods and materials, as well as the ‘grand theories’ of demography which are
applied elsewhere, are unlikely to enhance our theoretical, policy and practical
understandings about current and future demographic trends in remote Australia. This
chapter is constructed as a reprint of a published book chapter, combined with a case study
which is a modified version of a peer-reviewed journal article. The case study demonstrates
the concept of the ‘seven D’s of remote demography’ which are outlined within the chapter
and applied in various sections of the thesis. A conclusion has been added to summarise
intersects between the original articles and their theoretical and policy contributions to the
overall thesis.

The original book chapter has been modified slightly so that references to other parts of the
book are removed and replaced with appropriate cross-referencing to relevant parts of this
thesis:

'Demography at the Edge'. In D. Carson, R. Rasmussen, P. C. Ensign, L.
Huskey and A. Taylor (Eds.) Demography at the Edge: Remote human
populations in developed nations. Farnham, England: Ashgate Publishing, pp.3-
20.

The case study is constructed from a peer-reviewed journal article which has been shortened
and modified to meet the case study format:

nots in Australia’s Tropical north - new perspectives on a persisting problem.

The case study critiques a range of theories and approaches for regional development in the
context of remote areas and questions the assumptions of economic development theories as
they have been applied there, especially in relation to Indigenous people. The failure of these
to deliver (by and large) satisfactory outcomes in improvements to Indigenous wellbeing has
perpetuated groups of ‘haves’ and ‘have nots’ across the north of Australia. The ongoing
disjuncture between theory, policy and outcomes is symptomatic of some of the problems
facing contemporary policy making for Indigenous development in the NT. For the most
part these policies promote both direct and indirect mechanisms for influencing the
behaviours of remote populations with a view to ‘mainstreaming’ engagement with
economic systems, while paying little attention to the role of demographic conditions and
the impacts that variability in these might produce. This chapter emphasises the explanatory
potential of behavioural demography for understanding remote population systems as a pre-
requisite for avoiding unintended and potentially negative economic and social
consequences from policy interventions in the remote sphere.

6.2 Introduction
The grand theories of demography have been developed around observations of human
populations at the national or supra-national scale. While propositions such as demographic
transitioning are not universally accepted, they have proven very useful for researchers and
policy makers concerned with the characteristics of relatively large populations (Burch,
2003). Far less attention has been paid to formal or behavioural demography as it applies to
smaller (particularly sub-national), more dynamic and more open populations (Swanson,
2004). There are numerous studies about such populations, but they tend to be concerned
with data quality issues, methods of data analysis and the production of localised
descriptions of population characteristics (see, for example, Wilson & Bell, 2004, Wilson &
Rees, 2005). Processes of industrialisation and post-industrialisation have affected how
regional populations change and how they interact with one another (Pierson, 1998). A focus
on migration, including models of rural-to-urban migration and counter-urbanisation
(Bosworth, 2008) has been a main feature of sub-national demography. Population changes
have been interpreted in the light of theories of economic development such as the staples
thesis and various core-periphery models (Barnes et al., 2001). Overall, however, there have
been few attempts to synthesise knowledge about how sub-national populations work into
general models, despite calls for attention to the issue over at least the past two decades
(McNicoll, 1992).

One of the reasons for poorly developed regional demographic models may be the diversity
of small and dynamic populations which are available for study. Small area demographic
studies have been concerned with cities and urban centres (for example, Haase et al., 2007),
suburbs and the rural fringes of cities, agricultural and rural districts (Kandel & Brown,
2006) and more nebulous ‘remote’, ‘peripheral’ or ‘marginal’ regions (Gurung & Kollmair,
2005). These latter are to be found in all parts of the world including in developed and
developing nations. Developed nations are well progressed along the various demographic
transitions and contrast with developing nations, which are still in the process of technological, economic and demographic change (Attanasio et al., 2006).

Regional development theories suggest concentrations of a developed country’s human and economic resources exist around mainly urban population nodes (Currie and Kubin, 2006). These nodes have critical mass both of producers and consumers. They are well connected to markets and information through hard and soft infrastructure. They also tend to become centres for the creative industries, sports and recreation, education and learning because they have both the population and the economic wealth to invest in these activities. The more distant one gets from these centres (although the relationship is not strictly linear), the more difficult it has proven to bring together and sustain development resources (Polese & Shearmur, 2006). Consequently, just as different demographic patterns are observed between nations, there are important sub-national differences (Coleman, 2002).

Remote regions of Australia, Canada, the United States and the north of Europe are ‘at the edge’ geographically and economically, but nevertheless receive disproportionate attention from policy makers and service providers. Sometimes, this is because they contain natural resource wealth critical to the economic growth of the nation and sometimes because they are home to high proportions of Indigenous people and other ‘at risk’ populations. Remote regions have relatively low population densities (although they can have high concentrations of population in a small number of dispersed settlements) and low total populations when compared with the rest of the country. Understanding the demography of these regions is critical in designing and evaluating policy, workforce planning and the implementation of social services.

There are no existing universally accepted rules for defining what constitutes a ‘remote’ region. The relationships between remoteness, peripherality and marginality have not been well defined. In some literature, these terms are used interchangeably, while in other cases they are seen to have important differences. What is clear is that they are relative terms defined in part, if not in whole, by what is accessible, core or central. They are also purposive terms, implying the need to state a ‘remoteness from’ an activity, function or amenity (Wakerman, 2004). Any operationalising of remoteness will likely attract criticism because of the issues of relativity and purposiveness.

In the academic literature, ‘remoteness’ has commonly been associated with health care service provision and indexes of remoteness have been developed in Canada (Leduc, 1997) and Australia (Australian Institute of Health and Welfare, 2004) that reflect the relative level
of (geographic) access to various health services. Spiekermann and Neubauer (2002) reviewed a set of approaches to defining remoteness that were more concerned with the density of transport networks. For them, the ease or difficulty of the journey between places was more important than the level of services at the origin or destination. The term ‘peripheral’ is widely used in various streams of geographic and economic research, but it is mostly used as an a priori label for places (those which are ‘known’ to be peripheral). Gurung and Kollmair (2005), among others, have provided conceptual definitions for peripherality and marginality, suggesting that they have spatial and social dimensions, but are difficult to apply uniformly across nations, continents or the globe.

Remoteness, peripherality and marginality are subjective terms, defined at times by those outside and at times by those inside. Remoteness can be nested within a region, such that the region itself is remote from some core, and there is an internal organisation within the region of central and peripheral locations. Borgatti and Everett (2000) talked about multiple cores and multiple peripheries, which can overlap one another and which do not need to have one-to-one relationships. Many, like the NT, may consider themselves remote or peripheral to a core ‘down south’, a conception about where decisions are made and where the focus of decision makers lies. Similar attitudes may be held towards the political centres of these jurisdictions by those living in the ‘truly remote’ parts.

While there may be continuing disagreements about how remoteness is defined, even cursory examination of maps of Australia, North America and northern Europe reveal where the ‘extreme cases’ (Flyvbjerg, 2006) of remoteness are most likely situated. Each map has areas where there are many labels for towns and cities and where there exists a spider-web like network of roads and railway lines. As the eye moves (generally north) from these areas, the number of labels diminishes, along with the number of alternative transport routes between towns and cities. Ultimately, in the far north (and more so towards the west in Australia and North America), the level of human infrastructure is very low and population centres are small and widely dispersed. In Canada, the transition from high density human and transport networks occurs within a few hundred kilometres north of the border with the United States. The Yukon, Northwest Territories and Nunavut are jurisdictions most obviously ‘remote’ from the main population centres, but so are large northern sections of the more southerly provinces. In Australia, the NT embodies remoteness, along with the northern and eastern parts of Western Australia and the north and west of Queensland. Alaska in the United States has a population density of 0.42 persons per square kilometre, by far the lowest density of all States and comparing to 31 persons per square kilometre for the country as a whole. The northern European situation is more politically complex. The
Nordic Council of Ministers has identified the ‘Northern Sparsely Populated Areas’ (NSPA) which includes parts of Norway, Sweden and Finland, along with the Faroe Islands, Greenland and Iceland.

Formal demography is concerned with the statistics that describe populations - age and sex profiles determined by births, deaths and migration (Rowland & Trevor, 2003), methods for enumerating populations, for estimating fertility, mortality and migration rates and for constructing life tables. Behavioural demography by contrast looks for explanations for demographic outcomes (Hobcraft, 2006) - why are fertility and mortality patterns as they are? Why do people migrate from one place to another? Why are particular population structures correlated with particular health or economic outcomes? Why are family structures like they are and what might be the reasons for differences between populations? Many researchers interested in these questions would not consider themselves demographers at all – they are geographers and economists and sociologists and anthropologists and health scientists who are interested in constructing knowledge of formal and behavioural demography using perspectives drawn from a range of disciplines. Their aim is to describe both how and why remote populations change over time and the extent to which their ‘remoteness’ can be considered a factor in those change processes.

6.3 General Characteristics of Remote Populations

Australia, Canada, the United States and Europe’s Northern Sparsely Populated Areas face substantial challenges in including their furthest jurisdictions in the processes of post-industrialisation and the development of knowledge economies. It is now widely accepted that such processes are human ones – innovation diffusion relies on the interactions between people and the organisations they construct (Francois & Zabojnik, 2005). People provide the core inputs for networks and clusters. People are the entrepreneurs in economic systems. The collections of people as producers, intermediaries and markets constitute the critical mass which drives innovation. People are not just central to Markey, Halseth and Manson’s (2006) qualitative competitive variables; they also feature as inputs to quantitative variables such as economic structure and productivity. The role of people is not limited to economics and neither should economics be seen as the sole justification for the existence of remote populations. People sustain social, political and cultural capital – forces for social development, creativity and cultural enrichment which do not necessarily have to have immediate economic returns (Woodhouse, 2006).

The population dynamics of remote regions in developed nations differ from each other in some important ways, but many of the fundamental characteristics are similar. Similarities
are around how the regional populations compare with their national averages and how the regional populations are internally structured. Comparative elements include small size, low population density, high proportions of Indigenous people, high mobility, young age structures and high sex ratios. The comparative statistics conceal some critical internal dichotomies. The ‘split’ between Indigenous and non-Indigenous populations is most commonly cited (Taylor, 2003a), but this split does not completely explain structural differences. Remote populations typically have areas of very high population density separated by areas that are barely inhabited on a regular basis. They have one or two comparatively large population centres, with the average population of other settlements consistently low. They have some highly mobile groups and some that appear to be very stable. Their unusual age/sex distributions reflect both a young median age and an ageing population. High sex ratios are often reported, but are not apparent in all sub-populations or at all ages.

While demography of remote populations is a methodological challenge for demographers – from measurement to inferences drawn, it is a practical challenge for those who want to use demographic data to inform research or policy making. Presenting northern policy makers with summary statistics and then explaining why they cannot be used in the same way as their southern counterparts are used can be difficult. At the same time, there is obviously a limit to the number of views one can provide of a population while still enabling evidence-based decision making. Here we propose seven ‘D’s which at least help describe why standard demography is inadequate and perhaps provide some insights into alternative approaches.

6.4 Perspectives on Remote Demography

The challenges in understanding the behaviour of remote human populations include an information challenge, a knowledge challenge and a management challenge. Formal demographers want information that can accurately measure the characteristics of individuals (age, sex, fertility, migration events and so on) and describe those characteristics at a population level. Behavioural researchers want knowledge about why individuals act as they do and how this manifests in characteristics of the population system. Policy makers want to understand how the population system might respond to interventions and how different system structures influence the supply of labour, housing needs, the demand for services, social inclusion and so on.

Much of the thinking around these challenges has situated itself in the context of national and supranational investigation, with assumptions that populations at this scale are largely
closed systems in which fertility and mortality are the driving forces of change (Caldwell, 2004). Models developed under such assumptions may have limited utility when applied to remote populations in developed countries. For example, general methods for population projections appear inadequate because of the comparatively high contribution of migration and the substantially different demographic characteristics of Indigenous compared with non-Indigenous populations (Wilson & Bell, 2004). Harris-Todaro type rural-to-urban migration models have struggled to adequately account for dynamic internal migration patterns subject to cultural and historical influences (Petrov, 2007). The observed relationships between demographic structures and economic innovation appear different in remote areas (Markey et al., 2006). It is not inherently clear whether existing approaches to demographic inquiry simply need to be adjusted to account for remote conditions or whether new approaches need to be developed (Wilson & Rees, 2005).

Remote contexts have inspired theorising in some related disciplines, principally regional economic development. A group of (primarily) Canadian researchers starting with Mackintosh and also Innis in the 1920s have examined how a reliance on a small number of export ‘staples’ (largely unprocessed commodities such as minerals, timber and agricultural products) influences the economic development of remote regions (Brownsey & Howlett, 2008). Regions in Canada, the United States, Australia, New Zealand, South Africa, Argentina, Uruguay and Brazil have been examined in light of the staples thesis (Schedvin, 1990). Different researchers have viewed staples economies as essentially positive in helping to overcome the limitations imposed by remoteness, while others portray the staples economy as a condition that needs to be diversified out of if long term growth is to be achieved. Both views may have merit from an economic point of view (Watkins & Wolfe, 2006). What is interesting for demographers is the implications of the staples thesis for understanding population growth and change. Employment in resource-based industries is often male dominated and temporary (Barnes et al., 2001; Halseth, 1999). A focus on serving the needs of export partners may also reduce the motivation to invest in services for the young and old, stimulating high outmigration of specific age cohorts and of families (Jackson et al., 2008). Indigenous people are often marginalised, which contributes to those populations maintaining different demographic structures from other residents (Kassam, 2001).

Versions of Friedman’s (1966) core-periphery model resonate for demographers and population planners. Such models emphasise the economic development challenges that peripheries face and what these might mean for the migration of labour between core and peripheral areas. Increased access to communication technology, improved transportation
networks and the globalisation of markets has changed what it means to be ‘core’ or ‘peripheral’ (Fujita & Thisse, 2006), but the terms are still widely used in the literature. Increased mobility (both labour and lifestyle related) as part of post-industrialisation might also have changed how cores and peripheries are conceived. A recent book edited by Baerenholdt and Granas (2008) explores these issues in some detail. What their contributors describe is a complex set of adaptive responses by remote northern European population systems to internal and external conditions. In some cases, populations age and become less mobile, in other cases, population turnover increases or populations become younger and more prosperous.

There are aspects of post-colonialism embedded in much of the discourse around remote human populations and particularly indigenous populations (Briggs & Sharp, 2004). The discourse suggests a sense of the need to give to the colonised the power to define who they are and how they should be enumerated (Tully, 2006). Remote areas are often seen as locations where Indigenous culture has ‘survived’ more so than in urban areas (Wilson & Peters, 2005). Anthropologists working in remote areas have played an important role in describing the demographic characteristics of Indigenous populations (for example, Morphy, 2007). Methodologists prescribe specific models for enumeration, estimation and projection (Condon et al., 2004). Behaviourists discuss why Indigenous people have different fertility and mortality rates and engage in different types of mobility (Bramley et al., 2004, Romaniuk, 2008; Mazzullo & Ingold, 2008). Work on synthesising the various aspects of ‘Indigenous demography’ and situating the Indigenous within the broader population system is in its infancy.

Remote areas tend to be subject to political pressures to grow the population (Brett, 2007). At the same time, they are the hosts of environmental and cultural values that attach to pressures to limit growth (Lawrence & Adams, 2005). Indigenous and environmental politics contrive to secure vast areas of land – over forty per cent of the land area of Australia’s NT is Indigenous land or national park, for example. Attracting too many people to these regions is viewed by some as a threat to their use for environmental and cultural conservation (Muller-Wille et al., 2008). The health and culture of traditional custodians of these areas is seen as threatened by outmigration and population decline (for example, Kildea, 2005; Burgess et al., 2005); so the policy tensions are exacerbated.

Population policies in remote areas reflect a juggling of priorities of the types of growth that are desired. While larger populations are generally perceived as ‘a good thing’ to stimulate development, concerns have been expressed about population ageing (Malmberg &
Sommestad, 2000), about the nature, volume and sources of international migration (Rooth & Ekberg, 2006) and about rural-to-urban internal migration (Taylor & Carson, 2009a). The attention paid to population by administrators in remote regions reflects a perceived need to influence population systems in far more direct and immediate ways than may be the case in more densely populated, economically diverse regions.

What links these themes is that populations in remote areas can be considered as dynamic, adaptive, evolving human systems. There is no single demographic structure towards which all human populations are converging. Rather, different populations respond in different ways to changing environmental, cultural and economic conditions because they bring unique histories and have unique potentials. A diversity of population outcomes, even among similar regions, is not only possible, but unavoidable. This type of thinking has been popularised in demographic research by (among others) Anderson, Kaplan and Lancaster’s (1999) examination of differences in fertility trends in rural United States and Bock and Johnson’s (2002) analysis of migration decisions in Africa. To this point, evolutionary approaches to demography have focused on individual decision-making and have drawn from evolutionary biology and evolutionary psychology. There is also scope to consider how population systems as a whole emerge over time (Clarke & Low, 2001). This perspective is more concerned with analysing the ‘decisions’ of systems than the decisions of individuals, but the two are clearly interrelated. System properties (such as age distributions, sex ratios and so on) do not emerge as the optimal responses to environmental conditions. They emerge as part of a process of seeking optimal responses. Systems, like species and individuals, often ‘get it wrong’ – in which case they are motivated to new adaptations and the process of change becomes very rapid. Systems, species and individuals also often ‘get it right’, but can then be exposed to changing externalities (climate change, global economic forces, and so on) which demand further adaptation. Systems should not be judged necessarily by how well they perform at any given point in time, but by how effectively they manage change processes (Tooby & Cosmides, 2005).

The principles of evolutionary systems modelling suggest that they are at any point in time faced with multiple options for their futures (choice sets). Choice sets are path dependent, in that the choices that are available at a given point in time arise from choices that have been made in the past (Martin & Sunley, 2006). For example, a response to population ageing may be to increase fertility levels. However, the capacity to implement this response depends on (among other things) past migration decisions (women of child bearing age may previously have migrated out of the region). While multiple future paths are available, paths are irreversible in that the system cannot revert to a previous state. Conditions can never be

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exactly the same at two points in time (Edquist & McKelvey, 2000). In this way, even
systems which appear to have similar initial conditions can experience vastly different
evolutionary paths (Rodrigues-Pose & Crescenzi, 2008).

Most change is gradual, but from time to time, systems face bifurcation points where
radically different paths become possible (Thrane, 2007). It is at these times that the
differences between previously similar systems become pronounced. Bifurcation points for
national population systems over the past century have included World War Two (increased
mortality among particular cohorts) and the breakdown of the Soviet Union (radical changes
in immigration flows in Europe and beyond). While systems need to be innovative to
manage externalities, they are rarely able to cope with constant sequences of radical change.
Instead, they experience multi-stability - phases of consolidation of new system structures
between periods of more intense change (Saviotti, 2005).

This thesis is concerned with describing whether and why bifurcations from past dominant
patterns of Indigenous migration might be on the horizon, whether in isolated spatial
reaches, clusters of communities or at a more general level. The remainder of this chapter
describes some of the features of remote populations, including and especially remote
Indigenous populations, which entail that wisdom about the past behaviours of populations
system, used to inform policy, can soon become redundant. The first is that populations in
remote areas are heterogeneous. Populations cannot be described in simple ways, despite
their relatively small size. Within remote populations are Indigenous and settler populations
(or various kinds), urban and rural dwellers, economically engaged and disengaged and so
on. The second theme is of generational change. Newer and younger residents of these
regions have different local and global experiences to previous generations and their
behaviour is adapting as a consequence. The third theme is temporariness. High levels of
mobility and population turnover have become institutionalised in many cases. Finally,
remote areas are subject to internal and external ties which affect the ways in which their
populations evolve. Highly mobile populations may have weak internal ties and strong
external ties, while less mobile populations have strong internal ties and weak external ties.
Managing these ties is a fundamental challenge for peripheries. These perspectives on
‘demography at the edge’ lead us to consider seven ‘D’s relating to how demographic
research is conducted and analysed about populations in remote areas.

6.5 The Seven ‘D’s of demographic research at the edge

Demography at the edge is … different
We argue that remote regions are ‘beyond periphery’ when it comes to modelling population systems. There are some very good regional demographic models which leverage off core-periphery (CP) understandings of the relationships between regions. CP models are usually idealised in the form of two regions – an urban core which has a dense (and large) population and is the location of most of the high end economic activity; and a rural periphery which has a more sparse, smaller, population and is an economic ‘filler’ undertaking the activities that the core needs but cannot do because of lack of land or proximity of people (Baldwin et al., 2002). When these models are applied to demography, the development of cores and peripheries are seen as linked together. Migration patterns are interdependent (for example, ‘drawn to’ and ‘driven from’ may be intertwined). In times of labour surpluses in the periphery, people migrate to the core. They migrate out again when there are labour shortages combined with surplus in the core (Pekkala, 2000; Epifani & Gancia, 2005; Commendatore et al., 2007). Changes in demographic behaviour (family formation, health behaviours) diffuse from the core to the periphery. What is important in almost all CP models is that a periphery has one clearly identifiable core (although many models allow for cores to have more than one periphery) (Borgatti and Everett, 2000; Currie & Kubin, 2006). So, if young people move out, their destinations are relatively predictable. If urban to rural migration does occur, its scale can be estimated from an understanding of the characteristics of the core. If changes in fertility and mortality occur in a large city, algorithms can be constructed based on size of population, distance and dependencies to predict the dispersal of these behaviours. Even when changes are viewed as ‘global’, they first appear in the cities and then spread to the surrounding regions (Faggian & McCann, 2006).

Remote regions share similarities with peripheries. They are sparsely populated. They tend to have a narrow range of economic activity, much of which is based on the provision of goods to external markets. They often rely on capital (finance and labour) to be provided by urban centres and they often lose particular populations (young people, retired workers) to urban centres. We argue, however, that they are different in three key respects:

1. While the exchange of capital between a core and its periphery can result in the emergence of new cities in the periphery (through processes of conurbation, for example), this rarely happens in remote areas because the direct ties are weak;

2. It is often very difficult to establish which specific urban centre is the ‘core’ for a remote region. Remote regions tend to have multiple ‘cores’. In the NT, this has been demonstrated through analysis of sources of labour. Typically, a peripheral region will attract three-quarters of new migrants from just four or five other regions (the surrounding peripheries and a single dominant core).
Regions in the NT, however, attract less than half of their new migrants from the top five sources. So, while the Territory is more dependent on external labour than most Australian peripheries, it is much more difficult to identify the sources of that labour; and

3. CP models have fractal properties. A core relates to a set of peripheries. Within the peripheries are larger population centres, which relate to their hinterlands as cores, and so on. Such properties make it possible to talk about ‘step migration’, for example – where people move from smaller village to larger town to city but usually within a closed system in which the ‘ultimate core’ can be identified. This means that sub-regions can be identified with their own ‘internal cores’ even as the region itself serves as periphery to a more distant and larger centre. In many remote regions, the larger population centres serve at best as weak cores. Responses to weather and climate events and initial responses to shocks tend to be movement out of the region altogether.

Some remote regions do nevertheless appear on the surface to have clear CP relationships – Greenland with Copenhagen, the north of Manitoba with Winnipeg. But a closer examination shows these relationships weakening over time. In Greenland, this may be a function of self government. In Manitoba, it may be more a function of changing economic structure. Ultimately, however, when our remote regions speak about their relationships with the more densely populated centres ‘down south’, they are likely to be referring to a number of locations (or a poorly defined generality) rather than a single specific one.

**Demography at the edge is … distant**

Change over time is an important variable in understanding the demography of all regions. Changes in transport and communications technology, for example, facilitate connections between regions. Improved transport and communication means that people from peripheries have the opportunity to migrate further from home but retain family and social links. Improved communication means that new behaviours can be learned from distant sources. It has been argued, however, that global transport and communication systems have, in fact, emphasised the importance of local, physical ties (Storper, 1995; Cooke & Morgan, 1998). Core-periphery relationships have been strengthened in many ways. Cores have remained transport hubs and the key nodes linking peripheries to the outside world. Technology improvements are usually delivered first to cores and then disperse to their peripheries (Green, 1994; Krugman & Venables, 1995). There are examples of peripheries harnessing improved transport and communication technologies to bypass old cores and establish
themselves as new ones (such as happened during the era of ‘frontier’ expansion in the western United States of America) but these have always been places with ready access to large populations, which can exploit or even create geographic positions of access to markets (Gunton, 2003).

Remote regions, on the other hand, often become more remote over time as transport and communication ‘improves’. They lack the access to population to exert their position in transport or communication networks. Even Darwin, which appears geographically well positioned as an intermediary between Australia and its large Asian markets, has experienced reductions in air transport services and has been slower to gain access to new technologies than less well-positioned (but more populous) centres. New networks are formed that exclude or marginalise Darwin and it is very difficult to disrupt those networks once they are established. Of course, many remote places lack even Darwin’s geographic advantage and in the maintenance of transport and communication services, there are concerns of policy and polity rather than economy. In our ‘norths’, polity has always served as a weaker force for progress than has economy.

**Demography at the edge is … dependent**

It has proven very difficult to model the economies of remote regions. This is because formal economies tend to be externally focused and internal economies are often informal and poorly measured. Formal economies rely on the export of minimally processed natural resources and these ‘staples’ activities are sustained by externally sourced financial and human capital. Economies are highly susceptible to the boom and bust cycles of international resource markets. This leads to far greater fragility than in less remote places which can foster strong internal markets (Altman, 2003; Barnes, 2005). The same dependency on external conditions applies to demography and makes it very difficult to use standard regional demographic models which assume populations are largely internally regulated. Those models become less manageable once migration begins to play a substantial role. Their utility for remote regions is limited, then, because external events (which regulate migration – opening and closing of a mines, programs of welfare reform, relocations of defence personnel, investments in tourism infrastructure, and so on) are so important in the remote context. Understanding external influences must therefore play a greater role in modelling remote populations than it does in more standard demography.

**Demography at the edge is … dynamic**
Remote populations are constantly changing, partly as a response to the external events described above. The changes are not only in terms of size, but in terms of constitution. Population change following Cyclone Tracy in 1974 saw it become substantially younger, more male and with fewer families and children. ‘Reconstruction’ of the populations of regions across the north of Sweden resulting from decisions about education (for the young) and retirement (for the older) has also been documented. Remote populations may also be susceptible to ‘false dynamism’ to a greater extent than more populous ones. For example, patterns of family formation and migration behaviour of young women in the Arctic North have lead to many children being raised (and often legally ‘claimed’ by) by grandmothers or other older relatives of the birth mother – giving the impression of substantial rises in the average age at birth over a very short period. A change in policy for birth registration (as has happened several times in dealing with ‘Greenlanders’ born in Denmark and vice versa) or other vitals recording can lead to the appearance of dramatic changes that do not really exist. The consequence of dynamic populations is that trends are very difficult, firstly to establish and secondly to project forward. Demographers interested in remote populations need to be aware of the conditions which precede change and the context specific responses that people make to such change. Tools in this area are perhaps more valuable than sophisticated statistical analysis techniques.

**Demography at the edge is … diverse**

Diversity exists between the newcomers and long stayers, the urban and rural dwellers, the overseas born and native born. Many of the key demographic variables in remote populations have platykurtic (flat) or multi-modal distributions. Analysing demographic change based on measures of central tendency of such variables is pointless. Instead, the population needs to be de-constructed and the diversity accounted for. The difficulty is to what extent one can divide such small populations and retain meaning in summaries. It has become very common to implement different models to analyse Indigenous and non-Indigenous populations. It is less common, but not unheard of, to do so with migrant and resident populations or urban and rural dwellers. The critical task for the analyst is to understand the application of demographic information as well as its construction, so that wise decisions about deconstruction can be made.

**Demography at the edge is … detailed**

Because of the diversity and because of the dynamic nature of demographic change, demographic research in remote regions requires an understanding of detail. Seemingly
small changes – the decision of a few people to move around, to delay having children, to engage in risky health behaviours – can fundamentally impact the nature of the population.

**Demography at the edge is … delicate**

Regional economies are often dominated by national government transfers. The size of these transfers are in large part determined by estimates of the population and furthermore of particular sections of the population (Indigenous, rural dwellers and so on). It is therefore important to governments in remote regions to have detailed and accurate demographic information. At the same time, demographic research has been used as an instrument of control and administration of remote populations. A notable example is of the Sámi population in northern Europe where the perceived threat to Sámi cultural survival posed by research (including demographic research) has resulted in the removal of Sámi identifiers from data collections. More subtle, but no less important, has been the failure to participate in demographic data collections of large numbers of Indigenous people in the NT, the United States and Canada. There is some evidence to suggest a reluctance to provide information because of concerns about security of land tenure (threatened by outmigration of young people, for example), problematisation of particular behaviours (young males moving to urban centres viewed as ‘criminals in waiting’ (Taylor & Carson, 2009b), access to income (mothers might be denied welfare benefits if they acknowledged the presence of a spouse) or cultural sensitivities (Aboriginal people in Australia are often forbidden to acknowledge a recently deceased infant, for example). There are not just issues of delicacy for Indigenous populations. Remote regions, often viewed as frontiers, can become destinations for people who are deliberately trying to avoid surveillance or start anew (Woollacott, 2009).

### 6.6 Case study: The ‘haves’ and ‘have nots’ in Australia’s Tropical North

The north of Australia includes many of the nation’s most remote parts and epitomises the ‘Seven D’s’ discussed in this chapter. In combination these have produced the distinct and withstanding outcome of spatial concentrations of ‘haves’ (those who have achieved socio-economic success) and ‘have nots’ (those with relatively low socio-economic status) across the north. There is, however, significant confluence in the literature that leads one to expect groups of haves and groups of have nots in socio-economic systems within common spatial contexts. Several economic theories suggest economic activity to be concentrated in a few core areas with geographically large ‘peripheries’ relying on one or two industries for employment and income. In the context of the north of Australia, issues of disparities in
socio-economic status between the region and elsewhere in Australia, and also within the region have been highlighted in the literature for some time. Holmes (1996), for example, highlighted the role of natural resource extraction in the north for national economic wealth which has led to accrued rents outside of the region (Schedvin, 1990). This type of development is consistent with global trends citing the evolution of ‘bifurcated societies’ (Gray & Lawrence, 2001) where development becomes increasingly focused on cities while rural populations struggle under worsening biophysical conditions, becoming vulnerable to outside influences. Past studies have alerted us to societal bifurcations in the north of Australia at the macro level (comparing its population to the rest of Australia) and within the region itself (Stoeckl et al., 2006; Robins & Dovers, 2007).

Financial and human capital underpinning many development projects in Australia’s north have traditionally been sourced exogenously and based on temporary arrangements as observed in mining industry ‘fly-in-fly-out’ (FIFO) labour practices (Storey, 2001). In a similar fashion to the Canadian north (Bone, 2003), a series of ‘megaprojects’ have been proposed from outside of the region with the anticipation of major positive economic impacts for local residents. Many, like the proposed space port for North Queensland (Anderson, 1989), were government driven antidotes to the ‘problem’ of the north and the ongoing nature of the ‘project’ to develop it. Most of the larger projects have either failed outright or been scaled back significantly (Carson et al., 2009). Consequently, development projects have often fallen short of their stated intentions of promoting sustainable development for long-term residents. Projects which have been successful have tended to benefit a small, but elite group of haves (like the highly paid FIFO mine workers) who move through the region to meet skilled labour demands and manage capital investment associated with projects.

Conversely, many of the region’s long-term residents, including Indigenous residents, have been relegated to a group of have nots. These sentiments are echoed in the international literature on development in ‘frontier regions’. The extant literature on the north of Australia (for example, Moffatt & Webb, 1991; O’Connor, 2000; Jackson et al., 2008) concentrates on two major issues:

1) Development is exogenously driven with rents accruing to temporary residents and outsiders; and

2) Despite the growth in support from governments in the form of welfare and development programmes, the experience of large numbers of residents in the region is of an increasingly difficult and economically fragile existence.
The extent to which economic and complex systems theories can explain the continuance of a bifurcated society in the north of Australia may be limited because fundamentally these are a determinant of the demography and geography of the population which resides there. This case study identifies the nature and characteristics of the population system which has perpetuated bifurcations using a raft of data sources. We examine contemporary trends in industry (supply and demand) trends and demographic characteristics and change, with concluding comments and what these imply for policy in the north.

6.6.1 The case study region

The regional basis for this study is the Tropical Rivers (TR) region in the north of Australia (Figure 13). The TR region is the focus of a multi-institutional research program - the Tropical Rivers and Coastal Knowledge hub (see http://www.track.gov.au). It includes all river catchments that drain into the Timor Sea or the Gulf of Carpentaria. Stretching from Broome in Western Australia to Cape York in Queensland, the region includes 55 river catchments and covers an area of more than 1.3 million km² (Stoeckl et al., 2006).

![Figure 13 - The Tropical Rivers and catchment regions in northern Australia](image)

Data were sourced primarily from the 1996 to 2006 Censuses and based on aggregations and recalculations of Census Collection Districts (CDs) to approximate individual TR catchments. Time series analysis of tourist visitor numbers was undertaken using data from the National Visitor Survey and the International Visitor Survey, both sourced from Tourism Australia, for 1998 to 2006. The supply side of tourism in the TR region was assessed using small area data from the ABS’s Survey of Tourist Accommodation. Other data sources
included the Bureau of Rural Sciences, the Australian Collaborative Land Use Mapping Program for 2006, the Australian Schools Directory for 2008, the Australian Community Guide 2006, the Australian Natural Resources Atlas, and data sourced from the Department of the Environment, Water, Heritage and the Arts. The results referenced in this case study were sourced from two research reports:


### 6.6.2 Theoretical perspectives and empirical realities

From the beginning of the Twentieth Century a variety of disciplines have noted man-made and naturally occurring phenomena have highly asymmetric distributions (Watts, 2003; Adamic, 2008). Across space and time there are, for example, just a few large towns, and many small ones; fewer economically endowed people but many poorly endowed, only infrequent major earthquakes, and many minor ones. Barabási (2002) observed these *power law distributions* in social systems where people express their preferences among many options. Power law scholars stress that diversity and freedom of choice create inequality, and the wider the diversity, the more extreme the inequality in the system.

In the TR region, diversity in hydrological and biophysical systems would support that uneven distributions might also exist between groups of residents. Larson and Alexandridis (2009) confirm that this was the case in 2006 with:

1. High concentrations of population in ‘development enclaves’ – 80 per cent of catchments had populations below 2500 persons, while 10 per cent of catchments with the largest populations accounted for more than 70 per cent of the TR population (Figure 14);

2. Extreme income differentials – median weekly individual incomes varied from around $150pw in the Blyth and Koolatong catchments, to around $700pw in mining dominated catchments like Leichhardt and Embley; and

3. Variable access to transport and technology – residents of catchments closer to urban centres (like Adelaide River near Darwin), had relatively high rates of internet connections and vehicle registrations (56 per cent and 95 per cent
respectively), while in more remote catchments, such as Fitzmaurice the reverse was true (11 per cent of homes had the internet connected and only 38 per cent had a registered vehicle).

Figure 14 - Population concentrations in the Tropical Rivers region

Moreover, power law distribution theory proposes the continuance of counter-intuitive characteristics in systems (Shirky, 2003), a key one of which is termed ‘preferential attachment’ (Barabási & Albert, 1999; Newman, 2001; Ormerod & Colbaugh, 2006). It highlights that a) distributions within systems tend to become more extreme as the number of options rise; and that b) as the size of the system increases, the gap between the maximum and median increases. Preferential attachment implies that disparities already present in the TR region are likely to become more pronounced as populations grow. Tourist numbers in the TR, for example, have become more concentrated in urban centres during the 2000s while the share of visitors to remaining areas has declined (Carson et al., 2009).

Meanwhile, economic geographers have attempted to explain how and why economic activity is distributed across space, specifically emphasising that the distribution is not random, but rather a consequence of firms (and households) making location decisions based primarily on market criteria (Hanson, 2005). For example, firms with high establishment costs will generally locate close to output markets to minimise transport costs which invariably concentrates firms in or near larger centres. By contrast, firms that rely on particular inputs (like minerals) will by necessity locate at the input source.

The consequence of spatial divergence in economic growth is that one expects there to be ‘winners’ and ‘losers’ on a spatial basis with concentrations of relatively high incomes,
levels of investments and employment. One manifestation of this is the core-periphery thesis (Krugman, 1991) and in many ways, the entire TR region could be considered peripheral because of its distance from core markets and suppliers located primarily in the south-east of Australia and offshore. Its high rates of labour and general population mobility (among non-Indigenous people) suggest the region is drawing labour from a range of ‘cores’ and returning them rapidly (Carson, 2009; Carson et al., 2009). But the region also has enclaves of growth and development which might be considered as internal cores. Darwin and Cairns (adjacent to the region) stand out as centres for shopping, services and entertainment, as well as destinations for products. Darwin (the Finniss River catchment) dominates the labour force statistics for the entire TR region with half of the total labour force located there (Larson & Alexandridis, 2009). A handful of other catchments contain large settlements (such as Mount Isa, Broome and Katherine) and dominate the remaining total labour pool available in the TR region (Carson et al., 2009). The size of the labour force across the remainder of the region is very small, with almost half of the catchments (23 out of 55 catchments) having a labour force of less than 100 persons (Larson & Alexandridis, 2009).

Major variations in levels of economic activity exist within the TR region itself. Carson et al. (2009) found that most tourism activity is concentrated in just a few, mainly urban areas and that visitors and tourist infrastructure are becoming less dispersed over time. That mining activity must ‘cluster’ in regions where minerals are to be found is self-evident, but this also serves to concentrate related activities like manufacturing and services. Clear spatial patterns for agriculture also exist primarily because there are relatively few regions in northern Australia where low soil fertility does not constrain agricultural productivity (Larson & Alexandridis, 2009). Overlaying these are restrictions on irrigation farming and deficits in the necessary infrastructure which combine to constrain agriculture as a base for economic activity and diversification (Bennett, 2005).

Economists have attempted to explain perpetuations of groups of haves and have nots by focusing on the ways countries have developed over time rather than across space (implicitly assuming that economic activity is aspatial within the boundaries of a given country or region). Many different models have been postulated since the pioneering Solow Model was first introduced by the Nobel prize winner Robert Solow in 1956 (Weil, 2005) which predicted that, ceteris paribus, per capita incomes are likely to be less in regions with:

- Relatively few resources – be they natural or otherwise;
- Relatively high rates of population growth;
- Low rates of productivity;
• Relatively little opportunity to trade (outside of areas with ports or main roads) and/or to take advantage of technological advances; and
• Harsh climates, low levels of social capital, and challenging governance structures.

Evidence of income disparities within the TR region has been presented previously by Stoeckl and Stanley (2007) who showed median weekly incomes in regions with significant mining activity (like Mount Isa, Weipa, Nhulunbuy and Jabiru) were higher than surrounding, non-mining, areas. Catchments with the lowest median household incomes (as reported in Larson & Alexandridis, 2009) had relatively high rates of population growth between the 2001 and 2006 Censuses, all of which were higher than the TR regional average, which itself, is higher than that of Australia as a whole (Carson et al., 2009). In the TR region population growth outside of the main urban centres is driven primarily by natural increase amongst the Indigenous population. Conversely, non-Indigenous population change is characterised by high rates of turnover driven by migration into and out of the region (Grass & Hayter, 1989; Halseth, 1999). Furthermore, basic infrastructure in the TR region is sparse, and this constrains the productive capacity of some areas. Transport infrastructure is limited to a weak network of all-weather sealed roads and airports, and there are a handful of ports. This is particularly true of TR regions located in the Kimberley, Arnhem Land, and Cape York Peninsula. Non-transport related infrastructure is also limited. For example, more than a third of all catchments within the TR region contain no educational institutions whatsoever (Larson & Alexandridis, 2009).

Deficiencies in local infrastructure in places like the remote north of Australia might be predicted by the ‘staples thesis’ which describes how economies based on the extraction of natural resources develop over time (see Barnes et al., 2001). The staples thesis emerged from examinations of Canada’s economic history, but has been seen as applicable to other ‘settler’ nations like Australia, New Zealand, and Argentina (Schedvin, 1990). Here economic development was driven by the export of minimally processed goods to distant markets (initially the settling empires). Those markets provided the financial capital and much of the labour required to extract and export the staple, typically minerals, timber, or farm produce. As a result, they were able to determine the pattern of infrastructure development (Wolfe, 2006). Roads and railways were designed to freight staple products from the region, rather than to facilitate exchanges between residents of the region.

Institutional arrangements for staples economies have been observed as unsupportive of the design and roll out of transport and other essential infrastructure for facilitating development.
internally (Watson, 2006). Staples economies have high demands for labour already skilled up to the industry and its occupations, and typically such occupations are male-dominated and rely on the import of people from other parts of the country, while demand for locally developed skills is generally low (Kassam, 2001). Consequently, rather than being educated or skilled-up within the region, staples labour is mobile according to the needs of the extractive industry (construction workers, quantity surveyors, etc). As a result, local education services are minimal and usually aimed at achieving minimum literacy standards for Indigenous people rather than more rounded outcomes (Grass & Hayter, 1989; Rothwell, 2009). Under this model, regions ‘split’ internally into segments of highly mobile, highly paid, highly engaged workers and less mobile, less well engaged and underemployed Indigenous people (Abele & Stasiulis, 1989).

In the TR region, the catchments with the greatest economic activity (catchments around Darwin, Mt Isa, Weipa and Broome), have the highest rates of engagement in the labour force. Over 70 per cent of working age people in these areas were engaged in the labour force in 2006, compared with 65 per cent nationally. On the other hand, there were catchments where less than 50 per cent of working age people was engaged in the labour force, especially in Arnhem Land, the southern Gulf, and western NT (Larson & Alexandridis, 2009). Nine of the 55 catchment areas, typically those with urban centres or significant mining activity, like Finniss and Leichhardt, were ranked in the top quartile of Statistical Local Areas (SLAs) in Australia in terms of residential mobility (Carson et al., 2009). In contrast, population turnover in 21 catchments was less than one quarter of the 2006 resident population and in the lowest quartile of all SLAs in Australia. Over 90 per cent of residential moves were made by non-Indigenous people who were in the labour force. In short, the haves are the well-educated and economically engaged, and they tend to be highly mobile as predicted by the staples thesis. The regions they live in tend to have high sex ratios (110 men for every 100 women) compared with other TR regions (97 men to every 100 women) and low proportions of Indigenous people (around 10-15 per cent compared with over 50 per cent elsewhere).

6.6.3 Reducing disparities between haves and have nots

Current regional development practices indicate that investments are driven primarily from the government sector and often involve ‘showy projects’ (Gylfason, 2001) in or around isolated enclaves of activity. The focus of development initiatives on large, government-funded projects is consistent with theories of development for peripheral regions where
relatively large rents received from resource extraction are not matched by investments in labour in those industries. As an example, mining accounted for 25 per cent of the NT’s Gross State Product in 2006, but accounted for less than one per cent of all employment (Larson & Alexandridis, 2009).

Consequently, governments tend to invest rents in creating jobs which they have influence over, which is primarily in the public sector. Economies which are reliant on government investment become increasingly dependent on direct government support and public sector services (Auty, 2001). Indeed, public sector employment accounted for over 25 per cent of all jobs in the TR region in 2006, and was the largest employer in over two-thirds of the catchments (Carson et al., 2009). The second largest employment sector was agriculture and forestry, with an average of 11.5 per cent across catchments, followed by mining, and retail and construction, each employing around four per cent (Larson & Alexandridis, 2009). Furthermore, data presented by Larson and Alexandridis (2009) indicate high reliance by a majority of catchments on only one or two of these industries. Add to this a steadily declining tourism sector (Carson et al., 2009), and there is no immediate indication of the creation of structural diversity in the economies of the north.

The other avenue for government investment has been the construction of public buildings and infrastructure also mostly situated in or around the large population centres. Government investment in construction outside these areas demands greater economic, rather than public administration, justification (Bone, 2003). The TR region has been subject to a number of ‘megaprojects’ which have come with the promise of huge local economic benefits for residents but which failed to deliver. Perhaps the most classical (and farcical in terms of undelivered promises) was the proposed 1989 spaceport on the Cape York Peninsula (Anderson, 1989). With strong support from the Queensland and Australian Governments it was deemed that a space port would be ‘commercially viable’ on the eastern side of Cape York bringing in billions of dollars of revenue to the region and its residents from the launching foreign rockets. The venture never proceeded because the proposed location was too remote to attract necessary skilled staff to transport equipment. Similarly, unfeasible proposals have been made with unrealistic promises of benefits to residents including massive rice growing ventures in areas of the NT where soils were unsuitable, and a number of grand water damming proposals that did not proceed due to unanticipated costs.

Nevertheless, the economic development literature (for an overview see Stern, 1991) offers some hope that a ‘catch up’ can occur between disadvantaged and other regions via a process termed convergence, or, in some cases, through endogenous growth. While there is
some empirical evidence to suggest that poor regions are catching up with rich ones (for example, Martin & Sanz, 2003), many researchers have found evidence of growing, as opposed to lessening, inequalities (Temple, 1999; Pernia & Quising, 2003; Egger et al., 2005). In Australia, Altman et al. (2008) reported that it would take at least 100 years for Indigenous male life expectancy and 47 years for Indigenous female life expectancy to catch up with non-Indigenous people. Several other indicators, such as differences in savings patterns between the rich and the poor, and differences in population growth rates between the rich and the poor (Stiglitz, 2003), indicate that processes of ‘automatic catch-up’ are unlikely to occur. Such conditions may generate regional ‘poverty traps’ and, although pump-priming from large injections of capital may create temporary income improvements, a return to the original (low-level) state after a short period of economic growth is likely (Allison & Hobbs, 2004).

Development economists and others warn of the difficulties in helping regions climb out of a poverty trap. Resilience scholars like Holling (1973) have questioned the capacity of systems to experience shocks while retaining essentially the same structure, function, feedbacks, and, therefore, identity. Accordingly, the more resilient the system, the larger the disturbance it can absorb before changing states (Walker et al., 2006). Moreover, just because a region is resilient does not mean that it is desirable, and to escape from a very resilient and very undesirable state might require large external interventions and internal reformations (Gunderson and Holling, 2002). Such large transformations into fundamentally new states of equilibrium within a region might occur in response to recognition of the failure of past policies and actions (Walker et al., 2006) or result from a shift in the dominant social paradigm and social values (Gunderson et al., 1995). The history of development in and the contemporary characteristics of, the TR region indicate that none of these shifts is on the horizon.

6.6.4 Lessons from theory
We can expect that ‘the north’ will continue to be a focus for discussion about what it might offer the rest of Australia in terms of water and other resources. In many respects, despite its contribution to national development, northern development has, historically, been largely unsuccessful. Continuing to subscribe to the old methods of northern development will likely reinforce the structures that maintain the current situation, and those interested in improving the lot of the have nots may need to take a fresh look at what constitutes ‘development’. Changing the way development occurs in the north, and consequently the
social and economic outcomes for northern populations, requires rethinking both policy and practice.

In the first place there is a clear need to try and find ways of allowing the *have nots* to benefit from some of the existing, large-scale projects in their local areas. Residents will only benefit from these projects if they are afforded opportunities to participate in the production process as workers, or as organisations which supply inputs required by those projects (Stoeckl & Stanley, 2007). That said, simply saying ‘let the locals participate’ does not guarantee that localised benefits will flow. In addition, there is also a question of whether the local populations want to and can participate in such processes without detrimental impacts on their existing cultures, livelihoods and social systems.

As we have demonstrated, many regions in northern Australia are not just financial *have nots* but also have limited physical infrastructure, and frequently have low levels of human or social capital. The latter is important for determining the capacity for internally generated change, since internally present social and human capital play an important role in determining whether and how regions benefit from opportunities or cope with the negative consequences of change (Intergovernmental Panel on Climate Change, 2001; Adger & Vincent, 2005). The commonly held view of adaptation scholars is that adaptive capacity is created by:

1. Investing in creation and distribution of information and knowledge;
2. Encouraging institutions that permit evolutionary change; and
3. Increasing the level of capitals (financial, social and other) that are presently lacking (summarised from Lemos et al., 2007).

Learning, trust and engagement are key components of social resilience, argues Gunderson (2000). Thus, adaptive capacity theory emphasises attitudes, perceptions, and institutional arrangements (particularly informal arrangements which encourage self-organisation) as complementary to the factors of economic production and exchange at the local level (Folke *et al*., 2002; Lemos *et al*., 2007). In other words, a cry to ‘let locals participate’ also necessitates supporting mechanisms be established to facilitate their participation.

Secondly, there is a clear need to try and avoid ‘pie-in-the-sky’ development schemes which envision the TR region as a vast and untapped opportunity. Since early settlement days, the tropical north has been touted as a place where the dreams of development and riches can be realised (Powell, 1991). The literature warns us that ventures which require large volumes of goods to be transported long distances, be they raw materials which are required for
production or final products for sale in city centres, will struggle for financial survival as they compete with similar ventures which do not have to pay as large transport costs. Furthermore, the larger the volume of ‘inputs’ or ‘outputs’ that need to be shipped and/or the greater the economies of scale, the harder it will be for a remote venture to survive. Any re-think about what constitutes development thus requires a re-think about what constitutes appropriate projects.

The obvious alternative to large-scale externally resourced and directed development is small-scale, internally oriented development. This model typically accesses and harnesses capital which is available internally, however parsimonious, and focuses on development activities targeted primarily at local markets to build that capital. Examples include small-scale agricultural production aimed at providing fresh produce for local residents, sports and recreation ventures aimed at promoting social capital, development of micro-businesses within and servicing communities (for example, hairdressers and bakeries), or providing goods and services to large-scale ventures within the region (where they exist). Furthermore, many interesting remote-area business opportunities have begun to emerge which do not require residents to overcome the ‘tyranny of distance’. For example, carbon trading holds the potential for an industry which is not affected by the costs associated with transporting inputs or products since the product is produced ‘locally’ and remains in place.

6.7 Conclusion

There are many intersects between the issues discussed in this chapter and the tenet of the thesis. Primarily this chapter has outlined how and why the demography of remote areas in developed nations challenges established conventions and wisdom (according to formal demography) for explaining and predicting population compositions and population change. It is important to distinguish that remote populations behave as systems, sharing more in the way of commonalities than variations. Importantly, Indigenous people are an integral part of such systems, not least because they comprise significant proportions of overall populations. While the changing nature and composition of these are difficult to depict according to official boundaries and based on formal demographic measures, if they are examined from a behavioural demography perspective, richer and deeper insights are gained. Remote populations are different, dynamic, delicate, distant, diverse, dependent, and detailed and this chapter has provided many examples of why this is the case and of how these can rapidly manifest in bifurcations from past observations and trends.

This chapter has reinforced that the settlement and migration trends for Indigenous people in the NT and across the north of Australia have been inextricably influenced by policies and
paradigms for economic development. But these have rarely considered the characteristics of the population systems which they are attempting to influence. Consequently, even after decades of investment into ‘the project’ of the north, spatial clusters of *haves* and *have nots* in the NT and beyond are observed today. There is no doubt that Indigenous residents generally fall into the latter but our perspectives on remote demography warn policy makers of some of the impacts of generalisations and top down approaches to policy formation and enactment. Failed or misappropriated policy simply re-enforces the demographic and socio-economic structures which they set out to change. For Indigenous people, the overwhelming emphasis has been on generating economic capacity *in situ*. Our scrutiny of the evidence and available data indicates there has been a resounding failure on a macro-scale.

Economic development theories, therefore, as they are applied to the north under the paradigm of changing things ‘out there’, merely reinforce that the internal capacity for something different is constrained by a lack of internal capacity, requiring the continuation of outside interventions. Sceptics such as Lea (2008) would propose that the bureaucratic and political systems themselves are conditioned to ‘surviving’ on the continued existence of *have nots* (that is, dependent on disadvantage) in spite of the altruistic intentions they may harbour as individuals. Johns (2011), in the meantime, argues that there simply are no ‘economies’, nor the potential to generate them, at remote Indigenous communities; at least on a scale that would manifest a different scorecard of indicators for Indigenous wellbeing over the longer term. John’s call is for the nation to free itself from the ideology of spatial containment, using the metaphor of Indigenous communities as castles surrounded by a moat over which the drawbridge has been raised by those arguing for Aboriginal self-determination and economic development *in situ*. Intersects with the study of Indigenous migration practices are found in the behaviours of Indigenous populations according to the Seven D’s. Past behaviours cannot simply be assumed to continue or be influenced in linear ways, even under the pressures of social engineering and ongoing economic dependency on ‘the outside’ (for example Staples economies), as evidenced in the application of Indigenous and regional development policies for remote NT over many decades. In the subsequent chapter we turn to examining specific implications from these conclusions for the collection of remote area data for the purpose of demographic analysis, the production of information and knowledge, estimations of population sizes and compositions, and the methods and processes of forecasting of remote area populations, and Indigenous populations in particular.
Chapter 7: The Challenge of Enumeration, Estimation and Forecasting for Remote Area Populations: Numbers Aren't Everything
7.1 Preface

A great deal of focus is paid to Indigenous population counts, estimates and forecasts for remote areas as a consequence of their high representation in populations, political tensions over service provision, ongoing attempts to resolve disadvantage, and investments into improving their eudemonia. Procedures for enumeration and estimation have changed markedly in recent decades in all of the nations documented in this chapter, and this makes international comparisons worthwhile. Broadly, changing procedures reflect the evolving supra-national philosophies of reconciliation and mainstreaming in relation to Indigenous affairs (see Chapter Four) as well as financial imperatives. The latter reflects the administration of the NT is funded largely from direct transfers from the Australian Government. These transfers are sourced from revenues collected under the Goods and Services Tax, a national consumer tax similar to the Value Added Tax in the United Kingdom.

Revenues are distributed to States and Territories in Australia according to population size with an algorithm for ‘relative disadvantage’ (in terms of the cost of delivering equivalent standards of services such as health and education) weighting up or down the baseline allocation. The Indigenous composition in the population is a key variable determining the outcome of this algorithm with a greater share leading to a greater per capita allocation through the weighting process. These issues create the demand for accurate and timely population data including assessments about what might happen into the future. While demand for high quality data is evident and growing at the macro level, it is no less consequential at smaller scales with funding and outcomes for individual government departments and service provider organisations like councils, Indigenous representative bodies and other organisations who are engaged in Indigenous affairs dependent on the collection and dissemination of data.

The previous chapter has emphasised the uniqueness and dynamism of population systems in remote areas. It established, using the case study of the *haves* and *have nots*, the context behind the intense and ongoing focus on the demography of Indigenous populations at such places and discussed difficulties, resultant from the nature of populations according to the seven Ds, that demographers and policy makers face in generating knowledge on which ‘evidence based’ policy and institutional programs can be founded. This chapter delves into some of the technical and intellectual issues surrounding current practices in relation to generating demographic ‘knowledge’ about the changing demography of Indigenous people by comparing and contrasting the approaches of governments in developed nations to remote
area population enumeration, estimation and forecasting. The focus is on remote areas in
general in developed nations but with emphasis on the additional challenges for accurately
depicting and forecasting the size, composition and changing nature of Indigenous
populations. These challenges create statistical uncertainties around key data sets and lead to
errors which perpetuate through demographic estimation and modelling processes, the size
and sources of which may never be known. Consequently, techniques like population
projections modelling are reliant on sets of assumptions founded on combinations of the best
available data and expert opinions about the future.

The demand for Indigenous population data belies the challenges inherent in its collection,
analysis and forecast such that genuine understanding about its composition and change is
unobtainable. A high level of uncertainty exists not only for demographers, but also for
planners and policy makers, who attempt to postulate how and why these populations have
changed or might change. It is argued in this chapter that these issues have encouraged an
intellectual vacuum exhibited by a lack of propositions about possible alternative scenarios
for migration in the NT. With ceteris paribus regarding future migration trends and
population compositions perpetuating as the dominant academic and policy making
philosophy, a reluctance to deviate the ‘revered wisdom’ of just a few experts in the field
continues at the exclusion of perspectives from remote places overseas or alternative models
and conceptual ideas. Understanding the causes and consequences of uncertainties
surrounding Indigenous demographic knowledge for remote populations is important to
explain why policy making (and the philosophy of research) continues to be introspective.

The chapter is a modified version of two edited and published book chapters:

Taylor, A., Bell, L., Axelsson, P. and Barnes, T. (2011) The challenge of
enumeration and population estimation in remote areas. In D. Carson, R.
Rasmussen, P. C. Ensign, A. L. Huskey and Taylor (Eds.) Demography at the
Edge: Remote human populations in developed nations. Farnham, England:

Aren’t Everything. In D. Carson, R. Rasmussen, P. C. Ensign, L. Huskey and A.
Taylor (Eds.) Demography at the Edge: Remote human populations in

The original text for each article has been modified to form a single chapter and a short
conclusion has been added. The article on forecasting remote area populations has been
shortened considerably (mostly a reduction in the more technical areas comparing
international approaches to population projection methodologies) and some text has been added to provide a focus on issues of population estimation and forecasting for Indigenous populations. In this chapter the words ‘forecasts’ and ‘projections’ are used interchangeably to describe the processes and outputs associated with the demographic modelling of population futures.

7.2 Introduction

In this chapter, we compare and contrast current approaches to population enumeration, estimation and forecasting for remote areas of selected developed nations. These extend from the ‘manual’ Censuses of Australia and Canada, to the hybrid approach in Alaska, and to the statistical registers used in the Scandinavian countries. We outline methodologies and procedures which are specific to remote areas where factors of climate, demographic composition, infrastructure, distance and biophysical constraints make the provision of regular demographic snapshots costly and difficult for national statistical organisations (NSOs). Included in the section on Australia’s methods for enumeration and population estimations are actual examples of some of the dire impacts for policy making and finance in the NT of Australia from uncertainties around population estimates for remote areas. Following this a discussion on forecasting demographic futures for remote areas and Indigenous people highlights the flow on effects from enumeration and estimation difficulties as well as outlining the relationship of these to the dominant paradigms concerning the migration, and hence settlement, futures of Indigenous people in the NT.

7.3 Comparative approaches to population enumeration and estimation

7.3.1 Alaska

Up to and including the 2000 Census, enumeration in the United States (US) occurred decennially and was conducted via a combination of mail back, a short Internet form, pick up by respondent, telephone, or by interview with an enumerator (United States Census Bureau, 2002). The 2010 Census will be almost entirely by mail-back with households receiving a short ten-question form. But in remote Alaska most dwellings are either not accessible and/or lacked sufficiently complete addresses information for mail delivery (Zajac, 2001). For the 2000 Census, the United States Census Bureau employed two strategies aimed at overcoming these issues: the List/Enumerate (L/E) and Remote Alaska (RA) strategies. The former required collectors to physically identify dwellings and add them to maps. This was necessary because of incomplete or non-standard addresses and
added around 400,000 dwellings to the Master Address File (MAF) and at the same time as collectors enumerated dwellings they had listed. The RA strategy entailed waves of visits by collectors from mid-January to mid-April 2000 to remote communities comprising around 28,000 dwellings in aggregate where road access was not possible:

“The duties of an enumerator for this operation are still the same – list the addresses, map spot the addresses on maps, and conduct interviews. However, a major difference is that roads rarely exist to link the widely scattered villages and communities in Alaska.” (Zajac, 2001: pg.1)

In place of the long-form decennial Census, the US conducts the annual American Community Survey (ACS) which garners economic, social, demographic, and housing information. The ten-question Census form for 2010 will piggyback on the ACS which has been in place since 2005. The ACS maintains two sample frames, the Household Unit and Group Quarters frames, for a period of five years after which sample units are rotated (United States Census Bureau, 2009). Household Units include houses, apartments, mobile homes and a group of rooms or single rooms. Group Quarters are living quarters which are owned and managed by an organisation to provide housing and include health care, college dormitories and group homes. Data from the ACS is outputted for small areas by accumulating monthly responses to ensure appropriate levels of data reliability are achieved.

Remote areas such as Alaska receive higher sampling rates based on the known set of geographic ‘entities’ including American Indian, Alaskan Native and Hawaiian Home Lands areas, and American Indian Tribal subdivisions. During sampling, each address is successively assigned to a year within the five year sample cycle. All household units in Alaska are treated as un-mailable in the ACS because of the access difficulties and the non-standard nature of addresses for remote dwellings (United States Census Bureau, 2009). Climate and highly seasonal populations mean a modified sampling procedure is used whereby addresses are assigned to either January or September when the weather is more favourable. The Group Quarter sample is treated in the same way and additional time (up to four months instead of the usual one month) is allocated to complete data collection for each of the two periods. In remote Alaska further steps are taken insofar as attempts are made to conduct interviews by personal visitation during January to the end of April and September to the end of December – the best months for finding residents in Native Villages who might otherwise be away participating in subsistence activities.

Measurement of the Alaskan Native population in past Censuses is thought to have under-reported on numbers because, prior to 2000, people could not self-identify as Alaskan Native
AND some other race (Goldsmith et al., 2004). The change in 2000 meant that long-term analysis of demographic and health status requires back-casting of the base population according to the new definitions (Goldsmith et al., 2004). Within the ACS a greater level of detail is available than in the Census including for the variables ancestry, self-identification with ethnic groups, culture and language. The ACS also collects a range of information on mobility including *Year Householder Moved Into Unit, Seasonal Residence, Place of Birth,* and *Residence One Year Ago.*

Population estimates are compiled by the Alaska Department of Labour and Workforce Development using administrative data, primarily the Alaskan Permanent Fund Dividend (PFD) applicant information. In 2000, estimates from the PFD were found to be superior to US Census Bureau estimates and their availability at lower levels of geography is a benefit (Alaska Department of Labour and Workforce Development, 2007). Estimates are produced in January of each for the preceding One July. They exclude the large seasonal workforce, estimated at around a quarter of the population in 2006. Place, Borough and Census Area Estimates begin with the geo-coding of applicants to the PFD, the addition of resident military personnel through a separate estimations process to obtain the Non-Group Quarters (NGQ) population.

7.3.2 Australia

Demographic analysis for remote Australian populations is reliant on the quinquennial Census of Population and Housing conducted by the ABS. The Census counts people on a *de facto* basis according to where they were located on Census night, but output data is also available on a usual residence (*or de jure*) basis. This distinction is important for remote Australia since temporary populations, including overseas visitors, temporary workers, and Indigenous people are prominent and mobile during the winter months when the Census is conducted. In remote parts of the NT, for example, only 79 per cent of people were at their place of usual residence compared to 94 per cent for Australia as a whole at the time of the 2006 Census (ABS, 2007b). The usual residence count is derived from a question on where a respondent lives or intends to live for six months or more and is subject to coding problems from incomplete or partially complete responses as well as interpretation from respondents. These make knowing the ‘true’ size and composition of remote populations difficult, especially those situated on the fringes of communities or towns. Contrastingly, for most areas, the difference between the two count types can form the basis for examining impacts from temporary populations (Bell & Ward 1999) or to ascertain the size and composition of service populations (Bell & Ward 2002).
Until 2006, Census field procedures were organised around Collection Districts (CDs), which represented areas that a Census collector could reasonably cover in the specified Census period. CDs were not introduced to remote areas of Australia until 1971 and counts at CD level on a usual residence basis were not available until the 2001 Census. In urban areas CDs included around 225 dwellings but in rural and remote areas these could incorporate fewer dwellings and more expansive geographical areas (ABS, 2006b). In 2006, around 1,800 (5 per cent) of Australian CDs were classified as remote or very remote according to the Accessibility/Remoteness Index of Australia (ABS, 2009b). These were home to just five per cent of the national population but accounted for 85 per cent of the Australian land mass (Desert Knowledge Australia, 2008). Indigenous communities were generally allocated discrete CDs and their outstations most often incorporated into a surrounding CD or grouped together to form a distinct CD so as to facilitate their separate analysis.

The ABS is in the process of adopting a new statistical geography, the Australian Statistical Geography Standard (ASGS) to replace the Australian Standard Geographical Classification. The ASGS incorporates a micro-level geography called the ‘mesh block’ as its base unit (ABS 2007b). Other pertinent geographies for remote analysis using Census data are Remoteness Areas (dividing Remote and Very Remote from other areas) and Urban Centres and Localities (settlements of 200 residents or more). The ABS also outputs Census data for an Indigenous Geography which features Indigenous Regions (essentially Australian Government service delivery areas), Indigenous Areas (contiguous aggregates of CDs with at least 300 Indigenous persons) and Indigenous Locations (single or groups of CDs with at least 80 Indigenous people which, like Indigenous Areas, are contiguous).

The interest in official statistics for Indigenous people in particular (but also for other target groups such as the homeless and other ethnic populations) has grown in response to the desire for establishing the “… true state of affairs.” (Smith, 1980: pg.13) and this has influenced Census enumeration procedures greatly in remote areas. It was not until the 1971 Census that ‘Aboriginal natives’ were included in official population counts at all. The ABS has since developed and evolved a tailored Indigenous Enumeration Strategy where, in remote areas, Census Field Officers promote the Census and enlist local residents as collectors and interviewers well ahead of time (ABS, 2006a). In 1981, interviewer-based forms were employed at remote communities and outstations in the NT, Western Australia and South Australia, extending to Queensland in 1991. This was accompanied by strategies to recruit local collectors and interviewers. Continuing high non-response rates led to pre-marking of the Indigenous origin question to ‘Yes’ for remote communities in 1991.
In 2006 an Internet based Census form was enacted nationally to allow the public to complete and submit their Census return electronically. The ABS envisioned this approach as pertinent for difficult to enumerate households including those remotely located (ABS, 2006b). However, in the NT just 6.3 per cent of households (compared to nine per cent across Australia) completed their Census return online. The ABS anticipates that up to 50 per cent of Australian households will complete their forms online in the 2011 Census (ABS, 2007c) but for remote populations this target is problematic.

Subsequent to the Census, the ABS conducts the Post Enumeration Survey (PES) to determine the sources and sizes of Census errors. After 1981 the concept of Estimated Resident Population (ERP) was adopted as the official population series for Australia. ERPs are Census counts adjusted by age, sex and location for net under-enumeration and for Australian residents overseas on Census night. Post-Census estimates are produced by ‘ageing’ the Census base year counts forward through adjustments (on a quarterly basis) to births, deaths, net overseas migration, and net interstate migration. Demographic analysis for remote areas draws heavily on ERPs for Statistical Local Areas (SLAs – a unit within the standard geographical framework). Post-censal SLA estimations cannot be constructed using migration data and so are derived by using a range of data sources (including building permits and electoral enrolments) to determine the share of State population growth to be allocated to individual SLAs (ABS 2009b). For jurisdictions with significant remote population shares, the issue of ERP accuracy is pressing since standard errors around estimates are high. In 2006, for the first time undercount adjustment rates (the ratio of PES estimates to the Census count after not-stated's are assigned) were derived for the ‘balance of State’ outside of the capital cities. A complex adjustment process for Indigenous undercount was undertaken using the empirical Bayes method. Uncertainties around these methods and procedures have prompted alternative methods of estimation to be proposed (for example, Paradies & Barnes, 2005, Wilson et al., 2005). The significant impacts of errors on political representation and fiscal exchanges between national and other governments are discussed subsequently in this chapter.

Aside from improving Census counts and population estimates the ABS has introduced variations to sampling methods to draw remote samples for household, economic and social surveys. It has faced great challenges in generating representative Indigenous samples in particular for these surveys and maintains an Indigenous Sample Frame from which it randomly brings communities into scope for collections. Examples include the Indigenous Social Survey and Indigenous Health Survey, both of which allow for comparisons between
remote and non-remote areas and provide indicators for monitoring improvements in Indigenous well-being.

7.3.3 Case Examples - Population estimates in Australian Government processes: Are NT estimates enough for these tasks?

In countries with both national and regional governments, mechanisms for managing inter-governmental processes between tiers and between departments at the second tier are required. Population estimates play a major part in processes of equitability in the treatment of people between regions including:

- Levels of regional representation within national governments;
- Allocating national resources between governments of the regions; and
- Maintaining accountability for achieving collectively agreed social goals.

There are well-founded expectations that official population estimates for these purposes assist in fostering objectivity and transparency. However, the public perception of complete accuracy is not concrete and complications and confusion can result. We illustrate the case for remote regions with three examples from the NT in Australia.

Population estimates and political representation

The Commonwealth Electoral Act of 1918 indicates the number of seats allocated to the population of each state and territory in the House of Representatives (HoR) be determined primarily by Estimated Resident Population (ERP) size (ABS, 2009d). The formula for calculating numbers of seats is constrained so that jurisdictions are allocated whole numbers and the total number across Australia is fixed. Furthermore, periodic re-calculations allow for the changing geographic distribution of the nation’s population to be incorporated (see Wilson, Beneforti & Barnes, 2005).

Prior to 2000 this seemingly equitable method resulted in the NT being allocated just one of the 140 plus HoR seats. But with the year 2000 ERP the NT was allocated a second seat, doubling its representation. Electoral boundaries were duly divided geographically and two members were elected at the next election. However, much to the dismay and confusion of residents, the second seat was almost lost a few years later when a small downward adjustment was made to the ERP which left the total population a few people short of the required threshold for two seats. The imminent halving of representation resulted in much public and parliamentary outcry, including formal parliamentary committee hearings and reports which focused on perceptions of political unfairness and with little attention being
given to the key issue - the difficulty of estimating the Territory’s population with sufficient accuracy.

This story had a happy ending for ‘Territorians’ as a novel solution was devised by Australian legislators which removed the possibility of a repeat episode. The solution recognised uncertainty in ERPs and based the threshold for seat allocation on the lower limit of the ERP confidence interval rather than the ERP itself. The threshold for removing a HoR seat was reduced by two times the standard error of the ERP which, being quite large made it highly unlikely that a seat would be lost again into the future. The Act of Parliament was duly amended and applied retrospectively. This novel solution is now enshrined in legislation - perhaps a first for standard errors of estimates!

**Population estimates and financial allocations**

Under Federation, the Australian Government took on many tax and revenue collection activities from the States, although States retained some key portfolios (education and health in particular). Subsequently, the Australian Government collected roughly twice as much as it spent while the States spent twice as much as they collected an imbalance which required a resolving mechanism.

It was agreed that the determination of a ‘fair’ allocation of taxation revenues should be governed by the principle of ‘fiscal equalisation’, as summarised by the Commonwealth Grants Commission (CGC):

> “State governments should receive funding from the Commonwealth such that, if each made the same effort to raise revenue from its own sources and operated at the same level of efficiency, each would have the capacity to provide services at the same standard.” (Commonwealth Grants Commission, 2002)

In converting this principle to a formula, the difficulties a State experiences in ‘providing services’ are expressed as the accumulated ‘disabilities’ the State and its people suffer. This is an extremely complex process but, once completed, results in a single number representing such ‘disabilities’. The funds available are then calculated as the product of the three terms:

\[
\text{Total funds available for allocation} \times \text{the disability factor} \times \text{population}
\]

Here the population component is defined as the ERP and is published at 30 December each year. Changes to fiscal equalisation and the introduction of the Goods and Services Tax (GST) in the 1990s have meant that the above simple formula now distributes some $A50 billion in GST revenues annually. The NT’s slice of this pie is about $2.5 billion but with a confidence interval for the Territory’s ERP at around 10 per cent there is considerable scope
for the allocation to be much larger or smaller than the principle of ‘equity’ under the
Scheme would otherwise dictate.

Of greater concern for the Northern Territory Government has been consistent biases
exhibited in ERPs. Following most recent Censuses, estimates have been adjusted upwards
substantially (by as much as four per cent following two of the last six Censuses) but no
mechanism exists within the CGC system for re-adjusting the allocation of funds following
ERP adjustments. Consequently the Northern Territory Government has made vigorous
representations to the Australian Treasury and the CGC on the fitness-for-purpose of ERPs.

**Population estimates and ‘Closing the Gap’**

Under a recent major Council of Australian Governments (COAG) initiative, specific targets
for the socio-economic and demographic advancement of Indigenous Australians have been
set (see Council of Australian Governments, 2008). These are specified as numeric values
for certain statistical indicators to be achieved by all State and Territory governments within
specific timeframes. The indicators are typically defined according to the gap between
Indigenous and non-Indigenous people and targets expressed in terms of ‘closing the gap’,
for example, closing the gap in life expectancies at birth within a generation. Many of the
indicators are defined as ratio statistics where numerators are to be calculated from datasets
derived from State and Territory administrative records. Denominators are largely based on
ABS Indigenous and non-Indigenous ERPs and, while inaccuracies in numerators may be
substantial, there are concerns that errors around ERPs (the denominators) are too large for
the intended purposes of monitoring annual progress towards the agreed targets.

Highlighting the difficulties, population estimates at sub-national levels of geographies are
referred to by the ABS as ‘experimental’ with derivation methods changing over time
(typically from one Census period to another) which may lead to indeterminate non-
sampling errors. Inaccuracies arising from allocating, to the Indigenous or non-Indigenous
populations, all people counted in the Census without an Indigenous status being recorded,
add further to the uncertainty. The accumulative effect of these various sources of errors,
some of which cannot be measured, may mean that errors associated with some closing the
gap indicators are much larger than the expected magnitude of change over the desired
reporting interval, typically one year. That is, the Indigenous ERPs may not be sufficiently
accurate to determine the extent to which closing the gap in Indigenous disadvantage has
progressed.
7.3.4 Canada

Returning to comparisons of international approaches, Statistics Canada conducts a Census five-yearly with the most recent being in 2006. Until 1971 the Census was interview-based, but to improve response rates and eliminate interviewer interpretations, self-enumeration was adopted (Statistics Canada, 2009a). Enumeration is based on usual residence and captures residents in Canada and those who are based overseas (Statistics Canada, 2009b). In 2006 around 98 per cent of the population was self-enumerated using paper forms or the Internet. The country is divided into small geographic areas called Collection Units (CUs) of which there were 50,782 in 2006. Like Australia, population counts from the Census are used to realign federal electoral boundaries and to determine transfers of revenues under the Federal-Provincial Fiscal Arrangements Act (Statistics Canada, 2009b).

Statistics Canada has also turned to the Internet to reduce enumeration costs and improve Census data quality (Statistics Canada, 2009a). In 2006, 18.5 per cent of households completed online but the lowest rates were in remote areas including 13 per cent in the Northwest Territories (Statistics Canada, 2008a). The Canadian Census uses a mixed approach with all persons completing questions on age, sex, marital status, language and relationship to Person One on a short (eight-question) form. Meanwhile, 20 per cent of the population are sampled for a 61-question long form (Form 2B) and housing information is collected from a 10 per cent sample. Sample data are weighted to provide estimates for the entire population using calibration estimation where weights are progressively calibrated to deliver the closest possible match between sample estimates and full population counts.

Procedures for determining Aboriginal status are complex, reflecting the diversity of Aboriginal groups and the desire to identify members of distinct Indian and First Nation bands. Four questions determine the ‘Aboriginal ancestry’ of respondents: ethnic origin and ancestry, Aboriginal identity, Indian band/First Nation membership and Treaty or Registered Indian status (Statistics Canada, 2009b). The Aboriginal identity question determines the ethnic origin or ‘roots’ of the respondent (as either North American Indian Métis or Inuit) while the Aboriginal identity question provides counts of persons identifying as Aboriginal. The ‘yes’ or ‘no’ question on membership of Indian or First Nation Band collected the name of the band for ‘yes’ responses with around 630 bands thought to be in existence. Aboriginal populations on reserves are enumerated using the long Form 2D – the ‘Reserves Questionnaire’ (Statistics Canada, 2007). In remote areas in 2006 the Census was conducted early to avoid the migration period associated with hunting and fishing camps.
The Census in Canada is followed by the Aboriginal People’s Survey (APS) and the Aboriginal Children’s Survey (ACS). Both provide data on social and economic characteristics of Aboriginal peoples (on and off reserves) including health, language, employment, income, schooling, housing, and mobility characteristics (Statistics Canada, 2007). The APS also distributes supplementary sub-population modules, as it did in 2006 for Métis and Arctic populations. The ACS was first conducted in 2006 for the purpose of providing a picture of early childhood development for First Nations/North American Indian, Inuit and Métis children under six years of age who live off reserve. Information on health, sleep, nutrition, development, nurturing, child care, school, language, behaviour and activities is collected along with some parental, guardian and neighbourhood data (Statistics Canada, 2009c).

Following the Census three broad tasks are undertaken to derive population estimates. Firstly, adjustments are made to prior Census counts based on (current) Census under-coverage. Under-coverage is determined by coverage studies which identify those missed or double counted (Statistics Canada, 2008b). This study operates on a different methodology to the PES for Australia by employing a reverse record check. Here samples are drawn from five frames: past Census returns, births and immigration registrations, permit registrations (student, work, refugee and so on) and people missed in the previous Census (Statistics Canada, 2004a). Details of participants are compared to their Census returns. The 2001 under-coverage study sampled around 66,000 people with most (around three-quarters) drawn from past Census records. Each individual in the Under-coverage Study is classified as enumerated, missed or out of scope. The highest rates of net under-coverage for 2001 were experienced in the remote parts of the Northwest Territories (8.11 per cent) and Nunavut (4.49 per cent). Similarly to Australia, young males (at 11.68 per cent on a raw basis and 9.64 per cent on a net basis for those aged 25-34 years) had the highest rates of net under-coverage (Statistics Canada, 2004b). Separate estimates of under-coverage by Indigenous status are not produced. Meanwhile over-coverage is assessed in a separate study by direct matching and statistical matching techniques on Census data.

Provincial/territorial age-sex rates of net Census under-coverage result from the two coverage studies. These are applied to Census Division (CD) and Census Subdivision (CSD) populations by age and sex. After this the total populations for CSDs are interpolated using the annual average growth rates for prior intercensal periods which are used to obtain successive annual estimates right up to one year past the current Census (Statistics Canada, 2008b). Three post-censal estimates are issued before the final estimate becomes available around two to three years after the Census. The third step in the estimation process is
ensuring CSD estimates are consistent when aggregated to Census District levels (a higher level of geography) for which estimates are available by single year of age and sex and are derived by iterative proportional fitting.

### 7.3.5 Scandinavia

The Scandinavian nations of Finland, Norway and Sweden have markedly different approaches to Alaska, Australia and Canada for population counts and estimation. All three have developed systems of statistical registers which are derived from administrative data stores and held within disparate official organisations. These systems allow demographic information to be produced on a rolling annual basis, including for remote areas. Scandinavian countries first started introducing population registers in the 1960s and Finland lays claim to pioneering the shift, having moved to a full register-based Census in 1990. The primary motivations were fiscal and the desire to improve the timeliness and accuracy of official data (Statistics Finland, 2004). The Finnish manual Census in 1980, for example, is thought to have cost around 35 times that of the register derived Census in 2000 (Statistics Finland, 2004).

The introduction of a register system to Finland was predicated on the acceptance by the general public of linking of personal information across agencies via a unique personal identifier. This was achieved by incorporating register extracts as necessary documents for life events (for example, marriage applications, passport applications and distributing an estate). This approach is adopted in most register systems and ensures entries are updated regularly through the ‘coerced’ actions of individuals:

> “Another factor that speaks for the reliability of register data for statistical purposes is that it is in the interest of each individual to make sure that all the data within register systems are indeed accurate.” (Statistics Finland, 2004: pg.9)

Finland maintains a number of ‘basic’ registers including the Population Information System (or Central Population Register (CPR) which holds resident, building and dwelling data), the Real Estate Information System (data on land parcels, land and property ownership, mortgages, property rights and easements), and the Business Information System (details of business, companies and organisation). Each basic register is maintained by different agencies through a hierarchy of local and national offices. For example, births and marriage information in the CPR is administered by parishes while real estate authorities update dwelling ownership data in the Real Estate Information System.
The structure of registers is such that the update processing is confined to unit attribute data which actually changed, and this negates the need for global processing updates (Statistics Finland, 2004).

A major benefit of the Finnish register system is its ability to deliver flow statistics, or longitudinal data. Registers also supply structural population information, change information, and rates based information including fertility rates, mortality rates and migration propensities. The Population and Housing Census in Finland is conducted every five years using the basic registers described above as well as inputs from around 30 administrative registers.

In Norway the last self-completion Census was in 2001 when, in addition to enumeration, the quality of data held in the country’s two main registers (the Population Register and Ground Property, Address and Building Register, or GAB) was tackled. The CPR contains information on all residents of Norway and operates on a national ID number. It is maintained by municipal tax offices where individuals must register moves to and within Norway. Prior to 2001 the GAB lacked complete information on flats in multi-flat buildings constructed before 1983 since all units were assigned the same address (Statistics Norway, date unknown). In 2001 address badges were fastened to the inside door frames in flats since these lacked a proper address prior. The GAB is a Cadastral register and is maintained by municipalities as the official source of information on Norway’s parcels of land, addresses and building stock including those which have been demolished (Rygh, 2002). It is updated daily by transferral of information from municipal Judicial Land Registers which record land subdivision, building permit and new address information.

Before the 2005 Census, derived entirely from registers, Sweden also conducted its Census decennially and chiefly using manual methods. But in the five Censuses preceding 2005, gradually more administrative data sources were introduced and decreasing numbers of questions were asked on Census forms. Registers have a long history in Sweden, as our Sámi case example highlights, with church registers having provided comprehensive small area and sub-population data from the early seventeenth century (Swedish Tax Agency, 2007). The Swedish register system is broadly similar to Norway’s according to four basic registers: the Population Register, Real Estate Register, Jobs Register and Business Register. As for other nations, the integrity of the register system depends on the application of substantial methodological regimes and continuous improvement work. Complex metadata standards are in place and ongoing quality assurance work helps to improve the functionality of the system (for example, Statistics Sweden, 1999).
Nevertheless, ‘holes’ do exist in demographic data for the Scandinavian nations. In Sweden, as Censuses century became more and more complicated to administer, the question of how to record and administer Sami children born in mixed marriages led to frequent methodological changes in enumeration (Taylor et al., 2011). In the end the separate identification of race and culture was seen to dilute state power to the extent that questions to establish these were omitted from the Census. Norway and Finland have since followed suit and now there are no official datasets recording the number and characteristics of the Sami in Scandinavia.

7.4 Comparing enumeration and estimation challenges
The focus on remote populations in this chapter underscores the broader roles NSOs play in accurately representing all sub-populations in official statistics. In most cases NSOs face tensions between methodological consistency at national and sub-national levels and providing good quality small-area and sub-population data within budgetary and other constraints. In Australia, the ABS’s budget has been cut a number of times during the past few decades, in apparent contradiction to the increased demand for statistical information by policy makers, analysts and indeed the general public. The tailored approaches to remote enumeration and estimation discussed within this chapter demonstrate that common challenges exist for NSOs. Small and dispersed settlements situated in inhospitable environments, unusual demographic profiles, high proportions of Indigenous peoples, and the presence of highly mobile workers and other populations ‘at risk’ of being undercounted, double counted, or partially enumerated are but part of the challenge. Poor transport networks, harsh terrain and extreme climates, a lack of technological infrastructure, and poor levels of IT uptake exacerbate these. The critical legacy of these factors is that larger and more complex adjustments are required to derive remote population estimates and these may generate unknown or uncertain errors.

On the surface, register based systems offer many advantages over manual Censuses: reduced costs, minimal processing, improved timeliness, reduced respondent burden and enhanced protection of personal information (Longva et al., 1998; Statistics Finland, 2004). It is noteworthy that such aims feature in the charters of the NSOs of most developed nations. Registers also permit sample for cohort based research to be drawn and can be used to validate the representativeness of study results (for example, Eiliv et al., 2003). Nevertheless, transitioning to statistical registers has been a major undertaking for the Scandinavian nations and requiring of large investments of money, skills and societal will. Previous attempts to introduce national identity schemes in Australia have delivered stern reminders to politicians about the unwillingness of the general public to (at that stage at
least) release personal information to centralised data holdings and allow it to be shared across agencies (for example, Clarke, 1987; Jordan, 2008).

Registers have their weaknesses too. They deal poorly with temporary or ‘service’ populations (Bell & Ward 2002) and assume that people are resident at their place of legal residence (United Nations Economic Commission for Europe, 2007). A further and major deficiency is that Indigenous status is not registered in the official statistics of any of the Scandinavian register countries, rendering their Indigenous populations statistically ‘invisible’ (Petterssen, 2001). More practically, register reporting relies exclusively on existing variables and new registers cannot be readily constructed to meet immediate information needs. And although major data items like births and deaths are thought to be accurate, others suffer from lags and inaccuracies. Likewise, where linking on occupations and place of work is necessary, cross-agency inconsistencies are thought to exist (Statistics Finland, 2004). The issue of consistency in the coding of data items across registers is vital to the accuracy of register data and requires ongoing effort and attention. Finally, registers do not permit the piggybacking of other surveys as for the manual Census in Australia.

The diversity of enumeration and estimation methods for nations who are advanced both methodologically and technologically in the construct and capabilities of their national statistical systems is testimony to the wide-ranging views of societies on the collection, storage and use of personal and business information. For remote areas, the nuts and bolts of gathering such information costs more, is more time consuming and requires dedicated conceptual and practical approaches. The downstream impacts for demographic enquiry are uncertainties and errors which must, even at the most fundamental of levels of age and sex inquiry, be accounted for. Despite the benefits of technology and the honing of enumeration and estimation procedures, producing accurate, timely and consistent demographic data for the analysis of remote populations is not becoming any easier. It is a problem which can only be rectified by convincing the general public of the value and importance of core national data sets, but to date there is little evidence that this has been achieved outside of those nations with entrenched systems of registers.

7.5 Forecasting remote area populations

After enumeration and population estimation, forecasting changes in the numbers and characteristics of remote area populations is of great importance. In the NT, for example, forecasting the Indigenous population is critical to understanding and managing future finances, service planning and policy formation across the gamut of government portfolios. But the structure of remote populations, alongside the data and knowledge systems in place
to capture information about them, challenge our capacity for modelling of their population futures. For remote areas, more so than other spatialities, these difficulties extend to the most basic lines of demographic enquiry such as age and sex compositions. Nevertheless, in a globalised world with a hunger for evidence-based approaches to policy and planning, intensified policy foci on remote area issues (especially indigenous issues) ensures that the demand for detailed projections is strong. In this section we outline why this is the case and establish that, despite the inherent challenges, numbers aren’t everything.

7.5.1 The intricacies of forecasting remote populations

That the globalised economy is information intensive and demanding of retrospective and forecasting data is passé. From stock markets to climate change, lives are dependent on and altered by the outcomes of complex modelling about human and natural systems. Individually and collectively, mankind in the twenty-first century is wedded to a life of numbers and numbers on the future are coalesced into everyday decisions. Given the characteristics of remote populations outlined in Chapter Six it is little surprising that forecasting their futures is fraught with difficulty and statistical uncertainty. Yet political and social pressures demand that forecasts are produced to finely grained desegregations - geographic levels, Indigenous status, and age decompositions in particular.

Most forms of complex modelling are based on past data which is fused with expert opinions about the topic at hand to generate modelling assumptions. But herein lay two critical issues. Firstly, detailed forecasts are invariably wrong and a limited knowledge about the location and causes of errors can create an uncertain environment for the application of forecast data. Improvements in computing power and software have facilitated more complex models and the input of detailed representations of phenomena and their interrelationships. But because of, and not in spite of this, the scope for errors has increased. Secondly, demands by users for the outputs from complex projections modelling are increasing both absolutely and in the levels of detail required (time periods, geographic levels, populations of interest and so on).

The need for forecasting in spite of expectations and knowledge about likely errors is maintained in line with the growing penchant for ‘facts’ on which to base key decisions in both the business world and within government. Modelling is increasingly a technically orientated task which renders information users less likely to question the robustness of methodologies and input data. Consequently, users have become attuned to believing the ‘experts’ and headline figures are accepted at face value (Willekens, 1990). But the reality is that the future is highly unpredictable. Humans are notoriously bad at taking this into account when assigning probabilities to individual outcomes amongst a range of scenarios (Makridakis & Taleb, 2009).
And so it goes for population forecasting. When projections data are released, the political and public tendency is to emphasise the nefarious or positive aspects of absolute growth (especially in regional and remote areas) while little understanding about how the population might transition to reach the projected numbers may exist. In short, awareness about the relative force of individual demographic components of change (and the way they interact under certain conditions) in bringing about population transitioning is slight. Instead, there tends to be a focus on top line numbers which can be used to support policy initiatives; but there are inherent dangers in this. Both demographers and the public can be subject to ‘assumption drag’ (Smith et al., 2001: pg.286); socialisation into believing that past trends will continue in spite of data suggesting otherwise. For remote areas it can be particularly difficult for demographers to detach themselves from long-held and established views about complex human phenomena since only a small expert group may be active in the study of their populations.

Modelling in the remote context is not just dependent on having good input data and a good model to work it through. Instead, the plausibility of projections will be tested by knowledge of structural change and knowledge about interrelationships between variables. This is because both will inevitably impact on the accuracy of forecasts and, the smaller the population the greater the negative impacts from these will be. Structural shifts in migration trends are especially culpable in rendering projections out of date or in error (in the sense that the projected population differs by some degree of error from the actual population which eventuates at that point in time). Even where opportunities exist for structural changes to become known (for example, through pre-emptive policy statements or announcements about pending legislative change) the precise impacts on modelling parameters are difficult for modellers to deduce.

Modellers must also factor in knowledge about the types, directions and levels of interdependence between multi-dimensional forecast variables. But in their study comparing errors around several forms of simple forecasting exercises, Makridakis and Taleb (2009) found that forecasting relationships even between known variables and a dependent variable is fraught with potential error and uncertainty because averaging processes are required to eliminate randomness found in the distribution of these. These issues are at the forefront for demographers and have driven a body of work aimed at identifying the size and nature of projection errors. As Booth (2006) points out, even at the national level demographers have been increasingly at pains to warn users of the disparity between what projections can offer and how users interpret the offering. A common variation to structured (technically driven)
forecasting is to incorporate human ‘expert’ judgment. Indeed it is rare to not have the expertise feed into modelling assumptions (Alho & Spencer, 1985) but ‘mixed forecasting’ approaches may actually add to levels of uncertainty. Makridakis and Taleb (2009) demonstrated the compounding effects of applying human judgment to compensate for perceived weaknesses in formal modelling.

Remote populations present many practical challenges for generating meaningful forecasts, some of which are unique to the circumstance of remoteness, and some of which are common to all projections. Under the latter it is the acuteness of the issues which is emphasised in the remote context. Firstly, population distributions are sparse and aggregate population sizes small. While there are no hard and fast rules about what the minimum population required for robust projections is, recent projections for Alaska (population just under 700,000), for example, highlighted their subjectivity to ‘unpredictable events’ (Alaska Department of Labour and Workforce Development, 2007: pg.5) rendering that for remote regions in particular ‘… no demographer or economist has a predictable crystal ball to see into the future’ (Alaska Department of Labour and Workforce Development, 2007: pg.5).

Projections for the NT, with a population of just over 220,000, have been available since 1972 when the population was just 90,000. At the time of writing a number of sets of deterministic projections were available and included disaggregation by age, sex, regions and, in some series, Indigenous status (for example, Northern Territory Treasury, 2009; Biddle & Taylor, 2009; MacroPlan Australia; 2009; Blandy & Forbes, 1998; Department of Health and Ageing, 2008; ABS, 2008d). Despite the small size of the NT’s population, a major and long-term deficiency has been the absence of sub-NT projections disaggregated by Indigenous status (Northern Territory Treasury, 2009). As a response, the Northern Territory Treasury has invested in the development of a multistate hierarchical cohort component model (the Northern Territory Population Projections model – or NTPOP – see Northern Territory Treasury, 2009) in conjunction with demographers at the local university who provided the technical expertise. The broad approach to the development of NTPOP was as much strategic as it was technical since it sought to obtain significant ‘buy in’ from the user community and from executive heads of departments through an inclusive and comprehensive consultative process. One effect of this approach was to draw out considerably the time period for its development to around five years from inception to the release of outputs. The requirement for disaggregation by Indigenous status presented significant technical challenges, which will be of interest to modellers in other parts of the world, and a more comprehensive discussion of these aspects can be found in Wilson (2009).
Secondly, the high Indigenous composition typically found in remote area populations introduces major challenges for projections modelling. In 2008, American Indians and Alaska Natives comprised more than 16 per cent of the total population of Alaska; more than a third of NT residents identified as Indigenous in 2006; and in Canada, in the Northwest Territories (31 per cent), Yukon (21 per cent) and Saskatchewan (10 per cent) Indigenous representation was also high. High proportions of Indigenous people complicate fertility and mortality component modelling in particular (Wilson, 2009) and there are issues in accounting for changing ethnic status and Indigenous migration (Biddle & Taylor, 2009, Guimond et al., 2003).

For migration, redistributive effects from temporary intercensal movements may go largely undetected regardless of the format of core national data collections (Census, register, or other). Furthermore, high Indigenous compositions typically signify bimodal distributions in the characteristics of remote populations. In the case of deterministic projections their assembly entails some averaging out of data on migration, fertility and mortality such that diversity within sub-components of the population is lost, thus increasing the likelihood of errors. The NT, for example, has the lowest median age at death, highest standardised death ratio, highest Total Fertility Rate, largest proportion aged less than 15 years and lowest proportion aged more than 65 years of all Australian States and Territories, primarily because of its high Indigenous composition. The necessity for some averaging out of data applies to both deterministic (via the averaging of past data) and probabilistic modelling (where large deviations must be incorporated). Hence, the incorporation of socially constructed populations into projections is on the one hand of great benefit (and necessary given the size of these in remote parts) to users and policy makers but concurrently introduces further errors by requiring additional assumptions, data and computational parameters to be modelled.

The third major challenge for remote forecasting are the legacies of difficult to enumerate populations, which are outlined in greater detail in Chapter 2. The logistics of Census conduct in remote areas and the impacts this has on data which is used for projections adds to the potential for forecast errors. In Australia, for example, the Census has been conducted in August for some time now and this is the peak month for visitors to the remote north of the country. The mid-year ‘dry season’ climate provides for good vehicle access to remote roads and the variety of natural attractions dotted around the landscape. This facilitates the movements of people into and around areas that are inaccessible during other times of the year. ‘Finding’ these people is costly both in a financial sense and in terms of opportunity costs since tailored strategies for their enumeration draws limited resources away from the

148.
Remote regions also host temporary populations, like the fly-in-fly-out workers discussed in Chapter 12, and may contain single industry towns which exist on account of mining or tourism (with high rates of staff turnover).

The key legacy of smallness, high Indigenous composition and difficult to enumerate populations are that higher rates of complex adjustments must be applied to Census counts for remote areas in order to derive Census year population estimates. Any errors in the base counts and the adjustment processes flow through to affect jump-off populations in projections. To illustrate, the undercount adjustment factor for the NT in the 2006 Census was higher than other States and Territories (ABS, 2007a) and higher for cohorts with typically greater representation in remote populations – males compared to females, people aged in their 20s compared to other ages, Indigenous people compared to non-Indigenous people, and those who were never married compared to those who were or had been married. Critically, errors which are attributable to Census and estimation methods cannot be satisfactorily known or corrected and the outcome is that jump-off populations for remote area forecasts will always be less accurate than for elsewhere, unless the fundamentals of their composition become more ‘un-remote’ (that is, less male dominated, less Indigenous, more married, more balanced in terms of age distribution and so on).

And finally for the challenges, intra-regional diversity and the unique historical, economic and social circumstances of remote regions mean that knowledge about where remote populations are present and why they behave differently is of high intrinsic value. While some of this knowledge is held nationally, for example within NSOs, most is held by those who live and work there. Remote jurisdictions commonly struggle to attract and retain professionals in the workforce (Hall et al., 2007; Garnett et al., 2008) including in the fields of formal demography, demographic research, and indeed in the application and analysis of demographic data more broadly. If we accept that knowledge of local population systems are important to remote area projections, high turnover amongst the pool of experts and users who understand the strengths and limitations of particular approaches, and of individual datasets, carries with it a number of impacts. Losses of expertise through turnover might, for example, promote the application of transitive assumptions based on knowledge about other ‘similar’ places or based on an absence of knowledge about suitable localised data sets for informing modelling parameters. Conversely, over-confidence might be placed in the quality of local datasets when there is a lack of alternative data.
High turnover in the professions may also condense knowledge about local circumstances to just a few experts who hold particular views about demographic trends and change. Under this situation, experts may be inclined to maintain long-held beliefs even where evidence is weak or where new or alternative datasets contradict these. The problem of over confidence in assumptions affects users as well as modellers since they themselves are part of the churning population, reducing their collective capacity to discern and appropriately qualify the application of forecast outputs. This may create a condition of ‘received wisdom’ amongst those who remain and this reduces opportunities for new knowledge and ideas to be drawn from the expert pool in order to improve the quality of forecasting.

7.5.2 The evidence

Evidence of impacts from the challenges outlined above is clear in the forecast errors for projections of populations in remote regions. Such errors denote the differences between the forecast numbers and the population which actually eventuates (usually measured by official population estimates) expressed as percentages. Two commonly used measures of error are the Absolute Percentage Error (APE – the difference between the forecast and actual populations divided by the actual population), and the Mean Annual Percentage Error (MAPE – the sum of the percentage errors for a series of forecasts ignoring the sign).

Analysis by Tayman et al. (1998) on the forecast accuracy of sub-country USA projections confirmed that an inverse relationship between forecast accuracy and population size exists and by default, therefore, remote regions can be expected to be in the high ranges for APE and MAPE. The MAPE for the middle series for NT projections produced during the 1970s and 1980s, for example, showed an overestimation of the eventual population by a minimum of a quarter and by a maximum of two-thirds (Adam, 1992; Taylor, 2009a) while equivalent national level projections were just one or two per cent different to the forecasts (Wilson, 2007). In an examination of forecast errors for individual States in the United States, Campbell (2002) found the MAPE was high for states with considerable remote populations including Montana, Idaho, Wyoming, New Mexico and Alaska. The forecast population for these states was consistently over-estimated across all series. For the most remote of these, Alaska, the APE for the middle series was found to be double that for the combined States.

Not only are remote forecast likely to deliver high error rates but they also appear to do so within a short time period from the base year. Hence, while it is common for all projections to become progressively (usually linearly) inaccurate as time passes into the projection horizon, for remote projections high and erratic error rates are invariably found just a few years from the jump-off. During the 1980s, for example, the total population of the NT was
overestimated by around 10 per cent within the first 10 years from the base year (Taylor, 2009a). The introduction of high errors within a short timeframe renders forecasts ‘out of date’ and, unless there is sufficient data to ascertain the causes, presents modellers with questions about how to compensate for these when the projections are reviewed or re-constructed. Importantly, users must be made aware of such issues and how to account for them in planning and analysis. As earlier discussion in the chapter has proposed, this is neither a straightforward nor iterative task.

Above all, large APEs and MAPEs for remote areas are a mathematical function of population size since even small actual differences between the forecast and actual populations will generate large percentage errors. This statistical truism conceals the fact that such populations are potentially subject to relatively large redistributive effects from what may essentially be small (in the national or global context) events or bifurcations from past trends. For example, the devastating cyclone which hit Darwin in 1974 (Cyclone Tracy) induced a fundamental demographic restructure where male reconstruction workers and administration staff dominated the returning population while the proportion aged 50 and over was significantly diminished (Carson, 2008). But more than just singular events, extreme weather occurrences are a reminder of the very nature of remote places as areas as places which are difficult and costly to live in, fragile in terms of biophysical characteristics, and, by and large, not attractive or conducive to large settlements. The climate of Northern Alaska is at the other extreme to the sub-tropical and desert climates of the NT. Temperatures during winter remain well below freezing in the permafrost zone. The ecosystems associated with the permafrost regions are thought to be under threat from climate change and climate change research on arctic zones such as Northern Alaska highlights their fragility and susceptibility to change under these circumstances (Hinzman et al., 2005).

7.5.3 Lessons for the scholarship of remote demography

In summary, a number of fundamental commonalities exist in the compositions of remote populations, in the dispersal of these across remote lands in developed nations, and in the core datasets used as inputs to projections. These combine to make the task of producing accurate projections exceedingly difficult. Consequently, there is a great onus on those involved in their development and in their use in policy and planning processes to provide innovative solutions and to inform the broader community about these issues. Of course many of the issues and challenges are not unique to the forecasting of remote populations, but in aggregate these are magnified in the remote context.
Theoretical considerations for remote area projections are broader than for elsewhere. The contemporary approach is the continued use of cohort component modelling with limited excursions into testing of alternative approaches. One approach offering promise for remote area forecasting is micro simulation. Here, locally available micro-data sets (Wilson & Rees, 2005) are used for modelling individual level determinants for events (a birth, a death and so on). Its drawbacks include its complexity and the computing power required to deal with this. Nevertheless, Statistics Canada has moved from cohort component modelling to micro simulation for its national and sub-national forecasts (Wolfson, 1995) and more extensive trials are warranted in the remote sphere.

The development of the NTPOP model in the NT has demonstrated some of the spin-offs from persisting with projections in spite of these challenges and of the knowledge that high errors will result. It has delivered positive external effects including a greater understanding about the processes and purposes of forecasting amongst politicians, those in the bureaucracy and users of demographic data in general. While the choice of process is open to criticism (because of its heavy emphasis on user and expert opinions), the consultative process has reinvigorated a commitment amongst these groups to understanding and addressing a range of population related issues. As well, the development of the model’s assumptions necessitated detailed examinations of existing datasets and this has identified areas where improvements in data quality and consistency were on offer. Age heaping, for example was found to be a problem for the non-Indigenous population in official figures while some unusual age-sex distributions were observed in the zero to five years cohort for Indigenous children.

Most importantly, projections such as NTPOP for remote areas provided a focal point for public debate of key demographic issues including ageing, housing, retirement and sustainability issues. In a sense then, the knowledge of technical and data limitations in relation to remote population forecasting, so persistently highlighted in the threads of this chapter, must be tempered by the potential for new knowledge to be generated from locally developed projections. Furthermore, the sharing of knowledge with NSOs and other data custodians gained via the process of local projections development may facilitate engagements focused on improving processes and techniques for small area population estimation and forecasting. In this sense, and because we fully expect them to be subject to high errors, the forecast numbers produced by NTPOP are of somewhat less importance than the processes which produced them since the processes themselves have yielded longer-term benefits. Nevertheless, considerable potential remains for improvements to remote area
population forecasting and the story from the NT suggests that achieving a balance between conceptual and strategic drivers will remain as the substantive goal.

### 7.6 Conclusion

Population enumeration, estimation and forecasting for Indigenous people in remote areas are necessary and important processes for ensuring that targeted policies and programs are informed by accurate knowledge about demographic compositions and spatial distributions. Remote areas and Indigenous populations within these receive special attention by NSOs to ensure that counts and estimates are as accurate as possible. The per capita cost of a completed Census from remote area residents is an order of magnitude greater than for urban equivalents for all the nations considered here. In Australia the Indigenous Enumeration Strategy has led to large improvements in the veracity of enumeration methods, however under-enumeration rates remain high for Indigenous people in the NT. With Census counts forming the basis of future-year population estimates as well as the base population for population projections, these issues confound our understanding of the current and possible future demographic picture since the size and locations (according to space and demographic descriptors like age, gender and so on) of errors are unknown, leading to propagation of these through modelling processes.

Most literature on remote area population enumeration, estimation and forecasting has pointed to negative effects from Indigenous mobility (especially that which features NT Indigenous people, but also for Western Australia and Queensland) for the successful conduct of Census and survey based data collections in remote areas. As a result there have been ongoing calls for explicit acknowledgement about the fluidity and churning nature of service populations within ‘mobility regions’ (for example, Long & Memmott, 2007; Taylor, 1998: pg.4) as the basis for decisions on service demand modelling within government.

Underneath calls for using service populations as the basis of funding models is the notion of Indigenous mobility regions as unbounded and often crossing jurisdictional boundaries. This is seen to render services provided by jurisdictional authorities as un-attuned to the needs of their clients according to spatial ‘touch points’ enacted through mobility. Mobility regions are portrayed as being embedded by culture and remaining relatively unchanged in space and over time. As a result almost all scholarly analyses of Indigenous mobility includes bemoaning of bureaucracies, including data collection authorities and data custodians, for an ongoing emphasis on discrete population counts (Taylor, 1998).
Some localised efforts have been made to map out mobility regions for individual clans and settlements but these are largely presented as spatially amorphous and accorded nuances of secrecy, anthropological homage and unbridled spirituality in the language which is used by researchers to describe them. Little accompanying research is provided to differentiate factors which have established the spatial realms of mobility regions and, more importantly, those which might re-define them over time.

This chapter calls attention to the more fundamental issue of baseline information from which the outcomes of migration and mobility are measured and considered. In discussing the substantial practical efforts undertaken by NSOs in developing better demographic data for the study of remote populations, this chapter has touched on bigger issues of perspective, ideology and polity as they apply to the measure and study of Indigenous demography. The governing perspective has been of introspect insofar as discussions of future demography are concerned, and for migration these are the basis of assumptions for official population projections. Inherent in such assumptions are notations on what is ‘best’ for remote living Indigenous people in the NT and the clear tenet is that what is best is for people to remain resident at remote communities. Subsequent projections inform policy which in turn determines the locations at which investments in services infrastructure and programs are made. Such investments tend to reinforce existing settlement patterns, and the cycle continues.

Accompanying this cycle of remote ‘investment’, and despite the opportunities created by the era of reconciliatory politics for Indigenous people to return to their traditional lands (Altman, 2000), there have been at best marginal improvements to the socio-economic status and general wellbeing of Indigenous people living in remote communities. As a poor reflection on decades of massive per capita investment into improving the sordid state of wellbeing ‘out there’, decades of funding has produced limited results across a gamut of socio-economic indicators.

In the field of Indigenous demographic research very few have paused to ponder whether and how the fundamental transitions in Indigenous societies in remote areas might generate new aspirations and decisions amongst cohorts of the population, notably the young. This thesis has identified and contextualised a few of these in Part I and examined the experiences overseas including the enabling effects of education; the emerging career and educational aspirations of women; the rollout and adoption of global technologies; the extreme effects of natural disasters, and so on. Even for societies founded on and operating with a degree of collectivism, migration is simply the expression of individual decisions about where to
reside at a particular point in time. This holds true for all cultures and all cohorts within populations. Given that the field of demography has a relatively poor handle on how and why populations are changing in remote areas, it is apparent that actual changes might go unnoticed or might be misinterpreted for something else (the ‘no change’ misinterpretation persists), particularly when the available data and methods of research are not sufficiently sensitive or innovative to facilitate different lines of enquiry for establishing knowledge about bifurcations from past trends. Part I of this thesis has addressed these issues from the point of view of Indigenous migration. In Part II a range of research inquiries are laid out; which are conceptualised outside of these long-standing and favoured paradigms in relation to Indigenous migration in remote Australia.
Part Two: Investigations of Future Migration Scenarios for Indigenous People in the Northern Territory
Chapter 8: Indigenous Mobility and the Northern Territory Emergency Response
8.1 Preface

This chapter is a modification of a peer-reviewed and published journal article which comprised two research components: a baseline analysis of Census data in relation to intra-Territory migration flows and the characteristics of migrants, and in-depth interviews with Indigenous people in remote communities regarding these. The Census analysis component is incorporated into Chapter Three of this dissertation and omitted from this chapter, which instead focuses on interviews (with around 450 people) undertaken by the author and a colleague in four large remote Indigenous communities in the NT. Accordingly, the introduction has been altered substantially to avoid duplications across the chapters. Information updating the reader on recent developments in relation to the NTER (post-article publication) is incorporated to the introduction. A paragraph has also been added to the methods section to better explain the nature of the interviewing processes.

The basis of the chapter is research which garnered individual accounts and perceptions of mobility-related impacts from the introduction of the NTER, a major Australian Government policy initiative of the recent Indigenous affairs era. The NTER was purported to have triggered large scale movements into regional centres and towns by introduction of its raft of programs and schemes. Particular attention was given in the media and by proponents of the NTER to prohibition of the sale and consumption of alcohol in remote Indigenous communities, outside of the regulated ‘canteens’ which exist in some. The research has been published in the peer-reviewed journal article:


The discussion and conclusion sections in this chapter include text lifted from the following peer-reviewed conference paper:


A framework for re-conceptualising Indigenous migration in the contemporary remote setting, presented diagrammatically and discussed in the final stages of this chapter, is lifted
from the latter article. This framework was conceived from research findings outlined in this chapter and was initially presented in Carson and Robinson (2008).

8.2 Abstract
A number of commentators blame the Northern Territory Emergency Response (NTER), introduced in June 2007, for promoting the movement of NT Indigenous people away from remote areas towards towns. Using both Census and interview data the authors show that rural-to-urban movement in the NT has been well established since at least 1991. Mobility patterns are complex; many moves are simply short-term. But over time the long-term trend amongst Indigenous people follows the rural-to-urban pattern that has been observed in numerous other locations within Australia and overseas. Indeed, in the short term the NTER is as likely to inhibit this mobility as it is to promote it.

8.3 Introduction
The purpose of this paper is to assess the impacts that the NTER may have on the intra-Territory migration patterns of Indigenous people in the NT. In doing so, data was analysed from the 1996, 2001 and 2006 Census of population and housing to establish an understanding of the dominant formal migration patterns that have existed over the past ten or more years. The results of these analyses are presented in Chapter Three of this thesis. The Census data served as a baseline against which interviews with residents in four of the larger Indigenous communities in the NT were conducted during the mid part of 2008, around a year after the announcement of the NTER and as the Income Management Scheme (IMS) was being rolled-out to the communities engaged in the research. The IMS is a program under which half of the welfare payments of people residing in prescribed areas (initially Indigenous communities) is quarantined to ensure those monies are used to purchase suitable goods and services and to prevent the purchase of non-prescribed items like alcohol.

The NTER was an Australian Government initiative arising from a 2007 report (titled “Little Children are Sacred”) to the Northern Territory Government documenting abuse and neglect of Indigenous children, particularly in remote communities (Northern Territory Board of Inquiry into the Protection of Aboriginal Children from Sexual Abuse, 2007). The NTER formally commenced in mid-June 2007, with an initial five-year timeframe. It involved a range of measures applied mainly to remote Indigenous communities in the NT (Australian Government, 2007). These included an increased police and a military presence in communities, tighter restrictions on alcohol and pornography, compulsory health checks for children, new housing construction, and a range of measures designed to increase school
attendance and decrease spending on de-merit items such as tobacco, alcohol and pornography (Department of Education, Employment and Workplace Relations, 2008).

Critics have argued that the NTER was enacted as a lever for suppressing Indigenous rights and for weakening their ties to traditional lands. One of the most controversial aspects was the suspension of the Racial Discrimination Act of 1975 and the removal of the protection of anti-discrimination law in the NT. This enabled NTER-specific legislation to pass through parliament. The actions of taking away the right to have alcohol and the quarantining of individual welfare payments were popularly seen to have ramped up the ‘drift’ of people into towns in search of alcohol and to escape the shocks created by the presence of a multitude of outsiders in communities, as well as from the programs they brought with them under the banner of the NTER (Altman & Taylor, 2008).

With a change of Australian Government in 2008 the incumbent Labour Party undertook a full review of the NTER (Australian Government, 2008). The major outcome was to cease the blanket application of Income Management and instead make it voluntary (to all NT residents), except where issues of child protection, school enrolment and ‘other relevant behavioural triggers’ were deemed to warrant compulsory Income Management (FaHCSIA, 2008). Furthermore, blanket alcohol bans were lifted so that:

> “Individual communities may ask to have local restrictions tailored to their circumstances, based on agreed alcohol management plans” (FaHCSIA, 2008).

Almost all of the other recommendations in relation to a revision of the NTER and its programs were supported by the Northern Territory Government (including the re-instatement of the Racial Discrimination Act) and this paved the way for the passing of the redesigned policy (termed NTER ‘redesign’) in mid-2010. The redesigned version of the NTER ends in August 2012 with consultations in progress between the Australian Government and Indigenous communities over what shape or form the NTER should take subsequently.

Despite revisions around many of its key initial requirements placed on individuals and communities which were seen to drive people to become transients elsewhere, the NTER is still being attributed for increasing mobility from communities to towns and urban centres (Sky News, 2011). A recent resurgence of commentary and interest in Darwin’s homelessness problem attributes these issues primarily to Indigenous ‘transients’ who have left communities temporarily as a result of push factors from the NTER (ABC, 2011b). This dialogue, often approaching extremist in tone and content, continues despite recent findings that a significant portion of the homeless population of Darwin are non-Indigenous and that
a significant proportion of the Indigenous homeless who were originally from communities have no desire to return there (Taylor & Carson, 2011).

This paper argues therefore that an understanding of the impact of events such as the NTER on migration patterns requires knowledge of historical conditions as well as of the actions that people may or may not attribute to the NTER. This paper is critical of claims by academics such as Altman and Taylor (NT News, 2008) which ostensibly blame the NTER for rural-to-urban movements of large numbers of (particularly young male) Indigenous people without consideration of historical patterns. Likewise, media sensationalism which blames Northern Territory Indigenous people ‘drifting’ across the border to take up (unwelcomed) residence in Mt Isa and other Queensland urban centres on the NTER (ABC, 2008) reflect a poor understanding of history. To illustrate, the NT News has reported on the migration of Territorians to Mt Isa since at least the late 1990s (NT News, 2002) and at least 600 articles were published in the NT News and Advocate newspapers about the urban drift of Indigenous people in the year 2000 alone. The prima facie evidence, therefore, is that recent observations of rural-to-urban migration represent a continuation of trends of at least ten or fifteen years (it is possible that the lineage could be traced much further) rather than an emergence of new patterns of mobility.

The questions of interest to this research include:

- Compared to the baseline patterns of migration between remote/ rural and urban centres in the NT, described in Chapter Three, can impacts be expected from major policy shocks like the NTER?
- Who (in terms of age and gender in particular) are likely to be effected and why?
- What insights can residents’ perceptions about policies like the NTER tell us about future migration and settlement intentions?

**8.4 Methods**

As part of a suite of research examining the impacts of various aspects of the Commonwealth Government’s management of remote Indigenous communities in the NT (including, but not limited to, the NTER), we interviewed more than four hundred Indigenous people resident in or around (for example, in outstations) four large remote Indigenous communities – two in the Top End, one in the Katherine Region, and one in Central Australia. These communities all had populations around or in excess of 1,000 residents according to the 2006 Census usual residence count.
Interviews were conducted as researcher-participant discussions from which the researchers attempted to garner participant ‘stories’ about the topics of interest. This approach is semi-structured but less so than a question and answer interview. It facilitates group as well as individual interviews and allows the participant to convey concepts, ideas, information and stories which they see as relevant to the question or theme. This approach is endorsed by the Human Research and Ethics Committee as appropriate for the conduct of research in the remote Indigenous community setting. It brings particular benefits in terms of allowing the cultural and language nuances of the local community to be accommodated in the interview structure and process. A translator accompanied the researchers to help assist with any difficulties in these areas.

We asked respondents about their personal migration habits and whether recent events (specifically the NTER) had affected those habits. We also asked respondents to comment on changes in migration patterns they had observed among their friends, family and other members of the community. We were particularly interested in short-term mobility (to address the gaps in Census data), but also sought confirmation of the long-term mobility patterns observed in the Census data. Interviews were conducted between May and October 2008. It is important to note that the four communities (which cannot be named here for confidentiality reasons) had quite different experiences of the NTER and so a different sample of communities may have produced different results. However, being four of the larger remote communities, they represented a substantial proportion (around a quarter) of the total remote Indigenous population of the NT. Most interviews were conducted with heads of families and with other family and community members recommended by those heads. The bulk of the data therefore represents observations by relatively senior people who have cultural and social responsibilities that include monitoring the flow of population into and out of the community.

8.5 Results

Interview respondents identified a range of reasons why people moved in and out of communities. Travel was a common and often necessary experience for shopping, sport, recreation (including gambling and drinking, but also hunting and fishing), health treatment, work and study, along with cultural obligations to attend funerals and other ceremonies. Given the distances and costs often involved in such trips, activities may be combined. Each community was able to identify a set of locations among which population flow was common (this included people from the community going to these locations and people from these locations going to the community). Flows related to attending funerals, for example, were primarily between the home community and one (sometimes more) discrete
communities where family ties are maintained. Shopping activities, by contrast, tended to be more widely dispersed and less predictable. Locations were both urban and remote, but the more regular trips (shopping, gambling, drinking, and sport) were from remote communities to urban centres of Darwin, Nhulunbuy, Katherine, Tennant Creek, and Alice Springs.

Respondents distinguished between mobility events which were supported by the community and those which were of concern to the community. Supported events included shopping, health treatment, sport and education, and cultural obligations. Concerning events were those related to excessive drinking and drug-taking. Some of these latter events involved longer term migration to larger urban centres, but many involved very short distance trips – to drinking camps established outside community boundaries, for example.

Given the wide range of mobility and migration motives, it was not surprising that respondents identified a range of community members who moved around. It was clear that young people (males and females) were more likely to move around than older people. At the same time, older people were likely to stay away for longer periods of time, particularly when seeking health care. In somewhat of a contrast to the Census results, young males were seen as those most likely to move around a lot, and most likely to move for reasons that were of concern to the community, but drinking related mobility, for example, was not solely the domain of young males.

Trip lengths to urban centres ranged from a few days to a few weeks. Respondents acknowledged that many types of moves (for education or work, in particular) would result in more or less permanent moves away, while most other people were expected to return to the community at some point. Moves were facilitated and hampered by access to transport (which could be seasonal) as well as access to money. The widespread use of telecommunications (specifically mobile phones) also enabled increased mobility by facilitating people making arrangements to visit family or friends and by informing people of special events that they might like to travel to (sporting events, concerts and so on).

A number of structures have been set up (and differ from community to community) to assist short and longer term mobility and migration. These range from assisting children to attend school in Darwin and Alice Springs and consequently assisting families to visit those children, through to programs to return problem drinkers to remote communities from Darwin and Alice Springs. These types of programs have been in existence for many years and recognise the need for people to travel (for health, education, shopping) as well as the desire to travel (for socialising, sport and recreation). Their net effects in terms of stimulus of migration types (rural-to-urban, urban-to-rural, short term, long term) have not been analysed, but respondents suggested impacts were complex, with some programs
encouraging moves out of the community and some encouraging moves back to the community.

Respondents likewise had mixed views about the impact of the NTER on mobility patterns. They pointed out that many of the changes in lifestyle that may have been attributed to the NTER (alcohol restrictions, welfare reform and so on) had been occurring for many years prior to June 2007, and while these changes had contributed to patterns of mobility, it was difficult to attribute additional change specifically to the NTER. Some respondents claimed that increasing mobility (particularly leaving the community) was a common short-term reaction by some groups (particularly young males) to any substantial change in community life – the death of an elder, a police crackdown on marijuana use, the introduction of new regulations and so on. The NTER represented another of these changes, and so respondents expected increased mobility in the short term. They also felt that patterns stabilised once changes became absorbed or were reversed, and expected that this would also happen with regards to NTER inspired mobility. Respondents were reluctant to provide estimates of how many people had been affected by the NTER in this way.

On the other hand, some respondents suggested the NTER resulted in reduced mobility because of the red tape associated with temporarily changing residence (particularly with regards to making arrangements to access quarantined welfare payments), and the decreased capacity for people to pool money and share EFTPOS personal identification numbers and so on. This was because income management regulations emphasised individual responsibility for individual income over what had previously been more communal approaches. The NTER has also included investment in new services located in communities (including health care services, such as dialysis centres, and improved shopping facilities) which might reduce the number of reasons why people needed to move around.

The overwhelming perception of respondents was that people who wanted to move around, for whatever reason, would do so whatever rules were imposed by the NTER. Communities where royalty monies from mining and other ventures are distributed to families at relatively frequently intervals are a prime example. They have long experienced peaks in out migration to urban centres for shopping (and, where royalties are concerned, particularly for large items like cars and furniture), relaxation and socialising and the in migration of family at royalty time to share in the period of heightened social activity surrounding the influx of money. There was also widespread recognition that all communities experienced high levels of population mobility before the NTER and would be likely to continue do so in the future. Rural-to-urban migration had been, and would continue to be, most common, and young males would continue to be particularly mobile.
8.6 Discussion and conclusion

Community members had mixed opinions about the impacts of the NTER on patterns of mobility, but they were agreed that, while there may be changes in degree (number of migrants and timing of movement), the trend of movement mainly from remote areas to urban centres had been well established before the NTER for a wide range of reasons. Populations previously at risk of migration out of the community continued to be at risk. The NTER may well have introduced changes which are as likely to restrict mobility as to enhance it.

Meanwhile, post-NTER Indigenous policy reform from the Rudd Government, including proposed Community Development Employment Projects and welfare reforms under the Closing the Gap initiative, has espoused the role of job creation in remote communities for addressing socio-economic disadvantage while saying very little about the employment and career prospects of the growing number of urban Indigenous residents. With urbanisation comes the need for policies to transition migrating people into suitable forms of housing and into the mainstream labour market. At the same time urbanisation might be seen as beneficial because it situates those who have migrated closer to health, education and other essential services which are lacking in many remote communities and cost inordinately more per capita to provide there. For some, proximity to services in urban areas may be a catalyst for a change in their life course which helps promote more active engagement in the mainstream economy. But at the same time, interview respondents said little or nothing about the role of mobility in providing better access to jobs or career paths. This is perhaps indicative of the primacy of mobility as an enabler for meeting the immediate and fundamental needs of individuals and families. This includes the need for health treatment, the need for shopping, the need to consume alcohol, and so on.

While this study has shown that Indigenous people in the NT are urbanising, it has not identified whether a returning (de-urbanising) cohort of people (who make a residential move to urban areas, and declare so on the Census form, but subsequently move back) exists. Nor has it described the relative socio-economic fate of such people as they transition from a remote community to an urban centre and then back. Indeed there was evidence from interviews that the NTER contributed to at least some of these types of movements as people sought to escape the perceived negative consequences of the NTER, and particularly Income Management measures, but subsequently realised that these consequences followed them to the city. This is just one of many areas of need in terms of further research.

For policy makers, coming to grips with the perspectives articulated by Indigenous people in this research may require a shift in mindset. As Prout has recently discussed, gaps in our
knowledge of the structural context of Indigenous mobility have fed perceptions of it being strongly linked to negative things like disengagement from the mainstream economy and anti-social behaviour. The clearly dynamic and complex nature of Indigenous mobility drivers are on show through the results of this research. But more importantly, mobility patterns and flows seem so well entrenched that they are resistant to policy and legislation which, *inter alia*, might be expected to affect such phenomena. Policy and service delivery models which seek to understand and recognise, rather than politely ignore, Indigenous perspectives on mobility are more likely to succeed.

It may be more productive and appropriate for both policy makers and academics in the field to consider these findings as indicative of a system of migration and mobility which includes residential (permanent) moves from more to less remote places, temporary and short-term moves, and welcome and unwelcome moves, all of which may result from a spectrum of drivers. Within this, marginal benefits from employment and education are two of many factors. Transitive to this perspective it is possible to conceive and discuss a range of both positive and negative outcomes. In Figure 15 a framework for describing our understanding of rural-to-urban migration in the NT is presented. It depicts a suite of possible outcomes for the person moving, their community of origin and for the destination. Amongst these are reduced costs and enhanced access to services from the relocation of Indigenous people from remote areas (temporarily or otherwise) to urban centres, as well as the flow on effects for personal health and wellbeing which may result.
The complexity of the framework and the diversity of possible outcomes make it clear that changing the fundamental patterns would be very difficult. Evidence from overseas, and especially in the literature on Chinese migration to the cities, demonstrates the resilience of urban migration even in the presence of imposing policy which at times has created institutional barriers for reducing, and in some cases, discouraging altogether such movements (Zhao, 2003). In the NT more attention and energy might be paid to maximising the potentially beneficial outcomes and minimising the potential negative outcomes outlined in the framework and evident in the experiences overseas. Transitioning new urban residents to employment and education is obviously a key but, unlike the tenant of HT models and their more contemporary derivatives, not necessarily the most significant driving force.

In summary, Indigenous mobility in the NT (and possibly across Australia as a whole) has been poorly analysed in the academic literature to this point. The domination of post-colonial anthropological views of remote dwellers and their attachment to culture and community have precluded broader, and probably more relevant, attention to more robust demographic migration models, particularly of rural-to-urban migration. The NTER is one of a number of shock events and longer term local and global trends which contribute to the emergence of particular patterns of mobility. It is difficult to argue that the patterns observed
in remote Indigenous Australia should be any different to those which have emerged in other
developed and developing nations struggling with issues of regional development and the
attraction of the cities. Reversing provisions of the NTER is unlikely to reverse the
migration patterns which have been observed in this research. Better informed public debate
would recognise the history of mobility that includes all the patterns now being blamed on
the NTER. In doing so, we would be able to develop better models for testing the specific
impacts of the NTER (and other interventions) and provide better advice for generating and
receiving communities about how to manage mobility.
Chapter 9: Current Evidence of ‘Female Flight’ from Remote Northern Territory Indigenous Communities: Demographic and Policy Implications
9.1 Preface

This chapter is a reprint of a published and peer-reviewed journal article as follows:


The research deals with the vital issue of gendered migration from remote Indigenous communities in the NT. It extends research undertaken in the Arctic Circle (in Greenland, Sweden and Norway in particular) which found shifting Indigenous settlement patterns were first observable in the form of rapidly increasing rates of female out-migration from small and remote Indigenous communities. These left the demographic ‘footprint’ of a very high sex ratio at individual communities with serious social and economic issues following.

9.2 Abstract

A small body of research has demonstrated the dramatic social, settlement and demographic effects of Indigenous ‘female flight’ from remote communities in Alaska, Canada, and the Northern Sparsely Populated Areas of Europe. In the Northern Territory of Australia, remote Indigenous settlement patterns are highly similar to these areas but neither research nor policy have had anything to say about whether female flight has or might also impact there. This paper applies quantitative tests to thirty years of Census data to look for evidence of precursors in the NT and discusses the demographic and policy implications in light of the findings.

**KEYWORDS:** Indigenous migration, Female flight, Rural-to-urban migration, Northern Territory Aboriginal communities

9.3 Introduction

Quantum shifts in Indigenous settlement patterns have occurred as a result of rural-to-urban migration amongst the developed nations in Northern Europe and the Americas during the post-WWII era (Williamson et al., 2004; International Organisation for Migration, 2008). The phenomenon saw pipelines of migration away from small Indigenous communities into larger towns and cities driven by a number of factors drawing people to larger centres and also
pushing them away from communities. Key amongst these was the role of improved educational outcomes for remote Indigenous residents in Alaska, Canada and the Northern Sparsely Populated Areas of Europe (Knapp, 2000). Migration away from these spaces commenced with, and was sustained by, females who became over-represented in the out migrating cohort (Hamilton & Otterstad, 1998) with the consequences being largely ignored until they became dire (Pedraza, 1991). Women were not only more likely than men to migrate away, but also more likely to do so on a permanent basis and in their 1994 study, Hamilton and Seyfrit labelled these gendered differentials in out migration as ‘female flight’.

The tenet behind female flight is that a host of structural and aspirational factors associated with the engagement of communities in the knowledge economy have facilitated the migration of women to larger towns and then to cities (Rasmussen, 2007). The transition away from traditional life saw women, more so than men, engage actively and more comprehensively in education and career planning. Educational introspectiveness was noted especially in very small communities where Hamilton and Seyfrit (1994) and others found that female Indigenous high school graduates were placing a greater emphasis on mapping out and planning for future educational pathways. They found that females were better able to identify and articulate the skill sets required for building their careers, placing an emphasis on generic business skills which they could apply across a range of occupations. Importantly, the young females in Hamilton and Seyfrit’s study (1994) were accepting of requirements to move permanently from their villages to establish their careers. Young males, by contrast, were reportedly focused on the very specific skills required for trade jobs in extractive industries (Nelson & MacKinnon, 2004). With work available these industries in remote areas, over time males were less likely to move away for work and less likely to devote time and effort to education.

For the Arctic, the literature has emphasised the permanent departures of women from communities as a bifurcation from the previous predominant migration flows where young men engaged as migrant workers outside of their traditional areas (Rasmussen, 2007; Bjarnason & Thorlindsson, 2006). Meanwhile cities have in general become increasingly attractive to rural populations for reasons beyond education and employment (Ma, 2001). In his study of Indigenous migration from the northern frontiers of Canada, Petrov (2007), for example, has emphasised the role of negative issues in home communities for driving residential out migration. Once in the cities, it is apparent that females have been more likely than males to hold on to new jobs and then progress their careers (Carson & Taylor, 2009). Institutional economics argues that moving to the city at a particular life stage (be it for education, entertainment, employment or some other reason) can become a rite of passage for people from rural communities (for example, Horvth, 2008; Monsutti, 2007) but this is generally expressed in the literature as a male domain. Meanwhile, advances in telecommunication technologies
have assisted the urban diaspora to maintain important social and familial ties with those remaining in communities (Limstrand & Stemland, 2004) thereby reducing the emotional burden of migration. Urban areas have more shops, more entertainment facilities, more education and training opportunities, and a greater selection of potential marriage partners, making them ‘sticky’ for recent arrivals.

Notwithstanding these observations, economic transitioning for remote areas in developed nations has clearly occurred along non-discrete pathways. Diversity in the historical development of communities is observed in the demographic and economic diversity inherent in such populations today. Consequently, the process of transitioning between traditional lifestyles and its gender specific roles and norms, and the uptake of work and education has been staggered over time and space. For individual communities, female flight was first detected by dramatic rises in the sex ratios for source communities (Hamilton & Otterstad, 1998). The entrenchment of this ‘footprint’ of a female deficit was nevertheless disguised in some places by the arrival of temporary male workers in extractive industries (Hamilton, 2008) where the full effects went unnoticed until employment in these diminished. Notably in Alaska and elsewhere, many women migrated with their children and few returned (Martin, 2009). Such migration impacted on fertility and population renewal and in the long run became “…particularly acute issues of individual and cultural survival” (Hamilton & Seyfrit, 1994: p.16). More immediately, the out migration of women prompted school closures and reduced the opportunities for employment in situ in this sector. Socially, the departure of females saw increased abuse of women (especially teenagers) and growing self-destructive behaviour like alcoholism amongst males (Hamilton & Seyfrit, 1994). Where these became commonplace, the departure of women was thought to have accelerated in response to declining community functionality.

Indigenous migration studies in the remote Australian context reveal immensely complex issues in relation to the interplay of culture, modernisation and individual behaviours. Hence, while the outcomes of migration choices are depicted as individualised (demographic) data, the drivers of such are rarely so. Uncertainties around cause and effect have long been a dominant thread in discussions in the literature (for example, Taylor & Bell, 1999). The introduction of the motor vehicle to remote parts, for example, provided a new means of mobility and facilitated more people to travel further distances for kinship and cultural purposes (Petersen, 2004). Conversely, vehicles also enabled more ready access to towns where alcohol was available, with the legacies of these introduced spatial reformations remaining today. Establishing the relative influence of moieties on migration and other behaviours is one example of how complex the depiction of future scenarios in relation to remote residents has
become, not just in a demographic sense, but across the spectrum of economic, social and other issues.

In the Northern Territory of Australia, around a third of the population is Aboriginal. More than half live in remote areas outside of the urban centres of Darwin and Alice Springs, and most of these in small and discrete Aboriginal communities. The population structure there is youthful, reflecting low life expectancies, and these communities are well documented as places of socio-economic depravity (Taylor, 2003b). In political and academic circles, conflicting and trenchant ideologies persist on the value of ‘staying on country’ versus the benefits larger settlements offer residents for engagement with mainstream economic institutions and services (Rothwell, 2009). Large sums of Australian Government and NT Government funds are set aside under a raft of policies and programs to improve living conditions, develop infrastructure and deliver sustained improvements to Indigenous wellbeing. Improved educational outcomes are, for example, a key plank under the ‘Closing the Gap’ targets announced by the Australian Government in 2007 (Macklin, 2008). Meanwhile the Working Futures strategy of the Northern Territory Government seeks to establish 20 ‘strong towns’ through the intensification and streamlining of service delivery, improved transport networks and the creation of ‘real’ jobs (Henderson, 2009). Importantly, Working Futures curtails funding for homelands which are unoccupied for more than 3 months of the year, a decision which has attracted derision from homelands advocates for subjugating the residential choices of remote Aboriginal people (for example, Murdoch, 2009).

Despite the importance of these contextual debates, and the relative size of the Aboriginal population, extant research on Aboriginal residential migration in the NT is scant and there have been no attempts to lay out future demographic scenarios based on the overseas experience in places with highly similar settlement demographics. Research has instead focused on the domain of cultural continuance where migration is posited as short term, temporary and circular in terms of individual itineraries (Prout, 2008a; Taylor & Carson, 2009b). In part, the introversion of theory and research reflects sustained government efforts to balance progress with cultural maintenance, and research has focused on the issues for supporting this quest. Within this context, Aboriginal migration has by and large viewed as problematic for its effects on individual engagement with official systems. Public discourse too has targeted perceived negative outcomes from short term movements (particularly males) into towns, labelling it as ‘urban drift’. The phenomenon has received a disproportionate amount of attention given there has been little evidence brought forward to quantify its patterns and volumes (Taylor & Carson, 2009a).
Some evidence of Indigenous urbanisation in the NT has been provided by Taylor and Carson (2009) and, while the numbers are small, females have been over-represented in the urbanising cohort. Indications of the possible role of education are evident with, for example, 70 per cent of Indigenous post-school qualifications held by females in 1986 (ABS, 1990). By 2006 females made up close to 60 per cent of Indigenous people in remote areas who had completed the final two years of high school (Year 11 or Year 12) and 70 per cent of graduates at the advanced diploma level and above. Given this, it may be argued that remote NT communities are primed for female flight. This research poses the question of whether, and to what extent, demographic pre-cursors exist in the remote Northern Territory Aboriginal communities. To test this supposition we examine long term trends in the sizes and sex ratios for clusters of Aboriginal communities and conduct empirical tests to check for the emergence or existence of female flight. We reflect on the results by considering the social and political consequences for the NT in light of the findings.

9.4 Methods

This research analyses 30 years of Census data (1976 to 2006) for the NT. The geographical level of analysis is Urban Centre/Localities (UCLs, or places with 200+ residents) located in remote or very remote areas with more than a 50 per cent Indigenous share in the population, and with an absolute size of less than 3,000 residents. This places the urban centres and mining towns (i.e. Darwin, Alice Springs, Nhulunbuy, etc.) out of scope. Communities were clustered according to size: large (1,000 or more), medium (500 to 999) and small (200 to 499). Variants of tests conducted for other countries (see Hamilton, 2008; Hamilton & Otterstad, 1998; Hamilton & Seyfrit, 1994) were applied to 2006 Census data to examine for statistical relationships between community size, age and per cent female across 55 Aboriginal communities. Correlation tests between per cent female and the logarithm of population size for ages 20-39 years (the age group identified by Hamilton (2008) as most likely to exhibit a female deficit) were conducted and extended to include comparisons to other age groups.

There are a number of weaknesses with this approach. First and foremost it is relatively broad brushed, a function of poor data and the need to determine the baseline situation in the absence of pre-existing work on the topic. Issues with data quality and coverage for remote Indigenous populations are well documented in the Australian context (for example, Ross, 1999) including high rates of Census undercount. Undercounting is thought to be higher for males than females, and this no doubt directly affects the sex ratios in some communities (ABS, 2007a). Sex ratios themselves may be misleading at the small area level when examined over time due to changed Census procedures, changing propensities to identify as Indigenous and due to differential life expectancy gains across genders and ages in the NT (Wilson et al, 2007). Furthermore, Census
data captures only a snapshot of lifetime migration at one and five years prior to the Census date. Finally, the empirical tests say nothing about how reverse (urban-to-rural) migration in the NT may have impacted on population structures in settlements and this warrants further research.

9.5 Results
Remote Aboriginal communities, as defined for this research, were home to 24,773 Indigenous residents in 2006, or around 46 per cent of the total Indigenous population of the NT. The sex ratio for all communities in 2006 was 95.5 males per 100 females. There were also 2,200 non-Indigenous residents in communities and 881 who did not provide their Indigenous status. Outside of communities, around a quarter of all Indigenous people in the NT said they lived in places of less than 200 residents (stations, very small communities, etc.), 23 per cent lived in Darwin and surrounds (including Palmerston) or Alice Springs, and six per cent lived in the regional centres of Katherine, Jabiru, Nhulunbuy, Tennant Creek and Yulara.

In 2006, Community populations were clustered into four large, 20 medium and 31 small communities. The average size of large communities has increased steadily, and by around 60 per cent from 1,027 in 1981 (there were no large communities in 1976) to 1,615 in 2006 (Table 4). For medium sized communities, the average size in 2006 (712) was similar to 1976 (709) and has not fluctuated substantially over time. Small communities have decreased in size by around five per cent (to 305) from their average size of 320 in 1976. However, the average size of small communities has been quite variable.

Table 4 - Selected measures for remote NT communities, 1976 to 2006

<table>
<thead>
<tr>
<th>Year</th>
<th>Measure</th>
<th>Large communities</th>
<th>Medium communities</th>
<th>Small communities</th>
<th>Total for discrete communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>No. communities</td>
<td>0</td>
<td>15</td>
<td>12</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Median size</td>
<td>n.a.</td>
<td>709</td>
<td>320</td>
<td>538</td>
</tr>
<tr>
<td></td>
<td>Per cent female</td>
<td>n.a.</td>
<td>50.3%</td>
<td>50.5%</td>
<td>50.4%</td>
</tr>
<tr>
<td>1981</td>
<td>No. communities</td>
<td>2</td>
<td>13</td>
<td>11</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Median size</td>
<td>1,027</td>
<td>635</td>
<td>375</td>
<td>542</td>
</tr>
<tr>
<td></td>
<td>Per cent female</td>
<td>51.9%</td>
<td>51.9%</td>
<td>50.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>1986</td>
<td>No. communities</td>
<td>3</td>
<td>12</td>
<td>19</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Median size</td>
<td>1,068</td>
<td>652</td>
<td>322</td>
<td>493</td>
</tr>
<tr>
<td></td>
<td>Per cent female</td>
<td>51.2%</td>
<td>51.5%</td>
<td>50.5%</td>
<td>51.1%</td>
</tr>
<tr>
<td>Year</td>
<td>Measure</td>
<td>Large communities</td>
<td>Medium communities</td>
<td>Small communities</td>
<td>Total for discrete</td>
</tr>
<tr>
<td>------</td>
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<td>-------------------</td>
<td>--------------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td>No. communities</td>
<td>5</td>
<td>9</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>1991</td>
<td>Median size</td>
<td>1,131</td>
<td>699</td>
<td>368</td>
<td>587</td>
</tr>
<tr>
<td></td>
<td>Per cent female</td>
<td>50.6%</td>
<td>51.9%</td>
<td>50.4%</td>
<td>51.0%</td>
</tr>
<tr>
<td></td>
<td>No. communities</td>
<td>5</td>
<td>12</td>
<td>23</td>
<td>40</td>
</tr>
<tr>
<td>1996</td>
<td>Median size</td>
<td>1,274</td>
<td>724</td>
<td>355</td>
<td>550</td>
</tr>
<tr>
<td></td>
<td>Per cent female</td>
<td>50.7%</td>
<td>50.8%</td>
<td>51.1%</td>
<td>50.9%</td>
</tr>
<tr>
<td></td>
<td>No. communities</td>
<td>4</td>
<td>17</td>
<td>30</td>
<td>51</td>
</tr>
<tr>
<td>2001</td>
<td>Median size</td>
<td>1,364</td>
<td>720</td>
<td>317</td>
<td>555</td>
</tr>
<tr>
<td></td>
<td>Per cent female</td>
<td>51.1%</td>
<td>50.8%</td>
<td>50.7%</td>
<td>50.9%</td>
</tr>
<tr>
<td></td>
<td>No. communities</td>
<td>4</td>
<td>20</td>
<td>31</td>
<td>55</td>
</tr>
<tr>
<td>2006</td>
<td>Median size</td>
<td>1,615</td>
<td>712</td>
<td>305</td>
<td>563</td>
</tr>
<tr>
<td></td>
<td>Per cent female</td>
<td>50.7%</td>
<td>51.1%</td>
<td>51.6%</td>
<td>51.2%</td>
</tr>
</tbody>
</table>

Note - this table includes data for Indigenous residents only

The per cent female in the population has grown in small communities but has fallen for large ones (in particular) and for medium sized communities to a lesser extent (Figure 16). In 2006 the rate was 51.6 per cent for small communities, 51.1 per cent for medium sized and 50.7 per cent for large communities. In all cases it is apparent there is no significant emergent or emerging female deficit. In small communities, for which female flight was first observed in rural-to-urban migration in other countries, the per cent female has actually increased over time.
Nevertheless, in comparison to urban areas, a deficit of females in communities is observed in 2006 with the per cent female at 51.2 per cent compared to 53.5 per cent in urban areas. Figure 17 plots the age specific gaps in the per cent female in urban UCLs versus remote UCLs. A clear deficit is evident in remote UCLs from age 40 years and above.
In comparing the per cent female in communities across specific age groups, an emergent gap in the 15-29 years age group is noticeable since 1996 when compared to all other ages combined (Figure 18). The per cent female aged 15-29 is observed to have fallen substantially since 1991 while rising consistently in all other age groups since 1986.

The application of Hamilton’s tests to the supposition of a relationship between per cent female and the log of community size for discrete Aboriginal communities was applied to 2006 data. It reveals (unsurprisingly given the results above) that no discernable relationship exists for communities in the NT (Figure 19) with at best a weak correlation evident. A repeat of the test across all age groups (0-14, 15-29, 30-44, 45+) yielded similarly weak correlations.
Figure 19 - Correlation of per cent female to the log of community size, 2006

9.6 Discussion and conclusion

This research into examining available data for the emergence or existence of female flight from remote NT Aboriginal communities has revealed mixed results. On the one hand no evidence of a footprint exists in small communities where we would expect to find the effects if trends overseas were replicated in the NT. However, there are clearly deficits of women in remote locations in comparison to urban areas, most noticeably from ages 40 years and onwards. And while no sign of a ‘wave’ of female out migration to urban centres or interstate exists, there are strong indications of female deficits in a handful of communities where sex ratios have risen consistently over time. These are of varying size and with no apparent spatial patterning. Changes in the average sizes of clusters of communities are consistent with expectations under conditions of rural-to-urban migration with small communities progressively decreasing in size and large communities expanding over time. The expansion of the largest of communities has and may continue to place added pressure on housing and services there, with crowding of houses already documented as a major social issue.

What does stand out in the results is the apparent out migration of older women from large communities in particular. The question is why this is the case? Part of the answer might be
found in the conditions of poor housing, a lack of services and poor prospects which are faced by residents on a daily basis. Education too may be playing a role in pushing older women to urban centres since, although standards and outcomes have been low, educational facilities have at least been present in the larger communities for some time. It may be, therefore, that a form of female flight is occurring on a small scale but that its composition and magnitude does not approximate what has been observed elsewhere. Whereas in other countries out migration has been the domain of primarily young and educated females, in the NT a deficit is being established amongst older and more educated women. Comparatively, out migration of older women produces reduced effects on fertility and perhaps mitigated social consequences. But a growing urban diaspora of older women may revise the dominant short-term and residential migration patterns observed to date, notably in the form of visits by community residents to relatives and friends, as well as the likelihood of travel in the reverse direction.

But detecting female out migration is, as we have discussed, hindered by a mix of changed (generally improved) procedures for Census enumeration, changing propensities to identify as Indigenous and other data issues. These mean that generalisations about the long-term demographic trends at community levels should be treated with caution. Further complicating the issue are age and sex specific improvements to Indigenous life expectancies which have altered survival rates unevenly (see Wilson et al., 2007). Consequently, it may be that the observations made here reflect a combination of these factors and nothing more. Indeed the purpose in this paper is not to present female flight as *fait accompli*. Aside from industrialised countries, the experience of poorer nations has been the opposite. Gendered differences in rural-to-urban migration in sub-Saharan Africa, for example, were strongly male orientated post-1960s due to the migration ‘drag’ of very high fertility rates (Brockerhoff & Eu, 1993) and from the disproportionate incentive of higher wage gains to be had by males who migrated to urban areas (Agesa & Agesa, 1999). However, as with female flight, males who migrated had superior levels of educational achievement.

Thus, talk of radical change must also be tempered with knowledge about the spectrum of complexity which underlays the data, including the demographic, social, political, historical, and economic circumstances affecting Aboriginal communities in the NT. These factors render generic suppositions about their settlement futures to be unsatisfactory, since each is located at a different starting point; a distinction which appears to have been lost in the recent political climate where blanket approaches to mending Indigenous disadvantage are favoured. Whether or not the observations made here are identified as evidence of female flight, this study raises issues of how new populations for remote communities may be sourced if current trends persist or accelerate. It has been well documented that the NT struggles to attract non-Indigenous migrants from other parts of Australia (it is more successful in attracting international migrants,
although it is not known how long they stay in the Territory). The social, cultural, and legal structures around remote communities in the NT also make it difficult to introduce new long-staying populations. It is also difficult (often impossible) to buy property or establish businesses. There is a strong divide between the ‘permanent’ populations (often Indigenous people with land rights claims) and the more temporary ones (often non-Indigenous people working in the government service sector on short term contracts).

This study also highlights that a better understanding of the migration futures of remote Indigenous populations is required for improving population projections modelling in remote Australia. This might commence with research which attempts to gauge the future aspirations of women in relation to education, place of residence and engagement with the global world as a baseline. Current approaches are focused squarely on short-term mobility (ABS, 2004; Taylor & Carson, 2009a) and deal uncomfortably with issues of intra-regional and cross-border migration. Residential migration has long been conceptualised as a minor redistributive force in the spatial realm of remote Aboriginal populations in Australia but the debate must allow for alternative paradigms. Specific research is also required to monitor changing fertility rates since it is expected that the number of births and the TFR will fall with continued trend of relatively higher rates of net out migration by females.

Female flight is just one of the many issues in the hotly debated space of appropriate models for depicting and describing economic development and improved wellbeing in the remote Indigenous context in Australia. The potential for female flight to occur highlights the importance of demographic futures to be considered as both inputs to and outcomes from policies aimed at ‘closing the gaps’. This is particularly so in the current climate where blanket approaches are applied to disparate demographic contexts and without due consideration of the experiences for small communities in the remote parts of other countries. If the desired outputs from policy remain fixated on a set of quantitative ‘proofs’ of gap closing, there are real possibilities that such policies will drive opposite effects in some communities and regions. Education in situ is one example. Thus, while the evidence presented in this study is mixed, for policy makers there may be greater rewards in focusing on increasing the opportunities for welcome outcomes from residential migration as well as managing its effects on those who choose to remain as residents of remote communities.
Chapter 10: Conceptualising and Measuring Indigenous Student Mobility in the Northern Territory
10.1 Preface

Educational qualifications are universally denoted for driving mobility and enabling individuals to pursue further opportunities by relocating. Conversely, high rates of Indigenous mobility in remote areas in the Northern Territory have been identified as one reason for the ongoing low rates of educational achievement by students residing there. This chapter is a reprint of a peer-reviewed journal article which reports on exploratory research and analysis using an administrative dataset to determine existing patterns and mobility flows for school-aged Indigenous people in the NT:


10.2 Abstract

The vexed and ongoing issue of poor educational outcomes for Indigenous students in the NT continues despite years of successive programs and policies. Much of the debate has been on funding and pedagogy, in particular the merits or otherwise of bi-lingual teaching. Largely omitted from discussions, although well known by teachers and schools in remote areas to be an issue, are high rates of in-term student mobility. Such ‘unexpected’ moves are thought to affect the capacity for students to achieve benchmark outcomes, for teachers to deliver these and for schools to administer their students within the allocated systems and budgets. Up to now teachers and schools have relied on anecdotes to engage in dialogue around the impacts of mobility. This is because adequate conceptualisations for aggregating, depicting and reporting on the size and nature of in-term mobility were not available. This paper documents several years of work into producing these outcomes. Three measures are conceptualised and outlined in this paper which will be of interest to teachers, schools and educational administrators in all jurisdictions where services are delivered in a remote setting. The results clearly demonstrate the high churn of Indigenous students within terms, especially in remote areas of the NT. The findings from this study can be applied to inform funding and policy making and as a basis for further research to document the impacts for teachers and schools.

10.3 Introduction

The historical record of Indigenous student outcomes in the remote NT (population around 225,000) of Australia is demonstrative of the difficulties of delivering education within a geographically isolated setting and to students from culturally specific contexts. More than a
third of the population, and half of those outside of its capital city Darwin, were recorded as Indigenous in the 2006 Census (Taylor, 2009b: pg.2). Disparate rates of urbanisation between Indigenous and non-Indigenous people (although both are urbanising) are resulting in increasing concentrations of Indigenous Australians in the most remote areas (Taylor & Carson, 2009a). Here, Indigenous people are known for their high mobility with much of the extant demographic literature depicting a consistently churning population where individuals and groups undertake short visits away from their ‘home’ communities (Taylor, 1998). The phenomenon has most commonly been described as ‘temporary mobility’, where a change of residence is not featured, and where fluid exchanges of populations in, around and between discrete communities as well as between these and towns or urban areas is commonplace (see Long & Memmott, 2007; Taylor, 2006; Prout, 2008a).

The accurate measurement and depiction of temporary Indigenous mobility in remote Australia is a well known problem, highlighted especially in the north of Western Australia, the NT and in northern Queensland. Two main reasons for this can be themed from the academic literature. Firstly, there are no nationally (or even State/Territory) consistent databases for measuring the size and spatial realms of the phenomenon. Secondly, its drivers are complex and heavily interwoven with cultural, historical and other factors. These provide the perception of a population whose actions contradict the norms and expectations of the modern society and its service delivery institutions, including for health and education. Nevertheless, Taylor and Carson (2009) found temporary mobility in remote NT to be very much embedded in a common set of drivers and around a multiplicity of individual needs and requirements. Importantly, their work advocates that temporary mobility is well entrenched at the local level, to the extent that patterns are not fundamentally altered by the introduction of shocks from policy or programs.

Temporary Indigenous mobility can fundamentally alter the demographic size and characteristics of populations at both the receiving and source locations. In line with this, levels of demand for services may fluctuate according to the characteristics of temporary movers (Biddle & Prout, 2010). Warchivker et al. (2000) and Taylor (1998) propose that three populations are important for understanding the potential demand for local services – the base population (essentially the official Census count), the maximum population (based on the highest count of persons per dwelling from administrative or other sources) and the service population. The service population is described Bell & Ward (2002) as either the larger of the latter two population types or the difference between usual residence and place of enumeration counts from the Census.
For these sorts of reasons, temporary Indigenous mobility continues to be denoted as problematic both by measure and in its impacts. Prout (2008a) highlighted this perception as derivative of the lack of knowledge and understanding about Indigenous mobility practices, in itself stemming from a lack of reliable data for depicting and understanding it. Consequently, aspersions have long been cast on mobile Indigenous people in remote areas (although almost no studies identify who ‘they’ are) for ‘opting out’ of the systems, institutions, and infrastructures put in place to provide them with lifestyles approaching equivalence to those in less remote parts of the Territory. On the surface, such sentiments might reflect the frustrations, born out of a lack of progress in ‘closing the gap’, where education features prominently in the Australian context (Lynch, 2009). Specifically, Indigenous spatialities (the places people live at, move to and move through) is one of many elements contributing to the very high costs of service provision in remote areas where populations are dispersed, dynamic and fundamentally different in terms of their demographic characteristics when compared to non-remote populations.

Demonstrative of these issues, the delivery of education in the NT is acutely affected by the demographic and settlement characteristics of its population. It has a high Indigenous composition (around one third), with a large proportion (around 80 per cent) living in remote or very remote areas. In 2008, just over 40 per cent of the school aged population enrolled in transition to Grade 12 was Indigenous, compared to around four per cent nationally (DET, 2009). Meanwhile, more than 40 per cent of all government schools in the NT have close to 100 per cent Indigenous enrolments, and the majority of these are in remote areas (DET, 2009). The costs of education delivery within this context are, unsurprisingly, high.

Indigenous student mobility and its impacts for schools and students in remote areas and has been touched on only at the periphery of the educational literature for Australia, and barely at all in the migration literature, despite commonalities existing across the north of Australia. Although some programs are in place to track students and deal with the outcomes of high mobility (for example the Individual Learning Plan Toolkit within Queensland Education’s Building For Success strategy), attempts to quantify the size of the issue, the spatial characteristics of mobility flows, and the characteristics of mobile students (for example, age, gender and Indigenous status) have not successfully delivered a consistent and comparable research based account of in-term mobility. The availability of such information is the necessary starting point for assessing teacher workload, individual and school impacts and for discussing how to deal with it on a system-wide and informed basis.
There is some literature for the NT which hints at the size of the issue. Dunn (2009), for example, has documented a remote homeland school in the NT which had on average 100 students attending per day, but had a throughput of twice this amount of individual students during the year. Fluctuations of this order complicate the allocation of resources ‘on the ground’ since estimates of workloads are generally made prior and on the basis of official counts or estimates. Funding allocation models deal poorly with such fluid populations, particularly where the subjects are mobile across administrative boundaries. Consequently the real costs of in-term mobility are not evident in the funding models for distributing resources within the system.

The primary concern in relation to student mobility is for the student themselves. Although limited, discourse on impacts from student transience in the NT and other parts of remote Australia has been linked in a small number of reports and studies on ongoing poor educational outcomes for Indigenous students. The most holistic document in the NT is the ‘Learning Lessons’ 1999 review of Indigenous education (Northern Territory Department of Education, 1999). Foremost, this report identified three areas of risk for mobile Indigenous students from what it described as a ‘growing issue’ (Northern Territory Department of Education, pg.146). Paraphrased, these were:

a) An increased likelihood of students needing to repeat work due to contact with multiple teachers;
b) A reduced likelihood of students developing a rapport with the teacher(s); and
c) Reduced capacity for administrative systems to keep track of academic progression of students and consequently for their needs in the classroom to be articulated.

Research from overseas provides a more solid account of the potential impacts for students. Several articles on transient Maori students in New Zealand have noted that they are susceptible to bullying and behavioural risks and mobile students themselves articulate lower educational aspirations compared to non-mobile students (for example, Macarthur & Higgins, 2007). Mobile students have been found to have poorer attendance, a lower level of interaction within the school system, and less engagement in extra-curricular activities in New Zealand (Bull & Gilbert, 2007). Auld (2007) attributed the poor performance of transient students to an inability in coping with the double life change created by a new environmental setting, and the new or different school. Associations between short-term mobility and poor student performance have also been established by studies in Europe and the United States including those by Demie (2002) and Strand and Demie (2007). They found that mobile students were more likely to come from low socioeconomic backgrounds.
and consequently, have a reduced capacity to adjust to location and contextual changes as a result of mobility.

As well as the ramifications for students, schools themselves must cope administratively and educationally with fluctuations in student numbers. Mobility affects student numbers not only where schools are located, but also in their catchment areas, including outstations, temporary camps, and semipermanent camps (Foster et al., 2005). Whereas an individual school in the urban context can be relatively confident about the size and composition of its student cohort, remote schools may be dealing with daily fluctuations of what may be essentially an ‘unknowable’ cohort. Students who are unexpectedly on the move create a disjuncture for schools between their fixed schooling infrastructure and the desire to meet the needs of all students. This places the administrative capacity of schools to track students through the system according to institutional norms, where student’s successive enrolments are meant to progress in a pre-determined and relatively predictable way, at risk (Auld, 2007; Prout, 2008a). Lynch (2009) meanwhile has discussed the extra efforts made by teachers in remote Queensland to improve the flagging literacy of transient students. In the United States, Beaulieu (2000) has raised an important point regarding the effects of mobility on educational reforms at the school level. He noted that quality improvement strategies were difficult to enact and evaluate at schools where student transience was high.

Fundamental to this discussion, there is limited published data for assessing the size and impacts of Indigenous student mobility such that dialogue and appropriate responses both in the NT and other jurisdictions of Australia can address the issue meaningfully. Understanding about how Indigenous student mobility is related to student outcomes has been constrained by an absence of data collected on a consistent basis over time and reported on using appropriate quantitative measures which are conceptualised around business rules with meaning in the institutional context. Instead, workload measures in the past, in the NT at least, have relied on traditional methods for reporting student enrolments and attendance, based on the average numbers enrolled at a point in time to calculate student and school performance (Dunn, 2009). Because of this, little is known about magnitude, frequency, direction and characteristics of the mobile student cohort. The current situation has prolonged the generalised nature of commentary on the issue and meant that dialogue has relied largely on anecdotes, despite the common knowledge that in-term student mobility is a major issue. Consequently, teaching staff and principals possess little evidence to bring to the table when they engage with the educational leadership, with policy makers, and with their program managers to discuss the effects of mobility on their capacity to deliver educational outcomes.
In this study we describe in detail three conceptual measures developed over several years by the Department of Education (DET) in the NT for measuring and depicting student mobility. These are significant for their unique representation of the unit record level data held within administrative systems. They are also very important for facilitating quantitative comparisons across spatial areas and between student cohorts (notably between Indigenous and non-Indigenous students) for, in this case, NT Government schools. Underlying the development of these concepts has been a suite of business rules developed to ensure that each measure delivers consistent and comparable (over space and time) representations of in-term student mobility. We first outline these before defining the formulae themselves and passing through data from the NT education system to deliver the results. Finally, we discuss the value and implications of this work for growing understanding about Indigenous student mobility and Indigenous mobility in remote areas more broadly.

10.4 Methods
This study describes the conceptual basis of and supporting business rules for three measures of student mobility developed in the NT:

- Student Movements
- The Cumulative Enrolment Ratio
- The Student Replacement Rate

These determine how unit record level data held within the Northern Territory Department of Education’s Student Administration and Management System (SAMS) has been treated (in statistical terms aggregated, related across databases, cross classified, and queried) for the purpose of measuring and illustrating in-term mobility. SAMS contains information on all students enrolled at Northern Territory Government (NTG) schools. The DET databases record multiple levels of information about NTG students against a Unique Pupil Number (UPN) which remains with the students throughout their government schooling, and against which demographic characteristics, enrolment and attendance records are notated. A spatial and temporal account of student enrolments and the movements of students between schools are provided by the recording of the UPN at the time a student enrols at an individual school, for which geo-codes are available and added to the record.

Sequences of enrolments at the same or successive schools provide a history of the enrolment episodes for individual students. Spatially, these episodes can be represented by cross-matching the school of enrolment to a number of statistical reporting regions and this makes it possible to track the spatial ‘itineraries’ of individual students at the micro-level.
(between individual schools) as well as macro-level (across statistical regions within the NT). In this study we analyse student mobility in and between regions in the NT according to the Accessibility Remoteness Index of Australia (ARIA, see ABS, 2005). ARIA classifies individual Census Collection Districts, according to common characteristics of remoteness, into broad geographical regions called remoteness areas. The NT contains only three remoteness areas - Provincial (essentially Darwin and its immediate surrounds, sometimes referred to as ‘outer regional’), Remote (Katherine, Alice Springs and their surrounds), and Very Remote (the balance of the NT).

There are a number of limitations with the measures presented here. Firstly, it is restricted to students who are enrolled at NTG administered schools. An estimated 10,000 students on average who are enrolled at nongovernment schools each year are excluded from the analysis. Secondly, there is a small potential for student enrolments to be inaccurate or duplicated by incorrect recording of data or UPNs. In relation to Indigenous students the likelihood is increased by cultural factors (such as the non-use of certain names after death) and a higher likelihood of students not engaging with the officious systems which are designed to track their enrolments. In the NT, DET and individual schools have worked consistently since the introduction of SAMS to improve policy and practices to ensure that the UPN is used consistently as students move between schools and that enrolment conflicts (where a student is incorrectly enrolled at more than one school at the same time) are identified and corrected. Consequently, the accuracy of the SAMS database is high. We now detail the concepts and measures around which our analysis of student mobility in the NT is constructed.

10.4.1 Proposed concepts and measures of student mobility: Student movements

Information relating to each student and their enrolment sequences can be used to produce a dataset of enrolment ‘sequences’ or ‘pairs’. Student movement datasets consist of information relating to the student’s enrolment at the school of departure and school of arrival. A student movement occurs whenever a student (identified by his or her UPN) is removed from the current roll of a school and then undergoes the enrolment process again (either at different NTG school, or by re-enrolment at the same school). As there may be a lag between the student’s departure from one school and their re-enrolment, a movement is triggered by the arrival enrolment date.

A student movement is between schools whenever a student is removed from the current roll of a school and then undergoes the enrolment process at a different NTG school. On the other hand, a student movement is defined to be a return to the same school whenever a
student is removed from the current roll of a school and then undergoes the enrolment process at the same school without attending another NTG school. A student movement is considered to be *expected* whenever the student transfers at the start of the school year and progresses from primary to middle school, primary to high school, or middle to high school or secondary college. All other student movements are *unexpected*. A large number of student movements are accounted for by the requirement that administrative staff to remove students from the current roll when they have unexplained absences for four weeks, a policy which was under review at the time of writing.

**The Cumulative Enrolment Ratio (CER)**

The CER provides school level comparisons on the cumulative size of the student cohort relative to average weekly enrolments. Based on the actual number of students enrolled at a particular school or during a given time period, this measure is defined as the ratio of the total number of students enrolled compared to the average weekly enrolment for a specified time period. A student is deemed to be *enrolled* at an individual school on any particular day if his or her enrolment date was on or before that day and he or she had no departure date recorded (or the recorded departure date was after that day). For this measure, *average weekly student enrolment* numbers are calculated based on the last day of each school week to smooth out seasonal effects in enrolment numbers evident when enrolments are recorded during selected weeks within terms. *Average weekly enrolments* captures enrolment numbers across 40 school weeks per year (occasionally 41) and is defined as the average of the weekly enrolments during the selected time period:

\[
\text{Average weekly enrolments} = \frac{\sum_{\text{semester weeks}} \text{weekly enrolments}}{\sum_{\text{semester weeks}}}
\]

By treating student enrolments as a throughput measure, the total number of students who attended a particular school at any stage during the school year (or any reporting period) can be identified. This cumulative measure of enrolment highlights the manner in which the aggregate number of enrolments at an individual school increases over time as students move into and out of the school. The CER is thus defined as the total number of students who were enrolled at any stage during the specified time period according to the number of distinct student UPNs recorded:

\[
CER = 100\% \times \frac{\text{cumulative enrolment}}{\text{average weekly enrolment}}
\]
10.5.2 The student replacement rate (SRR)

This measure indicates the size of student turnover in the school population by quantifying the differences between student arrivals and departures. A student arrival occurs at enrolment and a student departure is defined to have occurred whenever a student is removed from the current roll of the school. To avoid situations where student turnover exceeds 100 per cent, which in the past has been misinterpreted as every student in the school changing, an average of arrivals and departures is proposed. This adjusted measure of student turnover is called the Student Replacement Rate (SRR).

The SRR is therefore defined as:

\[
SRR = \frac{\text{student arrivals} + \text{student departures}}{2 \times \text{average student enrolments}}
\]

The breakdown of arrivals and departures in this way facilitates the important analysis of how many and which students have experienced temporal ‘gaps’ in their enrolment sequences. These are created when students unexpectedly depart from a school during term, are subsequently removed from the enrolment register, and do not re-enrol (at the same or a different school) until a later date within the school term, or in a subsequent school term.

10.5 Results

10.5.1 Results for student movements

In 2008 there were approximately 151 NTG administered schools, of which about three-quarters were in remote (or very remote combined) areas of the NT. Average weekly enrolments for all NTG schools were 31,346 in 2007 and 32,684 in 2008, with 43 per cent and 44 per cent respectively being Indigenous students. During 2007 and 2008 there were a total of 16,000 student movements between schools, of which more than half were undertaken by Indigenous students (Table 5), although Indigenous student movements declined by around four per cent from 2007 to 2008.

Table 5 - Student movements by Indigenous status, 2007 and 2008

<table>
<thead>
<tr>
<th>Indigenous status</th>
<th>Type of movement</th>
<th>2007</th>
<th>2008</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous</td>
<td>Expected</td>
<td>485</td>
<td>756</td>
<td>1,241</td>
</tr>
<tr>
<td></td>
<td>Unexpected</td>
<td>3,448</td>
<td>3,765</td>
<td>7,213</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Expected</td>
<td>Unexpected</td>
<td>Total</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------</td>
<td>----------</td>
<td>------------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>Non-Indigenous</strong></td>
<td>3,933</td>
<td>1,251</td>
<td>1,868</td>
<td>3,119</td>
</tr>
<tr>
<td></td>
<td>4,521</td>
<td>2,128</td>
<td>2,031</td>
<td>4,159</td>
</tr>
<tr>
<td></td>
<td>8,454</td>
<td>3,379</td>
<td>3,899</td>
<td>7,278</td>
</tr>
<tr>
<td><strong>Unknown Indigenous</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td>19</td>
<td>31</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Unexpected</td>
<td>109</td>
<td>152</td>
<td>261</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>128</td>
<td>183</td>
<td>311</td>
<td></td>
</tr>
</tbody>
</table>

Of all Indigenous student moves around 85 per cent were unexpected compared to just half of the moves for non-Indigenous students. In 2008, almost 60 per cent of Indigenous student moves involved a return to the same school, compared to just 12 per cent for non-Indigenous students. There was an increase of 15 per cent in the proportion of Indigenous student moves which featured a change of school from 2007 to 2008 but this ratio was far higher for non-Indigenous students, at a third. For movements between schools, the highest rate of unexpected moves was for schools in Very Remote (95 per cent of all moves) followed by Remote (71 per cent) and Provincial (at just 59 per cent of all moves).

In terms of spatial flows (movements within and between remoteness regions) the vast majority involved a return to the same region classification that the student departed from. That is, 91 per cent of departures from Very Remote schools resulted in arrivals to Very Remote schools, 73 per cent of departures from remote schools were to Remote areas, and 91 per cent of departures from Provincial schools were to Provincial. The 27 per cent of departures from Remote schools that did not involve a return to Remote schools were distributed evenly as arrivals to Provincial and Very Remote schools.

10.5.2 Results for the CER

The CER for all students averaged just over 120 per cent during the 2006, 2007 and 2008 school years, but was consistently and markedly higher for Indigenous students (Table 6). Reflecting this, the CER was also much higher in Very Remote areas (almost 150 per cent in 2006, 145 per cent in 2007 and 140 per cent in 2008). The CER for Remote schools was 129 per cent in 2008 while for Provincial schools it was 116 per cent. There was very little difference between genders in the CER for the period of analysis.

Table 6 - Enrolments (number) and cumulative enrolments (CER), 2006 to 2008
<table>
<thead>
<tr>
<th>Student enrolments</th>
<th>CER (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All DET students</td>
<td>38,449</td>
</tr>
<tr>
<td>Indigenous</td>
<td>17,417</td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>21,032</td>
</tr>
<tr>
<td>Provincial</td>
<td>18,886</td>
</tr>
<tr>
<td>Remote</td>
<td>8,723</td>
</tr>
<tr>
<td>Very Remote</td>
<td>12,499</td>
</tr>
<tr>
<td>Female</td>
<td>18,551</td>
</tr>
<tr>
<td>Male</td>
<td>19,898</td>
</tr>
</tbody>
</table>

### 10.5.3 Results for the SRR

The SRR for all NTG schools during 2006 to 2008 varied only marginally from as low as 57 per cent in 2006 to 63 per cent in 2008. There was little difference between males and females in the rate, although females were slightly higher in 2007 and 2008 (at 63.2 per cent and 62.1 per cent respectively). Although reasonably consistent across the three years, an increase of six per cent in the rate was observed from 2006 to 2007. The SRR was highest for Very Remote Indigenous students at around 100 per cent each year (Figure 20). The rate was lower for Remote areas (around 60 per cent) and much lower again for Provincial schools (around 40 per cent).
10.6 Discussion
According to the measures conceptualised and applied in this study, the results clearly demonstrate that Indigenous students enrolled at NTG schools are significantly more mobile than non-Indigenous students. The CER and SRR were far higher for Indigenous students as well as significantly higher for schools in Remote and Very Remote areas of the NT when compared to Provincial schools. More importantly, a far higher proportion of Indigenous students recorded unexpected moves, with rates for both the CER and SRR being at their highest for Very Remote Indigenous students. The fact that the vast majority of moves in the remote sphere were unexpected is demonstrative of the disruptiveness faced by remote area teachers, students and schools from what are clearly, given the consistency in the numbers over time, persisting patterns of high mobility.

As well as demonstrating the higher mobility of Indigenous students relative to others, the measures provide an indication of the scale of additional ‘burden’ on schools in remote areas and particularly those with high proportions of Indigenous students. Factors include the administrative costs of processing student departures and arrivals, costs and efforts in assessing the students’ level of competence upon arrival, and the costs of monitoring the progress of highly mobile students including ensuring they are removed from the enrolled list, should they depart. While most unexpected moves involve a return to the same school, data suggests that there are definitive gaps in the enrolment itineraries for large numbers of individual students in remote areas. These represent time spent outside of the education system and this is perhaps the most concerning element of the findings for educators. The exception is movements which may have resulted in a temporary arrival to a nongovernment school, which cannot be quantified using SAMS data (although these are thought to be small in number). Despite the clear differentials between Indigenous and non-Indigenous rates of student mobility, what must be kept in mind is that, under the definitions here, a ‘move’ does not necessarily feature travel away from the home community of the student. An unknown proportion of moves will involve no change of address, community or town at all.

10.7 Conclusion
This study essentially confirms the history of anecdotes in relation to there being a consistently churning student population in remote areas which must be dealt with administratively and educationally by schools. While the results here are probably not
unexpected for those educators who have worked at remote schools in Australia, this study lays out for the first time research based information on which dialogue for addressing impacts can begin. At the very least it provides principals at any school where data on enrolments is available with the intellectual basis for quantifying the extent of mobility occurring within school terms, assessing the localised effects, and negotiating with system administrators to have these recognised (explicitly or inherently) within funding models. Types of effects from high mobility are likely to include direct financial costs (largely administrative), increased cost for the recruitment and retention of teaching and administrative staff and reduced student (and thus school) outcomes.

This study suggests that Indigenous student movements are a sub-set of the broader and more complex phenomenon of high frequency, temporary, and short-distance movements in and around remote indigenous communities in Australia. Critical to establishing how these are interrelated is knowledge about what triggers unexpected moves for Indigenous students and to what extent are these different to non-Indigenous students? There is little to inform researchers in either official datasets or in administrative data sources like the SAMS databases on the critical question who (if anybody) tends to accompany mobile students through movement sequences. And, as we have suggested, we also do not know the extent to which unexpected moves (with significant lags before re-enrolment) represent partial or complete disengagement from educational activities, or what activities might have been substituted in the place of classroom attendance. It is likely that the answers to these questions will vary substantially across States and Territories, within regions and between communities.

While this study has highlighted the worrying incidence of temporal disengagement from the education system, such episodes should not all be viewed as overtly negative and detrimental to the student, just because they sit outside of the norms of the system. It is not unreasonable to suggest that at least some of the mobile cohort is travelling purposefully on, for example, bush holidays, family holidays or to visit friends or relatives. These may include elements of ‘education’ in the broader sense. The undertaking of travel within school terms also signals the need for research which articulates if and how these are related to broader demographic and social processes like urbanisation (are students part of trips to visit relatives who have migrated to urban centres, for example?), changing access to and use of technology, and policies put in place by the Australian and Northern Territory Governments which overtly seek to influence the daily lives of Indigenous people in remote areas.
Interestingly, the timing of the data reference period (2006 to 2008) coincides with the commencement of the NTER, enacted in June 2007. Several reports have lamented (largely anecdotally) large increases in the ‘drift’ of people from communities to urban centres as a result of the NTER and its programs. Studies such as that by Holmes and McRae-Williams (2008), for example, have linked a growth in the number of ‘long grass’ people in Darwin post-2007 directly to the NTER. While acknowledging that homelessness for any individual is traumatic and is symptomatic of wider societal issues, the numbers quoted in such studies can best be described as small and lacking in baseline evidence on which to assess temporal change. Direct links between student movements and the movements of adults might be expected in the SAMS data if indeed the NTER drove such large numbers to urban centres. But comparisons of 2007 to 2008 data provide no evidence of a fundamental change in the size of student movements between remote and urban areas. While some students may indeed have ended up ‘in town’ with ‘drifting’ adults and not enrolled while they were there, at least some effect should be observable in the SAMS data if indeed the scale of movement intimated by Holmes and McRae-Williams did occur.

For teachers, schools and DET this study clearly points to a need for a research program which delivers knowledge about the drivers and the spatial attributes of the flows identified here. Secondly, the impacts on students, teachers and schools must be further understood and adjustments should be made to funding models and policy on the basis of these. The conceptualisation and application of the measures outlined in this paper represent only part progress in attempts to increase knowledge about contemporary Indigenous mobility. In the face of continued lamenting about the dearth of data capable of depicting short-term Indigenous spatialities (Biddle & Prout, 2010; Taylor & Bell, 2004) this study plays a small but important role. It is particularly useful because the SAMS datasets are built from the unit record level up. This ensures the data is methodologically consistent in terms of its collection and the business rules which are applied to its aggregation and manipulation, as well as the reporting measures conceptualised here. The internal consistency of SAMS data means it is a valuable resource and the efforts of the Department in developing and maintaining it must be recognised. Other jurisdictions will see the value in developing capabilities to measure student mobility on a system-wide basis.

With the ongoing urbanisation of the Indigenous population in the NT the question is raised as to whether those who are ‘left’ in remote areas are a highly mobile cohort that contributes disproportionately to the differences in rates observed here between Indigenous and other students. Most importantly from a demographic perspective is the question of who (if anyone) is accompanying students that undertake moves where there is a spatial change.
Answering these questions would require a complex and sophisticated data set which simply does not exist. Given the strong relationships observed overseas between student mobility and student outcomes, there is an imperative to better understand these issues through research. The first task is to understand what proportion of moves actually involves a ‘move’ at all in the spatial realm and why (or why not) these occur.

In conclusion, our study has provided appropriate measures and clear quantitative evidence to demonstrate the disparities between Indigenous and other student mobilities in the NT, and particularly in remote areas. For educators, the quantification of the phenomenon provides a research-based underpinning from which discussions on dealing with the consequences can progress. Our findings lend support to the notion that student mobility is one aspect of what, for many individuals, is no doubt a complex and dynamic, yet well entrenched, pattern of short-term and frequent mobilities. The drivers of such mobility are inevitably complex themselves. The embedded nature of Indigenous short-term mobility should lead us to question whether and how systems and procedures designed for progressing students in an orderly and predefined way might be improved to accommodate the life choices of students and their families, such that (Ministerial Council on Education Employment Training and Youth Affairs, 2006) remote Indigenous education is not a ‘bolt on’ to mainstream education, but is a consciously and thoughtfully derived part.

Acknowledgements
The conceptualisation of the measures proposed in this study, and the construction of databases and modules to facilitate the extraction of data represents many years of work by Bruce Dunn as an employee of the NT Department of Education and Training (DET). The authors wish to thank the Department for permitting the use of their data to depict broad level mobility patterns of students under its jurisdiction. All opinions and any errors of fact are entirely the authors’ in their roles as researchers with the School for Social and Policy Research at Charles Darwin University.
Chapter 11: Information Communication Technologies and New Indigenous Mobilities? Insights from Remote Northern Territory Communities
11.1 Preface

This chapter is a reprint of a peer-reviewed journal article which is accepted for publication in a special edition of the Journal of Rural and Community Development, forthcoming in late 2011 or early 2012:


This is the first of two chapters in this dissertation on the theme of technology adoption in remote Indigenous communities and its effects on migration aspirations for residents. This chapter is focused on reporting the current status with respect to ICT ownership, levels of use and applications to information searching and exchange, while the subsequent chapter has a more theoretical focus.

11.2 Abstract

The Northern Territory of Australia has a large Indigenous population who live in small communities, isolated from major service centres and urban areas. A digital divide has long existed for residents there but with the rollout of the Internet enabled ‘Next G’ mobile phone network from 2006, along with other technology infrastructure upgrades, residents are going through a rapid ‘catch up’ in personal technology ownership and use. The new network allows for both reliable communications with the outside world as well as broadband access to the Internet. Studies elsewhere highlight potential for these gateways into the global world to bring about changed aspirations and behaviours in relation to life choices for education, employment and where to live, particularly amongst young people. In this study we explore the early outcomes in relation to these themes from the uptake of information communication technologies by residents of three remote Indigenous communities in the Northern Territory of Australia. The results suggest that technology, particularly the mobile phone, is already changing people’s lives, bringing with it opportunities and possibly negative consequences. The research demonstrates the value of observing and commentating on the process of technology adoption as a lens for re-considering how we might perceive Indigenous disadvantage and its turnaround.

**Keywords:** Information communication technologies, Indigenous migration, Indigenous communities, Northern Territory, Indigenous demography
11.3 Introduction

The NT has a population of around 230,000, of which a third are Indigenous. This is the highest proportion of all States and Territories in Australia. The settlement distribution of the Indigenous population is best described as highly remote and widely dispersed, with around three quarters living in small communities outside of the urban areas and larger service centres. Residents fare poorly in almost all measures of socio-economic status compared to other Australians. This is despite long-standing efforts and massive investments by governments to address economic, educational and social issues.

Residents of Indigenous communities are known be highly mobile on a day to day basis and to travel frequently between communities, service centres and urban areas. (Taylor & Carson, 2009a; Prout, 2008b). Despite regular interaction with larger population centres, rates of information communication technology (ICT) ownership and use in (Indigenous) communities have remained well below those found elsewhere in Australia (Australian Communications and Media Authority [ACMA], 2008). In 2002 just 591 residential phone services were active in communities in the NT (ACMA, 2008). By 2006, only 12 per cent of Indigenous households had some form of Internet access compared to 57 per cent of others, and as recently as 2007, just 16 per cent of remote Indigenous communities had terrestrial mobile phone coverage (ACMA, 2008). Consequently, Indigenous people have long been seen as symbolic of the ‘digital divide’ between urban and rural or remote populations (Daly, 2005; Perley & O’Donnell, 2006).

This study aims to provide early indications on whether and how a range of technology developments causing a quantum leap in ICT access at communities have impacted on the lives and aspirations of residents. First is a discussion on the reasons provided in the extant literature for the ongoing digital divide between residents of communities and the rest of Australia. Subsequently the nature of ICT developments specifically affecting communities from the mid-2000s onwards are outlined and results from studies elsewhere in Australia and overseas, where similar leaps in technology have happened, are put forward as examples of what might happen here. The methods for this study are then outlined before presentation of the results, discussion and conclusions. Throughout this paper the word ‘communities’ should be taken by the reader to mean remote Indigenous communities in the NT.

A major obstacle to ICT adoption in communities has been the costs to governments of establishing and maintaining reliable mobile phone networks (ACMA, 2008). Consequently infrastructure investments were fragmented over time leading to poor reliability and coverage for services of all types (home phone, public phone boxes, mobile networks and the Internet) in and around communities (Daly, 2005). Prior to 2006, most communities
relied on satellite technology for Internet access and mobile phone communications. For the handful of communities who were connected to the CDMA (Code Division Multiple Access) mobile network costs were high and service levels notoriously poor (Tangentyere Council and Central Land Council, 2007). The prohibitive prices of satellite left most community residents with few options for communicating with the outside world; these being public pay phones (often not working) or the phones and computers owned by service providers, friends or relatives (Dyson & Brady, 2009).

As well as costs for governments and consumers, low literacy and numeracy rates and a lack of cultural content were identified as retarding more widespread ICT use in communities. Some commentators have perceived low uptake rates as a natural outcome from the exceedingly poor levels of English literacy and numeracy persisting at most communities (for example, Dyson, 2004; Dugdale et al., 2005; Dyson & Underwood, 2006). Meanwhile many localised trials of technology-based initiatives were criticised for not consulting with residents and for not including content that was contextualised according to the local culture (for example using the local language) and circumstances (Perley & O’Donnell, 2006). More complex socio-cultural issues were articulated by Dyson (2007) who summarised cultural ‘ethicist’s’ concerns over the push for catch ups in ICT use in communities as merely a continuation of the march of “cultural imperialism” (pg.58); destined to either fail from rejection or to destroy valuable cultural legacies altogether.

Clearly, therefore, a technology gap of major proportions has long existed between remote Indigenous and other Australians, continuing well into the Twenty First Century. The numbers around this were so stark that they approximated the contrasts seen between Third World and developed nations at the turn of the last century, sentiments echoed in the pessimistic forecasts of researchers in the field for the future potential for a closing of the divide in Australia (Daly, 2005). But from the mid-2000’s a number of developments altered the status quo in relation to ICT access at communities. The most significant was the public-private partnership to rollout Telstra’s ‘Next G’ network to remote communities from 2006 onwards. Next G (a 3G network allowing mobile broadband access) superseded the existing CDMA network across Australia. Its functionality, range, reliability and signal quality are a big improvement and many communities are now ‘switched on’ (to Next G) with the rollout continuing at the time of writing. Importantly, Next G supports mobile broadband access through Internet enabled phones or other devices (laptops and so on).

Concurrently, Indigenous school children in communities throughout the NT are each receiving a hardy wireless-Internet enabled laptop called the ‘XO’ at no cost. Provided by the One Child One Laptop (OLCP) philanthropic organisation, the XO is specifically
designed to withstand the harsh conditions found there (OLCP, 2010). Other national educational ICT initiatives are underway including the Australian Government’s Digital Education Revolution, which aims to “…prepare students for further education, training and to live and work in a digital world.” (DEEWR, 2009). This is supported by the rollout of the National Broadband Network, a major policy commitment from the incumbent Australian Government which will see remote communities furnished with upgraded ADSL2 wireless and satellite services with speeds of 12 megabits per second (Conroy, 2009).

Studies in Australia and overseas suggest that this rapidly acquired access to ICT communications might bring about downstream impacts for employment, education and life ambitions for residents in the NT. Brady and Dyson (2009), for example, recorded mobile phone ownership rates of around 60 per cent less than one year from switching on the Next G network at two Indigenous communities in Queensland. Higher rates still (around 80 per cent) were recorded for young people. Similarly a small qualitative study in Central Australia found extremely high rates of mobile phone ownership by young Indigenous people (Tangentyere Council and Central Land Council, 2007). Localised studies have reported on Indigenous people’s use of mobile phones for Internet banking (ACMA, 2008; McCallum & Papandrea, 2009) and for shopping (ACMA, 2008). Younger users have been found to frequently access music, sports and game sites; are familiar with Google products and social networking sites like YouTube, Facebook, Bebo and MySpace where they upload films and photos; and are establishing and maintaining social relationships (Kral, 2010). Digital technologies have also been used to record and preserve traditional knowledge (Daly, 2005) including ancestral songs. Meanwhile, online galleries (Corbett et al., 2009) and e-commerce (Dyson, 2004) have changed the product distribution system for Indigenous arts and crafts created in communities and now sold worldwide via the Internet.

From a situation of information isolation, the exposure of individuals to the ‘globalised world’ suggests that new opportunities and challenges will arise. Postman, (1992) proposed that technology has the power to fundamentally alter the preferences of individuals in relation to key aspects of their live courses (education, employment, family formation and so on) and influence the way people think and interact as communities. Importantly, examples from overseas hint at the potential for the ‘switching on’ of ICT to trigger migration flows to larger urban centres. Muto’s (2009) study in rural Uganda, for example, found that residents with recent access to mobile phones applied them to job seeking and the negotiation of work contracts without leaving their villages; and then left to commence their work. Paragas (2009) describes the possibility for lives of “spatial simultaneity.” (p.39) provided by mobile phones for transnational migrants, and Hahn and Kibora (2008) discuss ICTs ability to ease the emotional burden of migration by facilitating low cost visual (for example Skype) and
verbal contact between family and friends, making cities more ‘sticky’ for in-migrants, a proportion of whom might otherwise have returned home.

Key amongst the challenges facing policy makers and service providers to communities in Australia is the extent to which individuals might embark on a journey of technology assisted ‘mainstreaming’ which, after all, is a clear goal for Indigenous affairs in this nation. Put simply, having observed facets of the modern world, will the current youth take steps to locate to places where they can experience these first hand? The small size of individual communities underlines the importance of understanding the potential migratory impacts because just a handful of young people leaving can endanger the fabric and sustainability of communities. This has certainly been the experience for many Indigenous villages in the remote parts of Greenland, Alaska and Canada (Norris et al., 2004; Rasmussen, 2007) where the encroachment of modernity triggered large rural-to-urban migration flows from the 1970s onwards.

Consequently baseline knowledge is needed in relation to the NT on the ways in which community residents might, if at all, deterministically enact ‘new mobilities’ by re-envisaging their world view as a consequence of recent access to ICTs. Extending Cook and Belanger’s (2006) proposition that there is much to be learnt from studying the influences and motivations for Indigenous migration, this study provides early indications on whether and how the lives of Indigenous people in remote communities in the NT have been altered by technology uptakes. It explores the interrelations between this and the key life areas of education, employment and future aspirations to identify some of the challenges and opportunities that technology is bringing to residents of some of the most remote parts of Australia.

11.4 Methods

Research for this study was conducted in three medium-sized Indigenous communities (populations of between 300 and 500) in remote parts of the NT. Indigenous people comprise between 80 per cent and 95 per cent of the population at these communities with the remainder being non-Indigenous workers (teachers, sports facilitators and so on). At the time of the study in 2010, the Next G network was switched on at two of the three communities and scheduled for activation the following year in the other. In-depth interviews were conducted using a semi-structured approach with around 40 to 50 Indigenous participants. This number is non-specific given that some group interviews were conducted with varying levels of participation from individuals such that the total number reflects the researcher’s best estimates about active participants. A range of non-Indigenous
key informants were also asked for their perspectives on the use and adoption of ICTs in the communities they lived at. These included school principals, teachers, a council manager, a sport and recreation officer and a health clinic manager. People of all incomes and education levels were considered as being in scope.

Indigenous participants were asked what ICTs they currently owned, how often they used these, and for what purposes. Interviews included questions and discussion about the types of content and information people viewed and what purposes these were applied to. Questions on use of Internet-based social media applications were included. Information on the impacts of ICT use on personal mobility and observations on the mobility impacts for family and friends (including for trip planning, information sourcing, use during travel and use after travel) were sought. Themes included how ICTs are influencing decisions about future travel and how travel related information is shared using ICTs. A question was also included about how the use of technology might be shaping the aspirations of the individuals in relation to where they would like to visit, live, work or study in the future and why.

This qualitative approach was preferred to a more structured survey so that individual’s ‘stories’ on the effects of ICT on life aspirations, education and employment could emerge. It was anticipated that complex and rich information would be forthcoming using a discursive approach while indications on the rates of technology use could also be gained by interview, albeit not on a representative scale. The conversational style of gathering information was considered to be more likely to yield meaningful information in the remote Indigenous community context and allowed for group discussions, a key feature of communication in Indigenous settings. Relationships must be established with individual participants for meaningful information to flow and for the intent of the research to be understood by participants such that they engage openly and actively with the researcher (see, for example, Taylor et al., 2011). This approach has previously been endorsed by the Human Research Ethics Committee for research at Indigenous communities and specific clearance was also obtained for this study.

The method, along with most qualitative research techniques, comes with limitations. Principally, there is the possibility for the researcher to influence participant responses by the nature or line of questioning employed. The use of open ended questioning helps to minimise these risks, however, it may also introduce topics not directly relevant to the research questions at hand and lengthen the overall discussion. There is also potential for the researcher to articulate or introduce information, concepts or conclusions into the interpretation of results from individual interviews based on personal perception or personal
bias. To help increase the robustness of the information gathered, the researcher engaged a local resident to help explain the intent of the research to potential participants and to assist with translation where necessary. The researcher ensured that clarification and confirmation of participant views were obtained during interviews.

11.5 Results
Rates of mobile phone ownership and use were reported to be very high at each of the three communities, including by those who live where there is no mobile phone reception at all. Interviewees estimated that between 60 per cent and 80 per cent of people over ten years of age owned a mobile phone and used it regularly, or had access to one and used it regularly. Rates for young people were said to be even higher than for the general population. It was reported as common for parents to buy a mobile phone for children aged nine years and up. Young people were observed texting and using their phones almost constantly in the two communities where there was Next G coverage. While it was difficult to establish whether gendered differences in mobile phone ownership and use exist, there were reports that young girls are particularly intense users because they regularly access Internet chat rooms. There were no complaints about the quality of mobile phone access or coverage. People at the community without coverage seemed to accept the delay in the arrival of Next G and many were aware of when it would be active. Only one respondent across all three communities reported having a land line at her house.

Respondents in the community without mobile phone services reported similar rates of ownership to those in the communities where Next G was already operating. However, the nature of use was clearly different since mobile phones were primarily a tool for communication when people were travelling away from the community and in areas with coverage. Several respondents across all three communities discussed the importance of mobile phones for relaying information to extended family members about other family and friends who were away from home. Conveying information particularly emphasised the importance of owning a mobile phone in case of emergencies during travel and for ensuring people were contactable en route. While it was not fully explained how information could be relayed back to community members when there was no mobile service, it appears that messages are relayed via friends and family in nearby communities.

Although some elders and key informants thought that technologies like mobile phones and the Internet posed some threats, overall the attitude towards high rates of youth ownership and adoption was found to be positive. One elder expressed his desire for more ceremonial dances and songs to be recorded digitally because the only person remaining alive who knew
them lived away from the community. The main problem reported with mobile phone use was its role in fuelling arguments and fights between residents of two communities because of derogatory text messages regarding the outcomes of Australian Rules football matches.

Substantial variations in the functions commonly used on mobile phones were reported between generations. Older interviewees used phones mainly for making calls, having them nearby in case of emergency and for staying in contact with family and friends. A male participant said: “I only use it for emergency, or to call parents.” By contrast, younger residents in all three communities preferred texting to making phone calls, and nearly all said they accessed chat rooms frequently and regularly. The ‘AirG’ service, a suite of Internet chat rooms accessible on Telstra’s Bigpond plans, were spoken about widely. One of these, ‘Divas’ was reported to be very popular with young girls and said to be accessed daily by most users. Young people said that they use the chat rooms for entertainment and to communicate with people who are known to them (in their home community or other communities in the region) and one young person said he “…makes friends all over the world.” Although one respondent reported that access to AirG was free on a pre-paid Bigpond plan, this was not established definitively. Interestingly, none of the respondents who said they regularly use chat rooms perceived this as Internet use. As explained by a young female participant: “We don’t go on the Internet, just AirG chat.”

Some young respondents said they constructed text and chat room messages in their traditional languages for interacting with people of their own language groups. But for communications with non-Indigenous people, English was said to be used and special attention was paid to grammar, spelling and sentence structures. Some reported that young people gathered in groups to help each other construct linguistically appropriately text messages before sending them. Younger residents also used mobile phones for entertainment including playing games, downloading and listening to music. Pictures are often taken using mobile phones and stored on internal memory cards while audio and video data were transmitted to other devices via MMS or Bluetooth. Transmission to computers via USB-connection was reported, but not on a widespread basis.

Several parents and their children present at interviews talked about the importance of mobile phones as status symbols for young people. They said that children always wanted the newest and most upmarket model phone available at the local store. Phones are reported to be frequently lost, borrowed without return, or broken. In all cases people simply purchase another phone and no respondents indicated that this created a financial burden or caused them to suffer financially. Other than those with a mobile phone supplied for work, all respondents who were asked about what type of plan they were on said ‘pre-paid’. Top-
ups for pre-paid accounts were available at community stores and at stores on trips away. Pre-paid accounts were said to be ideal for managing how much gets spent on using the phone. The use of mobile phones for e-commerce was not reported to any extent, but a handful of respondents said that they or people they know used their phone to check their Basics Card balance (the Government issued card for managing individual welfare payments) online. Checking balances by calling the ‘Freecall’ number was a more common approach to managing this aspect of individual finances.

Private ownership of laptops and Internet use in the home was said to be limited in all communities, but there were reports of children using XO laptops at schools and in other settings. While there was not much discussion about young people’s Internet use, in one school some teachers outlined their strategy to motivate students to attend school and complete homework by rewarding them with Internet time on school computers after school. In addition, some respondents were clearly ‘power users’ of laptops and the Internet. One young lady said she actively searched the Internet for Indigenous committees and advisory groups to join in order to travel interstate regularly. She was also about to commence a university course in Brisbane where she was temporarily relocating, but did not see herself permanently moving away. Some respondents said they used the Internet on computers at work, mainly for emails, and also sent emails on behalf of other community members. One group of older ladies were very keen to learn from the researchers about what hardware and software was needed to setup wireless broadband connections. When advised of the costs (including the cost of purchasing a laptop) they felt these were reasonable and that only a lack of information on how to set it up and to operate it had prevented them from purchasing the equipment and getting online.

At the time of the study a computer course was being conducted at the training centre of the community without a mobile phone network. The course was relatively advanced and included formatting hard disks and installing operating systems. The researchers were permitted to talk to the group (eleven young men). They all had a strong desire to use the Internet to source information to satisfy their curiosity, but said they do not apply structured processes to using the Internet. Instead, as one put it, they largely “...go where it takes them.” One attendee said he likes to look at information and images on faraway places because he is curious dreams about going there. When asked where he would go if money were no object he replied “Las Vegas!” All of the course attendees were in agreement (when one said) that having the skills to use the Internet and computers would help create new life opportunities, and especially jobs. Some thought those jobs might be elsewhere in Australia or overseas but none indicated they had specific plans in place to pursue a life outside of the community.
Mobile phones were found to be widely used to support travel away from communities. In two out of three of these, at least some Indigenous residents said they searched for information about destinations, activities and attractions on the Internet but overall the use of travel based Internet applications (travel blogs, travel intermediaries and so on) was not reported. In contrast to the pre-travel stage, mobile phones were frequently used by remote Indigenous travellers during trips. They are used to contact relatives at home during the journey or on arrival, to call friends or relatives living elsewhere, and to take and send pictures of travel experiences. Maintaining contact with the home community during a longer stay away and staying reachable en route were the main benefits put forward in relation to mobile phones and travel. While there were no reports of mobile phones being used to organise transport or to book accommodation, non-Indigenous informants reported that Indigenous visitors from remote communities were frequent users of Internet cafés once they were the service town.

Interviewees across the three communities said they take pictures during journeys and show them around on return. Young interviewees said they stored pictures on their mobile phones for long periods and, once memory cards were full, bought new ones. The transmission of photos to computers or laptops was rare. Only young people reported transmitting them from their phone to a computer for storage purposes, but there were no reports of uploading images to social media sites or other web 2.0 applications (like Facebook). Pictures taken by friends and relatives during travel did not directly, according to interviewees, motivate other community members to travel to the places represented in the scene.

A number of parents spoke about their children who were interstate at boarding schools and some teachers said their school had a ‘feeder’ partnership with a specific (private) school interstate. One family said they use Skype every night to communicate with their daughter who lodges interstate at a boarding school. Overall, there few expressed a desire to move permanently to such places even if the experience of travel there was good. Older people were less likely to consider living away from their community when asked if they could envisage ever doing so. Nevertheless, it is clear that at any given time, significant numbers of people are interstate, many for extended periods of time. School children, for example, spoke of excursions interstate and many young males have travelled away to play Australian Rules football exhibition matches or to compete in leagues interstate. There were no reports of mobile phones leading directly to employment or being used purposefully to seek and gain employment.

Meanwhile, examples of the potential for ICT to generate touristic activity (visitors) at communities were found. Managers at the arts centre at one community, who were proactive
in training staff on ICT use, spoke about their use of ICTs to promote the annual festival and sell tickets online. This had led to large increases in visitor numbers such that new camping grounds were needed. Some younger interviewees were critical about the effects of large crowds being present in the community during the festival. People involved in this discussion were aware of the barriers to success, chiefly the processes and systems required to facilitate visitors to obtain permits to access Aboriginal lands, however, a pass was included with the ticket in this case.

11.6 Discussion

It is clear that ICTs, particularly mobile phones, are now part of everyday life for residents of the three communities in this study. The change from exceedingly low rates of ownership and use to very high rates has occurred within a very short timeframe (one to two years). The current young generation will be the first to use such technologies on a daily basis to communicate, be entertained and to carry out e-commerce, with the next generation likely to be even more ‘connected’ to the global world. The rapid and widespread uptake of mobile phones, even at places with no reception, echoes research findings in other parts of Australia. Similarly, the main functions and uses to which mobile phones are put are congruent with a handful of studies elsewhere like that of Brady and Dyson’s in remote Queensland (2009) and Kral’s (2010) study. While computer based Internet and e-commerce activity in NT communities is comparatively low, the use of social media sites and general (unstructured) searching is seemingly quite popular.

This study has brought to light some new information including the everyday access to chat rooms by young people on their mobile phones. Most do not realise (or care) that this is done on the Internet. Such active consumption of Internet based information and exchange is consistent with early user behaviour during the process of technology diffusion. Kral (2010), in his study in a remote Western Australian community observed young people to be:

“...learning by observation, trial and error experimentation, peer teaching and learning, and everyday practice because the new digital technologies are meaningful and relevant.” (pg.14)

This self-directed and snowballing approach to learning via technology is happening largely outside of the direct influence of programs in place for developing and educating young people with mainstream skills in these areas. There are no courses on ‘how to use a mobile phone’ being run, for example. Instead, with the infrastructure finally in place young people are grasping technology for its entertainment value, interactivity and to find and share information. Quite simply, they really enjoy using it and this is entirely consistent with
studies on the explosion of mobile phone use by poor and marginalised populations in places like Kenya (for example, Wachira, 2003).

The small number of people using the Internet via home computers, in contrast to the general population of Australia, means that the Internet per se is not something that people feel they need to know a great deal about. Instead, individuals are satisfied so long as they have sufficient information, equipment and skills to access the things they want to access at the time, based largely on what other people are doing. Consequently, the educative and employment generating power of the Internet is currently under-utilised, or at least poorly understood. It is likely that mobile phones will make only small contributions to improving these outcomes in the short-term and there are no indications that people are basing future decisions about where to live or work on information or experiences they have garnered using their mobile phone. There were, however, exceptions found in this study. A small number of frequent Internet users can be found at each community and they are actively applying their ICT skills towards creating opportunities for themselves and others. For some, this has shaped their travel patterns and their spatial mobility but for now has not yet inspired them to move away from their communities.

The ability for individuals to establish and maintain personal networks and communications when travelling away from communities is a particularly important consideration in discussions about the role of ICT for travel and migration. The mobile phone provides security, information about loved ones, and support in case of emergencies. As we found for the family who Skype every night with their daughter away at boarding school, mobile phones and Internet based applications are helping those who are away to remain there.

The speed at which mobile phones have been adopted in remote NT communities dispels the myth that there is insufficient capital from within (economic, social and individual) for remote Indigenous people to grasp ‘mainstream’ and globalised concepts and practices. While demand-side constraints have restrained technology uptake in the past, clearly with the mobile phone the market has found a product it can integrate into daily life to achieve individualised outcomes. The apparent lack of concern over pricing and costs affirms that people have the skills and wherewithal to shift funds between competing priorities in order to meet their needs at the time and that incomes are not universally low. ICTs are a desired and desirable asset and increasingly so for children who see them as necessary to life and as a status symbol. While there were no indications that purchases of ICTs were being made at the expense of other staple needs, research in this area would be invaluable.

Access to new social, business and transnational networks via Internet based technologies co-facilitates opportunities for other forms of mobilisation to be harnessed by Indigenous
people in the NT. Tarrow (1996) has described the power of technology for stimulating and sustaining collective actions including to fight environmental causes and resisting perceived negative policy change. Recent events in the Middle East have resonated the speed and effectiveness of technology in mobilising collective political and social causes through individual actions. Over time technology might shift the centre of influence for Indigenous affairs in the north of Australia from its established ideological base where ‘outsiders looking in’ propose and re-propose solutions to the ‘problem’ of Indigenous disadvantage. Instead, technology might allow resident voices themselves to be harnessed and pave the way for engineering solutions from within. Online forums might also expose the entrenched practice where ‘consultations’ with Indigenous people around policy formulation, program delivery and evaluations include only the voices of individuals purported as universally representing the diverse views of residents and the community. These gatekeepers of community thought are paraded as figures of unquestioned authority on what is best for the community, when in fact this can be far from the case. Internet based communications permit those too afraid to speak up against the status quo to do so anonymously and to organise others to do likewise.

There are also potential dangers given that children aged as young as nine years rapidly being exposed to the online community. Not least, the bulk of Internet content comes laden with western capitalistic ideologies, emphasising of materialism and individualism or, in other words, globalisation. Some see this as the death knell for Indigenous cultures in remote Australia. Nevertheless, Indigenous Australians have long been adopting and adapting Western technologies (witness the gun and the motor vehicle) and this study emphasises the ongoing nature of this process. Aside from the obvious opportunities for preserving elements of culture in digital forms and for sharing these with both countrymen and women and with the rest of the world, this study emphasises past contradictions and understated credit given to Indigenous people in remote Australia for grasping, learning, using and adapting western technologies.

There must also be careful monitoring and education programs to help Individuals avoid some of the pitfalls which come with ready access to Internet content and to interactions in chat rooms. Young people need to be taught to recognise and act appropriately on predatory or inappropriate behaviour and receive advice on the dangers of online gambling, obtaining online loans or committing to purchase goods or services over the Internet. Again, much can be learnt from elsewhere, as is the case for Finland where Autio, et al. (2009) spoke of the major financial difficulties created by young people’s access to instant loans online. These were used to buy cigarettes and alcohol, and to party. The speed of technology adoption

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found in remote Australia in this and other studies points to an immediate need for further research, education and monitoring in these areas.

11.7 Conclusion

This study aimed to provide baseline indications about the extent of ICT ownership and use in remote Indigenous communities in the NT in the short time since the rollout of the Next G network and coinciding technology developments. The proposal that rapid catch ups might occur in line with studies elsewhere in Australia has been supported. Mobile phone ownership rates are high and young people use them every day to communicate and for entertainment purposes, including accessing Internet chat rooms. Some educational benefits from ICT use have been demonstrated in this study, with young people saying they help each other to construct text messages in proper English. However, Internet use is currently limited as are the range of functions and applications used online. There are indications that more widespread and purposeful Internet use may not be far away with people of all ages expressing a desire to use it and at least some in each community already doing so in quite sophisticated ways.

The present situation in relation to the interplay of ICT use, education and employment is complex and very difficult to deconstruct according to cause and effect. For example, no link between the recent widespread adoption of ICTs and employment seeking behaviour was found in this study. Nevertheless, envisioning the potential has been made easier. Educators might consider ramping up efforts to get people online and using the Internet in more structured and purposeful ways. There is also the opportunity to look at expanding the types and delivery of courses to remote communities available online and to teach the current young generation about the information resources on hand from what Levinson (2004) has called the “...library with legs.” (2004: p.115).

Turning to aspirations and their effect on mobility and migration, this study found ICTs are used as tools in support of existing travel patterns but have not yet created new ones. If, for example, all trips and changes of address made by Indigenous people in communities since the switching on of Next G were compared to the two years prior, we would be unlikely to observe major changes in the places people visit or the number of people moving about. But, as Ishii’s (2006) evaluation of the influence of technology on spatiality highlights, there may also be temporal and contextual impacts yet to come from what is clearly a large scale diffusion of ICTs:

‘Consequently, ‘mobility’ cannot be defined as purely physical travel. Mobility should be understood in a broader sense to include at least three interrelated
dimensions of human interaction; namely, spatial, temporal, and contextual mobility” (Ishii, 2006: p.347).

The introduction and pervasive adoption of mobile phones has certainly begun to influence the context for mobility. Mobile phones are de-coupling interpersonal communications from societal and cultural norms handed down through centuries. This must be observed as ‘progress’ in light of the expressed aims of governments to ‘close the gaps’ between Indigenous and other Australians, as suggested by the example of young people gathering around the phone to ensure the quality of language contained in a text message.

The elders who were consulted in this study thought that the benefits from technology, including for digitally recording ceremonies and stories (to preserve them and teach young people) far outweighed the risks. Nevertheless, there will be many who see technology as a threat to languages and other cultural facets. The pace of ICT uptake found in this study dictates that those with such concerns should act very quickly to maximise benefits and minimise potential negative outcomes. Equally, the time is now to help young people to maximise the benefits from their clear desire to engage with the modern world and to teach them how to avoid the many dangers lurking in cyberspace.

It is clear that this study represents only a starting point for research in this area. Without longitudinal information on the continued evolution of ICT use in remote Indigenous communities, some of the potential dividends for education and employment may be lost. Communities may also progressively lose their youth cohort over time from out migration to larger population centres, should modernity have similar impacts to those in developed nations overseas. Major issues for planning, resource allocation and community sustainability will accompany this. On a practical note, the immediate need is to develop strategies to help young people steer around and away from situations online which may cause them financial, emotional or physical hurt.

Finally, the speed of technology adoption in remote communities has been at the fastest speed of all, the speed of the imagination of the people who live there. The innovative, enthusiastic and skilful approach of young people in particular should remind us that ‘closing gaps’ requires more than the re-engineering of bureaucratic solutions from the ‘outside’. Instead, purposeful efforts towards finding other ways to harness the mind's eye and entrepreneurship of remote Indigenous Australians should be a priority, in recognition that Indigenous people themselves are the solution, not the problem.
Chapter 12: More than Mobile: Migration and Mobility Impacts from the ‘Technologies of Change’ for Indigenous Communities in the Remote Northern Territory of Australia
12.1 Preface
This chapter is a reprint of a peer-reviewed journal article which is accepted for publication. It discusses emergent technologies which have made their way into the lives of remote Indigenous people and are proposed here as key factors determining future changes to Indigenous settlement distributions. While the previous chapter was based on primary research in remote Indigenous communities, this chapter is conceptual and theoretical by nature. The theoretical emphasis is on a re-conceptualisation of Transitional Migration Theory with respect to Indigenous people in the Northern Territory. This chapter is reprinted of the following article:


12.2 Abstract
Information communication technologies have permeated new consumer markets at remarkable speeds, diffusing to even the most remote and economically marginalised populations. In remote Aboriginal communities in the Northern Territory of Australia, residents have until recently been isolated from these symbols and facilitators of globalisation. But the rapid diffusion of Internet based technologies to communities in recent years raises important questions about future residential migration aspirations as residents engage with the global world. In this paper we critically review these ‘technologies of change’ for their propensity to change remote Indigenous spatiality. We propose a theoretical reconstruction of transitional migration theory, as it has been previously applied, and denote the implications for policy makers, researchers and service providers.

**Keywords:** Indigenous migration, Information Communication Technologies, Globalisation, Indigenous communities, Migration theory

12.3 Introduction
Information communication technologies (ICTs) targeted at the individual consumer market has engaged individuals with the globalised world on an immense scale. Mobile phones in particular have diffused faster than almost any other technology in history, including to remote and marginalised populations in both developed and developing countries where establishing the necessary infrastructure has long been problematic and past rates of access extremely low (Kalba, 2008). While governments have articulated the importance of ICTs
for closing socio-economic gaps between Indigenous and other residents, there are mixed views amongst researchers about its capacity to do so (Daly, 2001). Nevertheless, in Australia improving access for remote Aboriginal populations is now enveloped within broader Australian Government and State and Territory Government aspirations to improve Indigenous wellbeing. As a result, more and more Aboriginal people in remote parts are being afforded access to a new generation of ICTs and their necessary operational platforms.

It is hypothesised in this paper that the rapid and widespread adoption of such technologies in remote and small Indigenous communities in the NT will drive inter-generational changes to pre-existing migration, mobility and settlement patterns. With this in mind, the aim of this paper is to critically analyse the potential for ICTs currently diffusing to remote NT Indigenous communities to influence drivers of migration and subsequently enact new spatial flows and distributions. It should challenge policy makers and researchers to identify and debate the tensions from the expansion of modernity into culturally laden contexts as well as articulate how benefits from changed spatialities, induced by technology adoption or via other events, might be harnessed while negative impacts are managed.

At the outset it is important to note that the following definition of migration is adopted:

“A process of moving, either across an international border or within a State. It is a population movement, encompassing any kind of movement of people, whatever its length, composition and causes; it includes migration of refugees, displaced persons, uprooted people, and economic migrants.” (IOM, 2008: p.15)

While this definition is nothing startling in terms of how migration is conceptualised generally, in Australia it immediately challenges the revered wisdom of the enclave of researchers for remote Indigenous migration where a definitive focus on short-term mobility and circular mobility is maintained as analogous to the entire set of spatialities. That is, discussions to date have ostensibly omitted the potential re-distributive effects of residential migration for remote Indigenous populations both historically and into the future.

12.4 Why the ICT doomsayers were wrong

Despite their cultural heterogeneity, Indigenous populations in remote areas across the globe have exhibited rapid uptake rates for mobile ICTs including mobile phones and laptops. The introduction of mobile phones to remote parts of Africa, for example, generated subscription growth rates in excess of anywhere else in the world during the 2000s (Brady et al., 2008). In Canada, Perley and O’Donnell (2006) describe the widespread use of applications and
devices such as video phones, iPods, webcast music, and online games amongst First Nations youth in remote areas, and in Australia studies have documented very high ownership rates for Internet enabled mobile phones soon after their release into discrete Aboriginal communities (Dyson & Brady, 2009). But these trends are by no means unique to Indigenous or remote populations with analysts describing similar outcomes in other emerging ICT markets like Eastern Europe and India (Kalba, 2008). There is a sense of the ubiquitous therefore in the diffusion of mobile technologies and they remain symbolic of and implicit in the march of globalisation.

But the rapidity of ICT diffusion to remote Indigenous populations is proposed as being indicative of more than a latent demand for a reliable and affordable communication means. In Burkina Faso, for example, early adopters are described in a study by Hahn and Kibora (2008) as being driven to ownership by the status ascribed to phone aesthetics and user abilities to determine when and how they communicate with others. Such examples of the cultural appropriation of technology are testament to the seemingly inexorable reach of globalisation, but also reveal wide-ranging and juxtaposed ideologies about its impacts and its benefits for those in culturally specific contexts. Four main themes emerge in the extant literature in relation to this:

- **Access and cost.** The characteristics of remote settlements and their populations (including their physical disconnection from each other and from service centres; as well as social and economic marginalisation) has suppressed the free market and thwarted government attempts to raise levels of ICT access and use (for example, Dyson, 2004). Where infrastructure and services have been forthcoming, low incomes have been cited as inhibiting widespread uptake. Consequently, in remote areas of Australia and Canada, for example, Aboriginal people have long epitomised as symbolic of the ‘digital divide’ (Daly, 2005; Perley & O’Donnell, 2006). This has led researchers in the field to speculate that even the provision and maintenance of appropriate networks and infrastructure (itself a major and costly exercise) would not be sufficient to drive high rates of technology adoption because of the costs to individuals (Smillie-Adjarkwa, 2005). Highlighting this, in 2006 only 12 per cent of Indigenous households in remote NT had some form of Internet access compared to 57 per cent of others (ABS, 2010), while only 16 per cent of remote Indigenous communities in the NT in 2007 had terrestrial mobile phone coverage (ACMA, 2008).
• **Local consultation and collaboration.** In developed nations, where notable gaps exist between Indigenous and other people’s rates of ICT use, governments have and continue to make a push for technology ‘catch-ups’ through a range of programs and initiatives. In many cases individual initiatives have been criticised for design and implementation strategies which omit due diligence to the local context and cultures (for example, McLoughlin, 1999; McCallum & Papandrea, 2009). The diversity of Indigenous cultures is reflected in languages, demographic histories and a multitude of other variable localised circumstances. By contrast, programs for closing ICT gaps have expressed Indigenous people in the third person and as heterogeneous in terms of their ICT needs (Dyson & Underwood, 2006). A lack of engagement with local leaders and the community is a commonly cited reason for the failure of a local ICT initiatives and trials to deliver satisfactory outcomes and returns on investments (for example, Perley & O’Donnell, 2006).

• **Issues of gender.** Some studies document the role of ICT in strengthening existing gender-based, sociological, cultural and economic divides. Authors such as Rakow and Navarro (1993), for example, have suggested that females have not been afforded equal access to ICT and Smillie-Adjarkwa (2005) have expressed concerns about negative gender-based consequences from expanded ICT access, including the exposure of boys and men to pornography and the resulting issues.

• **Impacts on culture.** Concerns about the miss-representation, misappropriation and de-contextualisation of Indigenous cultures and knowledge in online or digital forms (Dyson & Underwood, 2006) are threaded into the arguments of opponents of ICTs. Some authors propose the imposition of Western ideals, pervasive in the information delivered by ICTs, might threaten the very survival of individual cultures (Dugdale et al., 2005). More broadly, the new ICTs are criticised for enhancing individualism and altering societal norms, undermining hierarchies and deteriorating traditional means of communications (Michaels, 1985; Hahn & Kibora, 2008).

Collectively these themes articulate complex sociological concerns that technologies are embedded with the values of societies they originated from, creating space for negative outcomes and governing the potential for positive outcomes (Dyson, 2004). Layered onto the pre-existing poor socio-economic conditions, the introduction of new technologies to remote Indigenous populations has been suggested as increasing, rather than abridging, the
digital divide between urban and remote, and between Indigenous and non-Indigenous populations (for example, McCallum & Papandrea, 2009). For these sorts of reasons, complex and diverse though they are, considerable scepticism remains over the benefits of ICT rollouts to populations who to date have effectively been isolated from their impacts.

Countering these perspectives, many benefits from ICTs for Indigenous peoples have been identified. These are broadly surmisable under three themes - developmental, cultural and individual outcomes. Developmental outcomes include more efficient delivery of services and programs to targeted populations, a major thrust of governmental desires to see technology play an expanded role in remote areas. There are many examples of initiatives particularly in service delivery to Aboriginal people including for education (Donovan, 2007) and health (Smillie-Adjarkwa, 2005). The literature suggests that ICTs opens up businesses opportunities for remote Indigenous people through increased market access in the areas of arts production and sales and in establishing tourism markets in particular (Hosein et al., 2005). ICT is also heralded for its capacity to record, preserve and share Indigenous languages, tacit knowledge and specific cultural practices (for example, Chikonzo, 2006; Schräpel, 2010). Perhaps most importantly, ICT is seen to facilitate access to jobs markets and employment opportunities (Muto, 2009) as well as a vehicle to deliver targeted curricula (Donovan, 2007). Sociologically, ICT is well regarded by some for enabling individuals to achieve their goals within a non-hierarchical and flexible environment (Wei & Lo, 2003) and without the limitations of prejudice (Brady et al., 2008).

The discussion so far demonstrates there is no universal acceptance of the potential for quantum benefits to flow from the provisioning of global technologies for marginalised (spatially and economically) and socially constructed populations such as Indigenous Australians living in remote areas. Nevertheless, in a significant development for NT communities, from 2008 onwards remote telecommunications networks were switched over from the CDMA (Code Division Multiple Access) network to the newly installed and Internet-enabled ‘Next G’ (or ‘3G’ for third generation) network. Next G is operated by Telstra (a partially nationalised Telco) using HSDPA (High-Speed Download Packet Access), Voice-Over-Internet-Protocol, picture TV and video-over-phone. It provides terrestrial mobile services for more communities and over wider areas than the CDMA network.

After the rollout of Next G to individual communities, uptake rates for Next G phones have been shown to be high and rapid, particularly amongst young adults (Dyson & Brady, 2009). In further developments, Aboriginal school children in NT communities are each receiving a wireless-Internet enabled laptop at no cost, thanks to the One Child One Laptop (OLPC)
philanthropic organisation. Other ICT initiatives are underway including the Australian Government’s Digital Education Revolution (DER), which aims to “…prepare students for further education, training and to live and work in a digital world” (DEEWR, 2009), and the National Broadband Network (NBN) which features the fibre-to-the-home delivery of high speed Internet via ‘Regional Backbones’ (DBCDE, 2010a). Populations not connected to the fibre network will receive enhanced ADSL2 wireless and satellite services with up to 12 megabits per second speeds (Conroy, 2009). These technologies will provide an information bridge spanning distances, and a cultural bridge which spans societies. They will afford individuals new and expanded information sets, new representations of the world, new abilities to ‘do things’ (like Internet banking and video chat), access to new networks, and new experiences outside of their immediate spatial and cultural contexts.

Only a small number of studies have examined the role of ICTs in bridging the physical spaces between remote or marginalised populations and others by means of migration. Mutu’s (2009) study in rural Uganda explicitly linked the uptake of mobile phones to greater rural-to-urban residential migration flows in subsequent years. Meanwhile, Paragas (2009) describes the possibilities for lives of ‘spatial simultaneity’ for transnational migrants thanks to mobile ICTs, and Hahn and Kibora (2008) discuss the important role of mobile technologies in easing the transition to urban life by facilitating contact between family, friends and the individual migrant. They propose ICT to be a factor making urban centres more ‘sticky’ for arrivals from smaller settlements.

With this in mind, critical questions are raised in the context of the NT about the possible impacts from widespread ICT access and adoption on the spatiality of remote Aboriginal residents. ICTs create a window through which the individual can observe and participate in the global world. They facilitate greater choice sets and expand economic and social opportunities for those who want to participate. Consequently new migration patterns which reflect individual aspirations for participation in the global economy may emerge. These issues are of vital importance to forward planning for future settlement and demographic characteristic in all parts of the NT.

In this study we take an interdisciplinary approach to conducting a critical analysis of the ‘technologies of change’ which have recently or are currently diffusing to remote Aboriginal communities. We assess their potential to impact on remote Aboriginal spatiality by drawing on research into technology uptake in remote Indigenous communities in Australia and elsewhere, as well as extant theory on Aboriginal migration and spatiality, and in particular the theory of transitional migration as it has been applied to remote Indigenous Australians. We go on to propose a re-conceptualisation of the theory by the addition of a further
transition which the authors have conceptualised from the arguments here as encapsulating the range of spatial repositioning likely to occur within one to two generations from the continued widespread adoption of ICTs in remote Indigenous communities in the NT.

12.5 Migration, technology and demographic change in remote Aboriginal communities

All of the 101,000 residents of the NT who live outside of its capital city Darwin (population 129,000) reside in regions classified as remote or very remote (ABS, 2010). More than half of this population (51 per cent) is Indigenous with most of these living in small communities of between 200 and 2,500 people (Figure 1). These communities have featured extensively in the media, in research and in countless enquiries for their poor rates of educational achievement, high crime rates, terrible health outcomes and low employment rates amongst residents. Little progress in narrowing gaps in these areas between Indigenous and others has been made despite a raft of targeted policy and programs and the onset of reconciliatory approaches to Indigenous affairs from the 1970s onwards (see, for example, Topsfield, 2009).

Like Indigenous people across Australia and in developed nations elsewhere, Indigenous NT residents are urbanising, albeit at relatively slow rate (Taylor & Carson, 2009a; Biddle, 2009; Prout, 2008a). Positive net migration away from or to small and remote communities are a powerful demographic force since even small population additions or subtractions can impose rapid, major and permanent demographic bifurcations. Such magnification in the remote context has been demonstrated in the female dominated post-WWII residential out-migration from small Aboriginal communities in Greenland, as well as other Nordic nations. In Greenland, substantial out-migration by females led to very high sex ratios in the communities left behind and led to negative social and economic issues (Rasmussen, 2007). While no clear acceleration in the rates of net residential migration away from remote areas in the NT is recently evident (as described in Chapter Three), long-term shifts in Aboriginal settlement patterns have been observed. Census data shows that fewer proportions of Aboriginal people now live in small communities in favour of larger communities and the urban centres of Darwin and Alice Springs (Taylor & Carson, 2009a). And, despite the contention that land rights and reconciliatory efforts have delivered opportunities for more Aboriginal people to return to living on or near ancestral lands, a smaller proportion are choosing to do so over time.

Aboriginal residents of remote Australia and in other developed nations have neither theoretically nor conceptually conformed to popular neo-classical models of migration
(Kinfu, 2005; Petrov, 2007). The study of rural-to-urban migration has been greatly influenced by the ideas of Harris and Todaro who in the 1970s proposed that labour market conditions arising from the transition from agrarian to industrialised economies served as the driving force for internal migration. These structural explanations of internal migration were built on the logic of economic (capitalist) theories about the role of peripheral areas as suppliers of labour to urban economies. These models and their derivatives have remained dominant in the field but nonetheless are criticised as being over-simplistic for reducing the forces of migration to ‘worker’s estimates of the probability of acquiring … employment’ (Ranis & Stewart, 1999, p. 286). It is clear in the context of most Aboriginal societies that a linear relationship between economic development and the migration of Indigenous people has not been evident and is not prominent even today.

Instead, some theorists align with the transitional theory of migration for describing and researching Indigenous spatiality (Bedford & Pool, 2004) for the Maori people of New Zealand, and Taylor & Bell (2004) for Indigenous Australians). The transitional theory of migration conceptualises and depicts changed spatiality according to the changing social and economic contexts of populations in question. Taylor & Bell (2004) have described three such transitions for Australian Indigenous people over time:

1. An extension of circulatory movement, initially associated with hunting and gathering, to include all activities which seek to maintain customary kinship;

2. Spatial concentration (largely during the 1960s) from the forced settlement of Aboriginal people into reserves and mission stations, the raison d’être of which was the confinement of nomadic movements; and

3. De-concentration from the freeing of restrictions on movements and the granting of land rights.

None of these transitions signify or can be comfortably aligned with developmental foci inherent in HT models, and instead are more aptly described as having been “…mediated by Indigenous agency.” (Ibid. pg.37).

Omitted from J. Taylor and Bell’s transitions are the contemporary phenomenon of frequent and large numbers of (mostly) temporary movements between communities and larger non-Indigenous settlements (service centres, towns and cities). Often involving extended time away from communities without a change in residence, these movements dramatically affect the demography of both the source and receiving locations. There are trenchant and complex views about the causes and effects, although the phenomenon remains largely unquantified (Prout, 2008a). Indigenous rights advocates view ‘urban drift’ as a manifestation of ill-conceived policy, with the more extreme citing the deliberate suppression of Aboriginal
rights as a motive (for example, Altman and Taylor, 2008). This expression was brought forward in response to the programs and policies of the NTER (or ‘Intervention’) which began in 2007 (for example, The Age, 2008a). Also tied to this debate are the perspectives of economic rationalists who highlight the problematic nature of short-term travel for the efficient and targeted delivery of services to what is essentially a constantly churning population (see Prout, 2008a). Collectively these perspectives emphasise the trenchant ideologies in relation to Indigenous cultures and policy in the NT.

Despite the ongoing spectrum of opinions, little in the way of sophisticated analysis about the relationships between changed spatialities and demographic structures has been forthcoming for the NT. Signifying this is a dearth of research on the causes and consequences of Indigenous residential migration, partly because numbers have historically been relatively small, but also because researchers have failed to consider and debate paradigms outside of those which posit spatiality as operational only within the transitional migration eras outlined above. The spread of the new generation ICTs into remote Aboriginal communities is engaging the younger generation in particular with the global world and provides them with opportunities to participate in it. This raises the question of whether technology might drive new expressions of migration including expanded residential migration to urban centres, and revised patterns of travel around remote areas and between communities and larger centres.

More specifically, when they are exposed more fully to the globalised world, will Aboriginal people aspire to its ‘fruits’ and adopt migration and travel patterns accordingly? Equally, if the intentions espoused in a plethora of policy for reducing socio-economic gaps are realised, where can we expect the new middle class to apply their skills, be entertained, work, meet partners, bring up families and purchase houses? Inherent in both of these questions is the sub-text of stark contrasts between the standards of living for remote Indigenous and other residents. On this basis, we must question whether, for young people especially, a desire for living away from remote communities, built up from increased knowledge about the alternatives, might be forthcoming. The idea of remote youth aspiring to a better way was seen as a primary driver of the out-migration of First Nations Canadians from reserves to urban centres from the 1960s onwards (Cooke & Belanger, 2006).

There are many historical examples of technology effecting changes to pre-existing spatialities for Indigenous people in what is now remote Australia. Indeed, Butchmann (2000) contends that Aboriginal people in Australia have long been enthusiastic about adopting and adapting European technologies, particularly for hunting and gathering activities where guns, and later motor vehicles, were incorporated to improve yields (Bird et
The arrival of the motor vehicle itself fundamentally altered spatial contexts for remote Aboriginals. During the 1960s, for example, the Toyota Land Cruiser became widely available, including the ‘Troop Carrier’ model which was capable of transporting large groups (Toyota, 2009). Its acquisition for traversing harsh terrain changed forever the nature and composition of travel by enabling larger groups to travel, increasing the catchment areas over which trip participants were drawn, and expanding the distances over which trips occurred (Petersen, 2004). The motor vehicle also opened up regular travel to urban centres and enhanced the ‘pull’ of these to people from communities (Altman, 1987).

But the current generation of ICTs is not the first information based technologies to have been diffused on a widespread basis to remote Indigenous communities. Television has been available in most for decades and has featured culturally based content and Indigenous run services (such as those described by Hartley et al., 2003). The Imparja television station, which broadcasts to remote NT, Queensland, South Australia, Victoria and New South Wales, has at its core philosophy to:

“...continually ensure that all of its activities positively promote Aboriginal culture and values.” (Imparja, 2010)

Radio broadcasting has followed similar developmental paths with both mainstream and Indigenous media stations now broadcasting in most regions (Ginsburg, 1993). While there are writings on the relative merits of television and radio broadcasting for informing and educating Indigenous residents, there are no analyses of their role in exposing such people to global phenomena, other than from anthropological perspectives (for example, Michaels, 1985) about specific impacts on culture in situ. Moreover, television and radio broadcasting are fundamentally different media types to the ICTs discussed here since their content is pre-determined and fixed according to programming schedules. By contrast information delivered using Internet based technologies is both user determined and, in many cases, user generated.

12.6 The technologies of change

Switching to 2010 we now critically examine the new generation of ICTs recently and currently (being) rolled-out to remote Aboriginal communities in the NT. The focus is on teasing out some of the possible impacts from their introduction and uptake for education, employment, life aspirations, migration and mobility. Included are discussions about infrastructural platforms on which specific technologies operate (such as high-speed broadband networks), individual mobile ICTs (like mobile phones), and some popular Internet based software applications (especially Web 2.0 applications) which run on these.
We also annotate the policies and programs which are driving their diffusion because these dictate how the relationships between modernity, closing socio-economic gaps and residential migration might evolve.

12.6.1 Broadband networks

In almost all communities, mobile broadband and broadband in the home have recently become available and offer speeds comparable to, if not better than, the same services in urban areas (because towers service a small radius of population and there are few if any tall buildings to obstruct signals). These are delivered via the Next G network discussed previously. Some communities are yet to receive Next G towers but these are slated for construction within the next few years. Next G is a large technological leap forward from satellite connections which were prohibitively costly to install and for individuals and households to use on a regular basis. Now, residents can use mobile broadband USB sticks purchasable at local community stores to access the Internet. These developments are so recent that there are no reports on uptake rates.

Further into the future, the Australian Government has announced its ambition to roll out a fibre-to-premises high speed National Broadband Network (NBN) across the country, and has formed a company to install and run it (Conroy, 2010). Included are infrastructures to construct ‘regional backbones’ (regional hubs from which rural and remote access to the high speed network will eventually be drawn). One of these, running North-South through the NT to Darwin, is already under construction. For 90 per cent of the population, the NBN is promising to deliver speeds of up to 100 megabits per second. For the remainder without direct access, next generation wireless and satellite technologies, with speeds of up to 12 megabits per second (DBCDE, 2010a), are proposed by instillation of WiMax and upgraded ADSL2 services (The Age, 2008b; TMCnet, 2007).

The Australian Government has signalled its intention to integrate its investments in the NBN with the future delivery of education. Its Digital Education Revolution initiative aims to improve students’ ICT skills and to encourage the use of ICT for interactions between teachers and students as well as parents and schools (DEEWR, 2010). This ethos is already on display through the ‘My School’ website (www.myschool.edu.au) which documents the performance of students at individual schools. Similarly, the Digital Regions Initiative (co-funded by the Australian and State and Territory Governments) provides around $60million ($AUD) for initiatives which will deliver digital applications for rural and remote communities in education, health and emergency services (DBCDE, 2010b).
Collectively, these emergent broadband infrastructures will deliver higher bandwidth to remote Indigenous communities in coming years. We are likely to see an increase in household and individual level Internet access and devolution away from the limited public access, traditionally provided at libraries, offices and community centres (McCallum & Papandrea, 2009). Broadband infrastructure is the platform on which new ICTs currently and will continue to operate into the future. The NBN, should it succeed (there are many questions about the veracity of its promises and the real costs of its construction and roll-out) will be a further quantum leap in Internet access for residents of Indigenous communities just a handful of years after mobile broadband became available.

12.6.2 Mobile Phones

The rollout of the Next G network during the first decade of the twenty-first century to remote parts of Australia signified a new era of communication there. Despite some criticisms, Next G provides vastly improved mobile phone coverage in and around communities, even at the extremes of remoteness, as Figure 21 shows for north-west Arnhem Land. Next G phones are available in local stores and come standard with a camera, video and chat capabilities, an MP3 player and, importantly, Internet connectivity. Studies on the use of mobile phones in Aboriginal communities in Australia are few and far between (the author could find only a handful of site specific studies) but in a survey in Central Australia, the Tangentyere Council and Central Land Council (2007) found that most people used them to keep in touch with friends and relatives. Interestingly, around a third used it to call family or friends who were interstate (pg. 39). Similarly, Brady et al. (2008) discussed the use of mobiles in the Torres Strait Islands for communicating with relatives who had moved away for school or work. Meanwhile, Sinanan’s (2008) study in rural Victoria identified how mobile phones are used to spread information about movements to and from the community including plans for weekend trips away. Whereas significant concerns about mobile phone uptake rates have long been raised on the basis of cost and cultural factors, early evidence suggests the ‘market’ has responded emphatically post-Next G. Dyson and Brady (2009), for example, found 80 per cent of young people owned a Next G mobile phone just nine months after their introduction to a remote North Queensland community.
On the one hand, the rapid uptake of mobile phones in remote communities is unsurprising since the introduction of these to remote and economically depressed populations in Africa saw growth rates in subscriptions exceeded anywhere else in the world (Brady et al., 2008). This may be partially explainable by the absence of reliable legacy ICTs, especially fixed-line telephones, which has been an issue for remote Indigenous communities in Australia (Kalba, 2008; ACMA, 2008) for some time. Pre-paid mobile phone plans at subsidised rates equivalent to non-remote areas are minimising cost burdens and phones themselves are relatively cheap and becoming more so.

In an interesting move in 2010, the Northern Territory Government announced it would provide free SMS, music and movie downloads for ‘frequent attendees’ at remote community schools to help address low attendance rates (ABC, 2010). Inherent in this initiative is the recognition of the reach of mobile technology and their potential for
distributing information and encouraging particular forms of action. More broadly, the Internet related functionality of mobile phones has been touted for its potential to improve educational outcomes for remote Indigenous students including in the areas of curriculum development, mathematical skills, and by general contributions to students’ communication and information seeking skills (for example, Hartnell-Young & Vetere, 2008). The mobile phone has perhaps the greatest capacity to engage young people with the global world and, should individuals increasingly opt to use the Internet over their phones as a means of obtaining information on activities and opportunities away from their communities, at least some migratory impacts are likely, particularly amongst the current youth and the generations to follow. Improved educational outcomes have been positively correlated with rural-to-urban migration from remote Aboriginal communities in Canada and the Arctic Circle (for example, Rasmussen, 2007) amongst other places. Mobile phones are also a means to access job markets and mediate contracts without travelling to the location of employment (Muto, 2009).

But the mobile phone is far more than a piece of technology. It has mediated new time-space decantations and has re-mediated the ways in which social relationships are formed and maintained (DiMaggio & Hargittai, 2001). Text messaging, for example, has proven to be unexpectedly popular in Aboriginal communities where literacy skills are poor and where supposed barriers to the use of such forms of communication were previously seen as impervious as well as contrary to the communication norms of orally based cultures (Brady et al., 2008). As virtual technologies are more widely adopted, remote lives may become increasingly organised around specific events, appointments and gatherings while face-to-face contact for conducting Indigenous business (Petersen, 2004) may be substituted. Whereas Aboriginal travel itineraries now are depicted as circulatory and occurring around flexible itineraries (compared to the diarised nature of travel for urban populations), travel itineraries in remote NT may in the future condense across space and time with the composition of travel parties becoming more specific according to the purpose of the trip. In short, the mobile phone has and will continue to effect changes on the drivers, composition, sources and destinations for circulatory patterns of migration and mobility in remote NT.

12.6.3 Laptops

Throughout the NT, small and hardy ‘XO’ laptops are being distributed to Indigenous children aged four to 15 years in priority order according to communities with the lowest Socio-Economic Index for Areas score (See ABS, 2008b for definitions). Backed by three of Australia’s largest companies, the XO has built-in wireless Internet and a screen designed to minimise sunlight glare. It is dustproof, waterproof and uses minimal power. An array of
features such as distance education, educational games, arts and music design are supported and these encourage students to engage daily with the technology:

“The XO laptop is best used as an agency for engaging children in constructing knowledge which is based upon their personal interests. Furthermore, it provides the tool for kids to share and critique these constructions. We believe that this will invariably lead them to become both learners and teachers - empowering them to solve the problems that are relevant to them and their community.” (One Laptop Per Child Organisation, 2009)

Computers in general, and particularly portable laptops, are espoused for their educational capacity, including for Indigenous populations (Wallace, 2008). Studies in Italy have noted that e-learning has the capacity to reduce the ‘tail’ of the bell curve for student outcomes and in northern Canada, e-learning is embedded in the curriculum (Roberts et al., 2005).

Progress towards improved educational outcomes from the diffusion of portable computers has been recorded in many countries including in Ethiopia and for the Navajo in the United States of America (Financial Times, 2006). In most studies and trials, educators and researchers appear to be surprised at how swiftly students in these settings take to using the functions and features of the technology. The opportunity for learning via highly visual interactivity and information delivery is thought to be the main reason young Indigenous people find them so appealing (Brady et al., 2008). Concerns are nevertheless raised about whether technology is subjugating efforts to establish the pre-conditions (for example, good teachers) necessary at the local level for realising sustained contributions to educational outcomes (for example, Wallace, 2008).
While the purpose of the XO laptop is primarily to engage children in new processes of learning, inevitably they will also grow up more accustomed to global forms of communication and ways of learning on offer via the technology. They will learn different ways of gathering information to generations prior and have access to greater volumes and different types of information. Once rolled out, a whole generation of young people will become familiar with using the Internet for everyday learning. Predicting how this might affect lifestyle aspirations is difficult. At the very least, young people will become more
situationally aware, be able to compare and contrast their lives with those of others, and will have the knowledge and means to travel to more distant places should they desire to do so. Clearly for some this may be a push factor for travel and possibly residential migration at discrete points in their lives, while others might find ways to use the Internet and laptops to build and sustain community capacity for engaging with the global world while remaining as residents of their community.

12.6.4 E-services and e-commerce

For some time now, governments in Australia have been integrating business models for service delivery to Indigenous communities with Internet capabilities (Dugdale et al., 2005). Examples included multi-agency hubs like the Rural Transaction Centres and the community access centres described by Daly (2005) for ‘one-stop-shop’ access to the Internet, government services, government information, and to e-commerce. Video conferencing has also featured in plans to bridge distances between city based organisations and their clients on the ground and to reduce service delivery costs. Technology in situ currently supports local service providers in health, education and other areas (for example, Kildea et al., 2006). Tele-health is used widely in Canada for the diagnosis of First Nations patients in remote communities, for example (Jennett et al., 2003). These community touch points with technology have encouraged skills development and familiarity with computer based technologies as a prelude to expanded personal adoption, albeit on a narrow basis for most communities.

There are mixed findings on the success of e-commerce initiatives for Indigenous communities in Australia. Brady (2007) established that, in spite of limited efforts by banks to account for the cultural and linguistic diversity of remote Indigenous clients, Aboriginal people have taken favourably to using Internet banking. Common tasks included checking balances, transferring money to family and purchasing goods from outside of the community. Meanwhile McCallum and Papandrea’s (2009) study in Central Australia found more Internet users used banking functionality than email or general browsing (p.1239), although it must be remembered that Indigenous people are now coerced to e-commerce by the introduction of the ‘Basics Card’ for income quarantining under the NTER (Hamilton, 2010). Accounts of e-commerce failures in remote Indigenous communities cite funding shortfalls, poor support, and a lack of effort to garner local input to the design and implementation, as well as limited training and to ongoing support for programs (Daly, 2005).
12.6.5 Web 2.0 technologies (social enabling software)

Web 2.0 is a term for describing a group of Internet-based applications which facilitate active user-generated content and social connectivity online. These include blogs (for example, blogger.com), social networking sites (like Facebook), wikis (like Wikipedia), podcasts (audio recordings of talks, lectures, books), RSS feeds (information on updated website content delivered to the user), video and audio sharing (like YouTube) and tagging and social bookmarking (for example, librarything.com). These social enabling tools introduce people to new networks and individuals and facilitate information and data exchanges between them. They are noted for reducing the level of uncertainty around developing new friendships and acquaintances traditionally associated with face-to-face contact (Stern & Taylor, 2007). User participation ensures individual engagement with interests outside of the immediate social and daily spatial domain as well as providing avenues for self-expression and feedback from others (Yurchisin et al, 2005).

Computer mediated networking has also extended to partnering formation, as the boom in Internet dating suggests. Web 2.0 enhances opportunities for people in remote Australia to meet partners virtually and a matching site for Indigenous Australians already exists to enable members to “…make new friends, network or to find that special someone to spend your life that shares similar interests, values, traditions and beliefs.” (The Black Match, 2010). Partnering aspirations may also lead to formations mediated over the Internet between Indigenous and non-Indigenous residents.

At the same time, Web 2.0 applications have made possible the showcasing of Indigenous cultures, encouraging in some cases travel away from communities. In 2007, a video of the ‘Chooky Dancers’ of Elcho Island in the NT performing ‘Zorba’s Dance’ became the most watched video on YouTube at the time (The Australian, 2007). The group was subsequently transported to southern Australia and to Greece to perform the dance. In addition, Indigenous art works and the stories behind individual pieces, their artists, and their communities can be viewed and purchased online from community art centres or collaborative art houses (for example, Aboriginal Art Online, 2008). Similarly, Warren and Evit (2010) have described the experiences of two Aboriginal hip-hop artists from remote communities who used YouTube to overcome distance to disseminate their music. This led to opportunities to travel and perform their music, including overseas. These small-scale contemporary means of ‘cultural outreach’ have the potential to engage remote Indigenous people (artists, musicians, web site designers, and so on) with mainstream business practices and to link them into business and social networks in distant places. Small groups of people
may undertake travel or be located in urban centres as they seek to expand these activities with technologies linking them back virtually to home communities.

12.7 ICT adoption and migration and mobility impacts

To this point we have outlined a range of technologies which, in a very short timeframe, have been rolled out to remote Indigenous communities. We have hinted at the many ways these might alter lives, develop alternative aspirations, create opportunities for improved education and employment outcomes, alter partner formation, and stimulate travel and migration between sources and destinations previously not linked. With a whole young generation now using a range of these technologies all sorts of questions are raised about the potential migration and mobility impacts. Although studies elsewhere support causal links existing between technology uptake for remote Indigenous (and indeed remote and marginal populations in general) and bifurcations from pre-existing dominant migration and mobility patterns, it is too early to tell in the NT how things might develop, how important technology, compared to other contextual factors, will be in garnering these, what altered migratory and mobility patterns may eventuate, and who might feature in these (age cohorts, gender balance and so on). On that basis there is clearly scope and an imperative for research to baseline the current situation and monitor and evaluate impacts over time. But the more immediate task is to conceptualise the macro level patterns of migration and mobility which might evolve, based on the available evidence, and to propose how these differ from existing patterns so that future research can identify where and when these changes occur.

To address this need, the author proposes an augmentation of the theory of transitional migration as it has been previously applied to remote Indigenous Australians by J.Taylor and Bell (2004). Transitional migration theory is a useful lens for depicting past and future migration patterns for populations undergoing rapid changes induced by demographic and non-demographic factors, or the interaction of these. The theory facilitates a much needed understanding of individual and aggregate means of explaining migration which Bell (2001) and others have proffered as being vital to building knowledge about future demographic change.

In early debates on this topic, theorists such as Zelinsky (1971) lambasted the dependency of migration theory on paradigms of relative attractiveness between sources and destinations (also known as the principle of least effort). He argued for intermarriage between these and other paradigms (like social mobility) for describing and understanding demographic transitioning. Zelinsky went on to define a ‘hypothesis of the mobility transition’:
“There are definite patterned regularities in the growth of personal mobility through space-time during recent history, and these regularities comprise an essential component of the modernization process.” (pg. 220)

Zelinsky’s mobility transitions feature irreversible changes from a situation of spatially confined physical and social mobility to patterns which propagate through time periods as ‘concentric zones’ which emanate from growth points and increase in diameter (space) over time. Importantly, the hypothesis is seen as fitting for the macro level analysis of changed mobility even where there is a dearth of data and research, and a lack of clarity over causes and effects in relation to the migration phenomena at hand. In these very nascent times of ICT adoption, transitional migration theory is highly suitable for developing and debating postulates on future impacts in places like the NT. An opportunity therefore exists to build on J. Taylor and Bell’s identification of three previous transitions in relation to this population in Australia.

Knowledge about the direct impacts from ICT diffusion for Indigenous populations on migration and mobility is primarily from developing nations but is nevertheless quite unambiguous for depicting fundamental changes and, in particular, increased rural-to-urban migration. The critical question in the NT is who and how many will be influenced under similar circumstances? Surprisingly, the answers may be more straightforward than belied by the question. It is those currently aged under 20 years who are demonstrably exposed to and engaging with the ICTs discussed here, and this has been confirmed by the handful of studies to date. These and the next generation of young Indigenous Territorians will grow up using the new generation of ICTs on a daily basis. The question of numbers affected is partially irrelevant, since, for individual communities whose populations are small, dynamic and delicate, even a handful of young people migrating away, or others who migrate in, can permanently and irrevocably change their demographic characteristics.

In line with these contentions, we propose that the impacts of ICT adoption on migration and mobility for Indigenous people in remote NT will initially be observed in the following areas:

1. Education - Critical to answering questions about how ICT will change migration and mobility, and therefore settlement patterns, is knowledge about its capacity to deliver improved educational outcomes. ICT is a key plank in the efforts of governments and others to improve Indigenous educational outcomes but, in line with the experiences in other nations, better education outcomes are likely to lead to increased migration to larger centres in the NT or to interstate for further education or work (for example, Norris et al., 2004). Indeed
improved education standards are universally espoused in the migration literature as enabling increased individual choice sets in relation to further education, work and socialising. Similarly, ICTs may contribute directly to accelerated positive educational outcomes by engendering users with the necessary skills to interact with the global economy. Technology also has a role to play in the design and delivery new pedagogies and ways of learning. Early reports into the successes of the XO laptops would certainly support this claim.

2. **Network and partnership formations** – ICTs offer individual access to an unlimited number of networks for communication and information sharing. The proliferation of Web 2.0 applications to support this major global development of recent decades increases the pool from which residents of remote communities can draw and develop friendships, associations, find partners and breed. Increased partnering with non-remote residents may result and is most likely to generate moves away from remote communities when co-location occurs, simply because the distribution of the non-Indigenous population is highly urbanised in Australia. It is important to note that the ratio of Aboriginal women to men who are in mixed partnerships is around 70 per cent and so we can expect the out migrating cohort from mixed partnering where a remote area resident is involved to have a female bias. Any growth in mixed partnering rates in the NT will affect settlement dynamics because of its outcomes on the share of Indigenous and non-Indigenous people in the population and on the relative balance of these between remote and non-remote regions.

3. **Mobilities of the mind** – The Internet is a vehicle for expanding individual’s conceptions of place and circumstance from the immediate physical sphere to the un-tethered possibilities represented in information delivered online (Zelinsky, 1971). Indigenous communities in the NT have long been economically, socially and culturally isolated from the goings on of modern Australia. But digital isolation, at least, has been brought to a sudden close with the advent of Internet and mobile telephony and, while there remain issues of connectivity and speed in many areas, current levels of access and availability is a quantum leap forward from the situation of just a few years past.

Residents can now explore places, cultures, people and networks virtually and some will develop aspirations for experiencing these. They can book and pay for transport to take them there, review places to stay when they get there, be
alerted to jobs which exist there and stay in touch with friends and family while they are away. Under the current conditions of poverty, and poor socio-economic outcomes in some remote communities, it is not difficult to envisage the aspirations of young generations feeding off such discoveries. And while low incomes and travel costs will hold some back, at least some will find the means to increase the radius over which they travel and live as time progresses.

4. **De-Circulation** - Circulation is the accepted term for describing the dominant form of migration for remote Indigenous Australians to date. Often referred to as temporary mobility, circular mobility or short-term mobility, it has attracted almost all of the energy of remote Indigenous migration researchers. Invariably, circulation has been explained by the types and nature of relationships which individuals in Indigenous societies have to their ancestral lands and to other Indigenous people in their immediate physical sphere (which in remote Australia can encompass hundreds of kilometres!).

But the imposition of western systems, institutions and autocracies has eroded the boundaries between circulation and other types of mobility. It is now accepted that circulation around remote areas and between remote settlements and other settlement types is purposeful in fulfilling a multitude of needs which are not necessarily related at all to culture or kinship (Taylor and Carson, 2009a). But under the current circumstances, the continued insistence by migration researchers that circulation is able to explain most observations of contemporary Indigenous spatiality in remote areas are disconcerting. This approach is frequently supported by cries of a lack of reliable data to specify otherwise and has created a space for the enclave of researchers in the field to perpetuate Indigenous migration practices as problematic by its measure and for its impacts (for a good discussion see Prout, 2008a). In between the lines of such discussions are subtle calls for Indigenous people to resist modernity by maintaining their cultures, at least according to highbrowed Anglo-Saxon inferences about what is best. And while the research enclave might argue that such adoption is promulgated under great duress and political force, the exceedingly high adoption rates apparent there belie these ideologies.

Consequently, while some impacts of ICTs on circulation can be expected, the attribution of outcomes from these will be extremely difficult to isolate and unpick because of the overlay of a plethora of policy, programs, research, reviews, viewpoints, indignations and evaluations including from attempts to
‘close the gaps’ between Indigenous people and others. On the one hand ICTs provide opportunities for the substitution of circulatory movement by, for example permitting users to conduct daily tasks online (like Internet banking and shopping) and for face-to-face meetings to be conducted virtually. Conversely, online communications increase the flow and reach of information about events and gatherings (for example, festivals, and funerals, training workshops, visits by football idols and so on) and this will stimulate new types of circulations.

A major conundrum for researchers is to articulate how cultures are and will be affected, enhanced or threatened as modernity takes hold. In the NT much of this debate features absolute opinions at extreme ends of the spectrum of possibilities. At one end modernity is postulated by activist as the grim reaper, spelling the death of Indigenous cultures. Conversely, governments are active proponents of the philosophy that only modernity (or ‘mainstreaming’ as it is referred to within most institutions) can resolve Indigenous disadvantage.

The net effect from the more comprehensive adoption of ICTs in remote Indigenous communities can be expected to be a concentric widening of migration from communities to progressively more distant places, accompanied by a shift in the relative importance of residential migration for determining the demographic characteristics of remote NT. This is proposed as the future fourth migration transition for Indigenous populations there, and will occur within two generations, or around half a century from now. It will differ fundamentally from the third transition (de-concentration away from communities) described by J. Taylor and Bell (2004) because, while larger numbers of people can be expected to venture further away from their communities on both a temporary and permanent basis, a major net re-distribution (de-concentration) between remote and non-remote parts is unlikely to result so long as birth rates in remote areas remain high. But a tipping point will be reached when sufficient numbers of females either move to non-remote areas (for education, employment and partnering) or chose to delay or forgo child birth for other reasons. From that point forward, the proportion of the Indigenous population of the NT living in remote areas is likely to begin to fall noticeably.

The fourth transition can be represented by depiction and an attempt to do so is represented in Figure 22. Starting from the centre, we can expect circulation as described by J. Taylor and Bell to continue to play a major part in the overall system of remote Indigenous migration over the medium-term. But proposed in this paper is the notion that ICT will progressively push individuals across greater distances emanating from communities for the purposes of
travel and recreation, partner formation, employment, to visit friends or relatives (VFR), to attend events and to access services. This is depicted in the arrows for each of the six proposed drivers of the fourth transition. The initial arrow indicates the expected majority flow, while the arrow furthest from the community represents both the expected ‘finishing zone’ (that is the spatial reach of migration according to settlement types) and the relative distance within each spatial unit to which the flows are anticipated to reach, for example, interstate versus overseas for travel and recreation. Hence, the extension of the travel and recreation arrow to mid way through the interstate and overseas spatial zone symbolises the expectation that this form of migration will propel people to places which are a large distances from their home communities. Conversely, we can expect migration driven by the need to access services to continue to involve travel to nearby service centres. Lastly, some of the drivers are depicted to include substantial return migrations, as indicated by arrows pointing to the centre of the diagram. Migration for partnering (especially mixed partnering), for example is not expected to generate significant return migration, whereas VFR is.
Figure 22 - Conceptualising remote Indigenous spatiality according to the fourth mobility transition
Note: V.F.R is visiting Friends and Relatives
12.8 Policy and demographic inferences

A critical point from the analysis of the individual technologies presented here is that Indigenous peoples across the world appear to very quickly adapt and adopt specific ICTs, and often a mix of these, to suit their needs and in order to obtain benefits they have identified as desirable. For policy makers this is good news since there are opportunities to fast track educational and employment outcomes from the integration of ICTs with programs to close gaps in these areas. But for demographers it means there is no linear model by which we can plot future migratory impacts since these will vary, not only according to the types of technologies introduced and adopted, but also the starting demographic and economic conditions at individual communities. In the remote NT and across remote Australia, these are highly varied, in spite of the largely amorphous picture depicted by the media and in some academic literature. The rapid uptake of technology is a reminder of the tendency for governments and researchers to persistently underestimate the tenacity, skills, internal capital, flexibility and competence of remote living Indigenous people. Instead we see a continuation in the discourse of problematisation.

The very rapid uptake of mobile phones amongst the young in particular suggests ICT capability issues are less significant than the narratives of doom and gloom have suggested. While some will argue that this merely reflects a latent demand from years of poor access, it could equally be argued that policy makers and researchers simply got it wrong in identifying the core reasons for low uptake:

“The speed with which residents have adopted 3G phones runs counter to the argument that Indigenous people need careful initiation into new technology and time to construct it in personal terms... This study indicates that, if Indigenous people want a technology and it is deemed affordable, they will adopt it.” (Dyson & Brady, 2009: pg.172)

In the current generation of mobile phones at least, the ‘market’ has found a product it likes and can afford to use. The mobile phone is another example of Indigenous Australians adopting and adapting Western technologies, and it is time that those charged with working toward a better future ceased to be convinced they are not capable of doing so in order to harness their full potential for meeting individual aspirations. The ‘new’ technologies discussed here, so long as their reliability is proven, bypass the need to rectify the poor availability and the inadequacies of remnant technologies (fixed line services, dial up Internet and so on) in remote communities. Clearly social equity measures will emerge and persist for those unwilling or unable to use the new ICTs, but over time these will diminish.
The main proposition from this study is that increased residential migration away from remote communities will be forthcoming within two generations. Governments must plan for the service needs of those who move from remote areas and those who will choose to stay. The parsimonious advice for policy makers is that emerging technologies are likely to grow the size of the urbanising cohort and that the ‘new urbanites’ are likely to be those aged 15 to 30 years. Consequently, absolute growth in the urban diaspora (for Darwin in particular) should be expected. But continued high fertility in remote areas should mitigate any re-distributive effects between remote and non-remote regions over the short-term at least. Accounting for the housing, employment, health and education implications of the new urbanites is critical to maximising positive long-term outcomes from any such transitions and to avoiding social and economic marginalisation in urban areas. However in the longer term, should the goal of closing socio-economic gaps eventuate in remote parts, fertility rates will be driven down (because of improved education and employment outcomes) and we can expect the Indigenous urban share to grow markedly in the NT.

For demographers, increased residential migration by young adults will bring into question the status quo of there being a ‘flatter’ age migration curve for Indigenous Australians when compared to others. The respected works of Rogers in this field propose that several migration intensity curves can be modelled and fitted together to reflect the propensity for residential migration at different life stages (Rogers, 1995). For Indigenous people in the NT, the migration propensity curve for ages 20 to 30 (the ‘labour force curve’) lacks the spike observed in the non-Indigenous curve which is created by the in-migration of young adults to commence and further their careers. But when efforts to close socio-economic gaps gain traction, the model migration schedule for Indigenous people may begin to more closely approximate the non-Indigenous curves. Indeed, this development may be as good an indicator as any of progress in closing gaps. But accounting for these developments in formal demographic models (especially population projections), and thus in planning for future service demands and settlements, will be a particularly difficult but necessary task.

There is always a danger in contemplating and researching Indigenous people in remote areas of Australia of crowding out space for alternative paradigms which describe fundamentally different futures for individuals who no doubt want nothing more than to better their own life and those of family and friends. What is lost in the doomsayer’s literature on technology and Indigenous cultures is that dispossessed Indigenous people around the world have used both technology and migration as a coping strategy to deal with threats to culture and society by dominant settling populations (ecological migration provides some good insights on this topic, for example see Poston and White, 1978). But Indigenous peoples have also integrated and adapted technologies to deliver positive benefits
and improve their wellbeing. The technologies discussed here both appeal to and can help facilitate individual ‘success’, at least according to Western notions about what that means (jobs, home ownership, consumerism, travel and so on). Substantial pressure is bearing down from the outside, and is evidenced in a swathe of policy, for Indigenous people to begin to realise such successes in greater numbers. The notion that technology and culture cannot be bedfellows, because the former symbolises the destruction of the latter, goes against the intent and rhetoric of contemporary policy which aims to narrow existing socio-economic gaps. It is therefore naïve to suggest that Aboriginal people do not or will not want the trappings of globalisation. Many will first discover what these are through the virtual world, and subsequently will enact changed spatialities to physically obtain them and the experiences which go hand in hand with these (shopping in a major department store, travel for leisure, going to major concerts and so on).

Finally, the issue of what consequences can be expected from the modernity of life in remote communities in the NT is at the heart of the debate on what benefits globalisation brings for humankind. While technologies are not a new construct in these spaces, access to the new generation of these questions technology’s capacity to truly deliver ‘progress’. Fundamental to that consternation we cannot ignore the potential for individual aspirations to drive social and cultural transitioning, as it has elsewhere, and consequently demographic re-distributions. But like most discussions in the realm of Indigenous spatiality, more questions are raised than answered. There is both an existing and impending need for research to document the baseline and to evaluate demographic, social and economic outcomes from initiatives like the National Broadband Network, a major policy platform instrumental in helping return the Australian Labour Party to government in 2010.

Unfortunately it is by no means clear how it will be known when the many questions raised here are answered, or how the outcomes might be measured. While the weight of evidence suggests that ICTs will indeed contribute to generating a fourth migration transition, even the seemingly straightforward task of identifying and measuring changes invokes tangled and difficult debates about how the nation addresses Indigenous relations. The role of the researcher is to forewarn as well as to retrospectively analyse, and in the field of Indigenous migration the potential for future impacts from residential migration have largely been ignored. Nevertheless, if the rhetoric of policy is upheld, it would be hypocritical to cling to antiquated mindsets of Indigenous Australians currently living in remote communities as without aspirations for engaging more fully with the globalised world. Furthermore, if such aspirations are realised, policy must be forthcoming which deals with servicing the physical, social and emotional needs of the diaspora as well as those who remain as residents in ‘the bush’.
Chapter 13: Conclusion and Implications
13.1 Introduction
This chapter summarises the research and its contributions to theory and policy. It commences with a review of the purpose of the research and a synopsis on the contribution of each chapter to the overall thesis. Following on are critical reflections on the implications of the research for theory and policy, along with an outline of opportunities and areas for further research, and finally a closing statement.

13.2 Purpose of the research
The purpose of this research was to investigate the changing demography and social conditions in relation to Indigenous people in the Northern Territory of Australia associated with the thesis that:

*Indigenous spatialities in the Northern Territory of Australia - the places people choose to live, travel to and from, and pass through along the way – are being redefined from within by the influences of modernity, globalisation and social change.*

The approach was inter-disciplinary by the application of mixed-methods and positivist investigations based on the thesis above. These were part of a broader research program examining the changing demography of Indigenous people residing in remote areas of developed nations, with a focus on comparing the NT to other (demographically and historically) similar areas including remote parts of Canada, Alaska and the Circumpolar North of Europe. The dissertation incorporated fourteen published and peer-reviewed articles which formed the substantial core of chapters outside of the Introduction (Chapter One), Methods (Chapter Two; which includes new material and text lifted from reports and the original articles) and Conclusion (this chapter), which are original works. Studies represented in the incorporated articles feature a mix of empirical, ethnographic and investigative techniques undertaken during the course of the candidature. These were conceptualised according to the paradigm of the potential for Indigenous people to develop revised notions of spatiality and researched under a number of themes and including:

- Indigenous population estimation, enumeration and forecasting;
- Historical demography of Indigenous peoples in developed nations;
- Women, migration and gendered demography;
- Technology and Indigenous futures;
- Globalisation and Indigenous migration;
• Migration data infrastructure and interpretation;
• Education and Indigenous futures;
• Indigenous settlement distributions and futures; and
• Transitional migration theory in the remote Indigenous context

Chapter One (the introduction) sketched out the research purpose, outlining its significance and relevance to contemporary Indigenous policy making, especially those addressing Indigenous wellbeing. It highlighted the limited capacity for extant demographic theories to explain changing Indigenous migration behaviours and to map out future directions in these. This was suggested as a consequence of the ongoing insistence that primary migration drivers for remote living Indigenous residents are, and will continue to be, inexorably tied to elements of culture: principally the necessity for individuals to return in a residential sense to remote communities to fulfil their commitments to accessing cultural lands and undertaking cultural practices.

Chapter One also noted that current intelligence on Indigenous migration futures, in the form of existing population projections from various sources, by and large embody these assumptions and archetypes. However, even the small losses from remote areas anticipated in extant population projections were demonstrated as being significant in the context of the very small and very isolated remote Indigenous communities found in the NT. Accordingly, any increase in net losses through the influences of factors investigated in this dissertation will bring about major demographic and social impacts at both source and destination settlements; resulting in revisions to broad Indigenous settlement patterns within the NT.

The methods chapter (Chapter Two) summarised the data sources and techniques employed in the studies associated with research articles incorporated to the dissertation. It outlines in detail where each study and each article is placed within the manuscript and summarises the research approach for each. The methods chapter also distends methodological text found within individual articles to provide the reader with a rounded overview and sufficient level of detail on overarching methodological concepts, techniques and classifications including definitions and geographical classifications. Following this the sources and uses of data collected, analysed and reported for this dissertation were described. This emphasised the contribution of the articles and this dissertation for extending the depth and quality of knowledge on appropriate methods for the study of Indigenous Australian migration futures, such as the adaption and expansion of Hamilton and Otterstad’s tests for ‘female flight’ to the NT context.
The remainder of the manuscript was divided into two parts with Part One (Chapters Three to Seven) establishing the demographic, social and political context for the study of Indigenous migration and settlement futures in the NT. Chapter Three framed the issues surrounding extant paradigms and notions about Indigenous migration futures by introducing and discussing a range of political, intellectual and philosophical tensions over historical and contemporary understanding on the changing demography of remote Indigenous Australians. It established the context for the thesis by proposing that Indigenous migration futures should be thought of as dynamic and evolving such that studies in the field should contemplate the effects of modernity (via technology, improved education, and the changing roles of women in particular) on the aspirations and choices of individuals in coming generations. The chapter argues for a focus on the presently young and forthcoming generations who are currently being exposed to opportunities, information, networks and images which are re-engineering individual notions of space and future aspirations surrounding their position within it. This is cached throughout the thesis as embodying the incessant march of the global economy, supported by government policy and embedded institutional scopes, into even the most remote Indigenous communities.

Chapter Four presented baseline evidence on long-term trends for intra-NT migration, comparing and contrasting the characteristics of migrating cohorts according to Census data. It found that established patterns of sustained net migration to the urban centres of Darwin (region) and Alice Springs have been in place since at least the early 1990s. Noted were high proportions of females in the migrating cohort. The high proportion of 10 to 19 year old migrants indicated education as a strong motivator. These patterns are broadly what would be expected having considered the international literature, with young people, and especially females, ‘leading the way’ in other developed nations in times past.

Chapter Four identified that at least some of the purported rapid growth in urban or town based diasporas, supposedly the outcome of the ‘urban drift’ resultant from poor policy, are individuals who instead have made conscious and formal decisions to reside there on a long-term basis. This finding is at odds with public perception and with most of the academic literature which identifies temporary ‘urban drift’ as the root cause of problems ‘in town’; driven by the desire for people to access certain things; usually couched as the desire for ‘bad’ things, like alcohol, or couched as having ‘bad’ consequences, like disconnecting people from place-based services. Importantly, this chapter highlighted there is minimal evidence of research which has developed theoretical and conceptual models on which future trends might be anticipated and used to guide policy settings.
Chapter Five discussed interrelationships between the components of Indigenous population change, examining trends in fertility and mortality in the NT and comparing these to remote parts of other nations. It incorporated discussions about other aspects of Indigenous population change including ‘ethnic mobility’ and increasing rates of mixed-partnering (where one partner in a relationship is Indigenous and one is not). Primarily depicted as urban phenomena, these are highlighted for their potential to dramatically increase the pool from which Indigenous children can be produced, and therefore for growing the size of the Indigenous population.

From a theoretical perspective, questions were raised in Chapter Five over contemporary accepted wisdom in the field which posits Indigenous demographic characteristics as influenced primarily by the State. Instead, the archetype of the thesis in this dissertation is that change will increasingly be driven from within through the individual and organic development of skills and resources for engaging with the global world. The processes and factors anticipated to deliver these outcomes (technology rollouts, educational gains, health gains and so on) are the subject of other chapters in the dissertation but in Chapter Five, climate change is identified as an impending ‘test’ for the adaptation of Indigenous migration behaviours to structural changes. The delicacy surrounding the issue of cultural maintenance in the face of modernity and economic development was raised to demonstrate that the study of Indigenous demography is far more than demographic in its roots and implications.

Chapter Six introduced and explained the contention held throughout this dissertation that traditional methods and materials, as well as the ‘grand theories’ of demography applied to explaining population change elsewhere, are unlikely to enhance our theoretical, policy and practical understandings about future demographic trends for Indigenous people in the NT. The ‘seven D’s of remote demography’ were introduced as theoretical examples of this contention. This framework highlights that approaches to regional development in the context of remote areas and the assumptions of economic development theories which continue to be applied there (especially in relation to Indigenous people) require revision in order to avoid repeats of past ‘mistakes’. Notably, economic development theories as they are applied to the north under the paradigm of changing things ‘out there’ merely reinforce that the internal capacity for something different is limited and requiring of continued outside interventions; the case study of the ‘haves’ and ‘have nots’ in the Tropical Rivers region of Australia is included to demonstrate this.
Chapter Seven probed technical and intellectual issues surrounding contemporary approaches to generating demographic ‘knowledge’ about Indigenous demographic futures by comparing and contrasting approaches by governments in developed nations to remote area population enumeration, estimation and forecasting. The focus was on remote areas in general but with emphasis on additional challenges for accurately depicting and forecasting the size and composition of Indigenous populations. The discussion showed these flow on to generate statistical uncertainties which perpetuate through demographic estimation and modelling processes, of which the nature, size and sources may never be accurately known.

Meanwhile, the contribution of mobile Indigenous populations and service populations to enumeration issues is seen to encourage continued bemoaning by researchers in the field over a lack of data and lack of process in capturing service populations consequent from short-term mobility. This, it was argued, has created spaces for nuanced anthropological homage to the unbridled spirituality and romanticism of Indigenous people in remote parts. Accordingly, ‘research based’ knowledge (generated by those on the ‘outside’) about what is best for remote living Indigenous people is for them to remain so. Given the credence afforded by policy makers and program evaluators to population data and population projections, this is seen to encourage cycles of poor investments into service infrastructure and development programs which are reflective and re-enforcing of existing settlement patterns. It was apparent from the chapter that actual changes in the demography of remote Indigenous populations might go unnoticed or might be misinterpreted (this dissertation argues that the ‘no change’ misinterpretation is prevalent) as a result of insufficient and insensitive approaches to data collection and interpretation.

Part Two incorporated investigative studies and experimental analyses on modern-day and future Indigenous migration practices in the NT. It commenced with Chapter Eight where results were presented from a program of qualitative research at four large remote Indigenous communities in the NT. This research gathered individual accounts about mobility-related impacts from the introduction of a major Indigenous-specific policy (the NTER). This policy was publically vilified for triggering large scale movements into regional centres and towns. The research here suggested that mobility patterns and flows are so well entrenched that they are resistant to policy and legislation like the NTER which, inter alia, might be expected to affect such phenomena. Policy and service delivery models which seek to understand and recognise, rather than politely ignore, Indigenous perspectives on mobility are therefore more likely to succeed. As such this chapter and this body of work as a whole should encourage policy makers and academics to consider these findings as indicative of a system of migration and mobility incorporating residential (permanent) moves from more to less remote places, temporary and short-term moves, welcome and
unwelcome moves, all of which result from a spectrum of drivers. A framework was presented in support of this ideology as well as to document positive and negative aspects of Indigenous migration in its many forms.

Chapter Nine investigated existing data for evidence of ‘female flight’ in gendered rates of migration to and from remote Indigenous communities in the NT. Techniques and approaches were based on similar work in the Arctic Circle (in Greenland, Sweden and Norway in particular) where the onset of shifting Indigenous settlement patterns was first observed as rapidly increasing female out-migration rates (from small and remote Indigenous communities), resulting in very high sex ratios at communities that were ‘left behind’. While the research revealed mixed results against this proposition, net out-migration of older women from large communities in the NT was evident. And while no sign of a ‘wave’ of female out-migration to urban centres or interstate was discovered, there are strong indications of female deficits in a handful of communities which vary in size and have no apparent spatial patterning.

It was theorised from results that, although in other countries out-migration has been the domain of primarily young and well-educated females, in the NT a deficit is being established amongst older and educated women. Comparatively, while out-migration of older women has a lesser effect on natural increase at communities, and perhaps mitigated social consequences, this form of out-migration can still re-shape existing patterns and systems of migration and mobility (for example, by encouraging visits by community residents to those now living elsewhere). Changes in the average community size for clusters were consistent with what might be expected under conditions of rural-to-urban migration, established in Chapter Three as the dominant trend in the NT for a number of decades.

Chapter Ten reported on the conceptualisation and analysis of measures of Indigenous student mobility within school terms. These were founded on the manipulation and mining of administrative datasets provided by DET. The study confirmed a history of anecdotes on the existence of a consistently churning student population in remote areas which must be dealt with administratively and educationally by schools. Rates of Indigenous student mobility according to the concepts of Students Movements, the Cumulative Enrolment Ratio and the Student Replacement Rate were found to be many times higher for Indigenous students in remote areas in comparison to non-Indigenous students. The research laid out (for the first time) a research-based approach for the depiction and analysis of such movements on which dialogue for addressing its impacts on students, schools and the education system can begin. The research also verified that Indigenous student movements are a sub-set of the broader and more complex phenomenon of high frequency, temporary,
and short-distance movements in and around remote indigenous communities in Australia. It raised questions about who comprises the ‘travel parties’ associated with these temporary moves, but emphasised that many of the moves notated in the data were unlikely to represent a spatial relocation of significance. The SAMS data also supported the finding (covered more fully in Chapter Eight) that the NTER is unlikely to have induced dramatic increases in the flows from communities to urban centres and towns in the NT.

Research presented in Chapter Eleven highlighted inter-associations between the rapid and widespread adoption of ICTs by young Indigenous people in remote communities in the NT and the potential for changing migration practices. By providing baseline information about the very rapid ICT adoption rates, very high rates of ownership amongst young people, and the uses to which mobile phones (especially) are engaged, the research highlighted implications for future aspirations in relation to education, family formation and the choice of residence in particular. Although ICTs are currently a means for supporting existing travel patterns, contexts for information gathering, its exchange and application were found to be changing rapidly. Mobile phones were reported as agents for the decoupling of interpersonal communications from societal and cultural norms handed down through centuries and encouraging of mainstreamed methods for interpersonal communications (for example using chat rooms).

The pace of ICT uptake was shown to fly-in-the-face of academic pessimism about the barriers created by literacy and numeracy issues. Consistent with themes throughout, technology was suggested as being illustrative of the innovative, enthusiastic and skilful approach of young Indigenous people in the face of major social and structural change; and in the face of their continued problematisation by others. Solving Indigenous disadvantage will require more than the continued engineering of bureaucratic solutions. Instead, purposeful efforts towards finding other ways to harness the mind's eye and the entrepreneurship of remote Indigenous Australians should be a priority, in recognition that Indigenous people there are the solution not the problem.

Chapter Twelve, on the other hand, has built on the practical demonstration found in Chapter Eleven on the speed of technology uptake at remote communities by supplying theoretical perspectives on the meaning of these for changing individual notions about space and the development of individual aspirations and opportunities within it. It was postulated that technology will be one (major) factor in the future emergence of a fourth Indigenous migration transition which was presented diagrammatically as an extension to the theory of Transitional Migration as it relates to Indigenous Australians. Accounting for the housing, employment, health and education implications from the ‘new urbanites’ suggested to
emerge from the ‘fourth transition’ was proposed as critical to maximising positive long-term outcomes for migrants and to avoiding social and economic marginalisation in urban areas. The development and application of theory which is grounded in this paradigm (for internally generated change) was seen as especially relevant to informing research into the long-term impacts from investments in technology infrastructure, and notably the National Broadband Network in Australia.

13.2 Contribution to theory

This dissertation has critically scrutinised a broad range of theoretical perspectives applied by scholars to inform research methods and programs of research on the demography of Indigenous people in the NT. These include the universally accepted theory of post-industrial demographic transitioning, a range of theories on migration and its drivers in the modern era (including Harris and Todaro’s theories on economic drivers and stepwise migration), regional development and economic development theories as they apply to remote populations (in Chapter Six in particular) and theoretical approaches to population projections in the remote context which were discussed for their diminution of individual decision making and over reliance on received wisdom garnered from respected experts. In each case the need for enhanced theoretical approaches were seen as necessary for generating research which is cognisant of the remarkable changes taking place in the lives of Indigenous people in remote areas of the NT at this time.

Demographic transitioning theory is exemplar of the reasoning behind the need for revising and enhancing theoretical approaches in the field of Indigenous mobility. It is the grand theory of post-industrial demography for developing and developed nations but is proposed here as unlikely to be able to explain or describe transitions in Indigenous populations in the NT and elsewhere. This is attributed to the unique and diverse characteristics of ‘starting’ populations and the ways in which modernity is influencing population change, with prima facie evidence in this dissertation suggesting migration (instead of fertility) led transitions will feature from the influences of global world phenomena on the aspirations of individuals in remote Australia. Linear conceptualisations and depictions of changes to age-specific fertility, mortality and migration rates under demographic transitioning were seen as deficient for predicting change in the remote Indigenous realm because of the complexity and dynamism of population systems there, and the complex factors generating bifurcations from past trends. The nature of these complexities was captured in the Seven D’s of remote demography framework. As well as contributing to discourse in the field (more on this
below) this framework lays out variant theoretical approaches to the study of remote populations.

The paradigm of cultural continuance in relation to Indigenous migration and mobility has come in for heavy criticism in this dissertation for producing introspective and inwardly focused theory and approaches to research in the field. For example, in Chapter Twelve it was argued that the discipline has continued to anticipate that Indigenous migration will remain under the influence of the State and that the nature of relationships between individuals and the State are governed by the policies under the umbrella of Indigenous affairs. This thesis challenges this assumption as being non-systematic in its visioning of the nature of demographic effects from migration into the future. Migration based studies remain largely focused on the domains of micro-mobility which, in line with Walter’s (2008) view of Aboriginal domains, is reflective of the need for individuals to remain spatially attached to their culturally embedded lands and its representations.

The framing of Indigenous migration according to these paradigms generates static views about what is a dynamic component of population change, whereas this thesis argues that individuals will increasingly make conscious decisions to broaden their location in space (with more choosing to reside away from communities). While to some this may be seen as coerced cultural abandonment, this paper argues that Indigenous people continue to demonstrate their skills in integrating, adapting and continuing to fulfil their cultural commitments and needs. Several examples are provided in the dissertation including the story of the culturally enlaced songs of the hip-hop band from the remote Torres Strait Islands who were signed to a record label after posting their music on YouTube (Warren & Evit, 2010). Symbolic of the willingness to carry forward their culture in new forms and over new media technologies, these young Indigenous Australian musicians were able to navigate barriers like “…patron discourses” (Warren & Evit, 2010: p. 142) which frame expectations of what constitutes proper Indigenous performance in the wider society.

Meanwhile this thesis has made direct contributions to Transitional Migration Theory (TMT) by proposing and mapping out a ‘fourth transition’ in the macro trends for Indigenous migration futures in remote Australia. This transition is indicative of an expected ‘opening out’ of spatial realms for Indigenous migration resulting from factors investigated here. In essence, this contribution to TMT hints that a ‘flattening’ of the world is finally underway for Indigenous people in the NT, and that its effects on migration patterns may not be too dissimilar than experienced by populations elsewhere. Fortuitously, these developments provide the backdrop for a wide range of inter-disciplinary angles and
backgrounds to be incorporated in the study of Indigenous migration and mobility research including tourism, transport and technology and these were indeed woven into the research reported in this dissertation.

This research also contributes to a more meaningful, accurate and unfettered discourse in describing and dealing with impacts from Indigenous mobility. A critical view has been taken of the discourse of theoretical hegemony embedded into assumptions about Indigenous population futures. The origin of these is seen as narrow and static theoretical foci as evidenced in past and continuing discourses of problematisation. The definitional approach encouraged and applied in this thesis sets aside acculturative embodiments of Indigenous migration in the NT and conceives of the need for research to embody internationally accepted discourses (Chapter Three). This ‘standardisation’ of discourse should encourage scholars to peel away from the long history of problematisation, found both in describing the practices of Indigenous migration and in the bemoaning of information used in its study. This thesis argues for a discourse which reflects more holistic and systematic understandings about the drivers, patterns and consequences of Indigenous migration in all its forms and all its outcomes. Inter-disciplinary approaches like those applied in this dissertation are encouraged as appropriate means for broadening the theoretical foundations of this field.

In a sense, the inability of the theories of demographic change, as it is proposed here, to ‘stay ahead’ of the how and why of changing Indigenous migration behaviours in the NT (and their influence on settlement patterns) should come as no surprise. Migration and mobility are, on the whole, studied as indexes of past behaviours in human geography, and for good reason. The ‘deregulated’ and uncontained mega-mobilities associated with the era of neoliberal capitalism (see D’Andrea, 2011 for a good outline) are in a sense too big and changing too rapidly for either micro or macro-scale theories to truly generate up-to-date knowledge. Only a select few, namely those in the field of demographic projections, engage in forecasting the future, and, as demonstrated in Chapter Seven, with great difficulties in the remote context. Consequently, modellers tend to continue to lean heavily on the past for assumptions about the future. Overlayed onto the delicate issues of culture (and its maintenance) and the past treatment of Australia’s original inhabitants it is not difficult to see why most scholars continue to fall back on the ‘theories of no change’. And while changes in individual behaviours proposed here for young Indigenous people in the remote parts of the NT may not be forthcoming, this thesis has at least recorded the urgent need to exhume knowledge and theory from other ‘places like us’ and from other disciplines outside of the demographical sciences to lend depth and breadth to theory and discourse around
debates on the appropriation of policy and programs for enhancing the futures of Indigenous people in the NT.

13.3 Implications for policy and practice

In considering short-term mobilities as a sub-set of broader population systems, a framework for understanding rural-to-urban migration in the NT was documented. It highlighted both cultural and other factors in driving mobility to and from remote areas. The complexity of the framework and the diversity of possible (positive and negative) outcomes make it clear that urban migration is a resilient and ongoing trend, a case supported by research around the world. In the NT more attention and energy might be paid to policy which maximises the potentially beneficial outcomes and minimises the potential negative outcomes outlined in the framework. This would see policies in place for helping those who have moved away from remote areas to transition to productive and successful ‘careers’ in education, employment and housing. The latter should be given particular focus given the misnomer of rapid and un-erring growth in transient populations in the urban centres of the NT.

Should migration patterns shift according to the propositions of this research, a significant over-representation of women will be seen migrating from communities to urban centres, interstate and overseas. This has social, economic and demographic ramifications which will need to be planned for. While women who migrate might be empowered to self-develop pathways towards better education, employment and housing outcomes, male dominated populations left at communities where female flight has occurred will need help in many forms. The solutions to a female deficit are not immediately obvious but are at the heart of the basic human desire to be partnered and to procreate. Simply allocating more money to remedying the relative disadvantage of those residing at remote communities will not fix current or future inequalities. However, targeted approaches to keeping women at communities and securing their progress in the areas above are needed. Initiatives aimed at establishing and supporting small enterprises might be appropriate, especially female-focused businesses like hairdressing salons which can serve social and economic functions.

As much as anything, this thesis is a call for changes in policy paradigms as it is for the conceptualisation and inception of specific policies. First and foremost is the need to redress the inherent (and largely unwritten, excepting the case of the Working Futures policy of the Northern Territory Government) policy of mainstreaming in situ. A continued focus on the problems of servicing remote Indigenous communities detracts resources from programs and initiatives which might encourage residents (who choose to do so) to seek opportunities elsewhere. This focus on problems perpetuates what is clearly a nationally ingrained
impression of Indigenous people as an ongoing problem for the nation: a problem for
Australia’s image overseas, a problem economically, a problem for the institutions whose
purview is to rectify ‘the problem’, a problem socially and a problem morally. Overly
ambitious and unachievable targets like those contained in the Australian Government policy
‘Closing the Gap on Indigenous Disadvantage’ (to which State and Territory Governments
have wholeheartedly signed up) are likely to further engrain perceptions about Australia’s
first inhabitants as an ongoing issue and a ‘project’ which must continue.

More importantly, being the subject of constant attention for policy, in the media and in
general commentary, Indigenous Australians, and especially those living in remote areas,
must inevitably feel they are a targeted and devalued part of the national population. The
ongoing discourse of problematisation has likely subjected some individuals into
surrendering to the very problematic and anti-social behaviours which are continually
levelled at remote Indigenous peoples, although this aspect is beyond the purview of this
thesis. Thankfully, the youth at communities now have in their possession the technologies,
skills and channels to speak out in support of themselves, their cultures and their aspirations.
Recent events in the Middle East show that, even under attempts of extreme censure, the
desires of youth for something different to the past cannot be constrained by bad policy or
the subversion the will for change.

13.4 Implications for further research

Clearly more research is required to better understand the changing aspirations of the
currently young generation of Indigenous NT residents in relation to notions of space and
the opportunities afforded to them by improving educational standards (should they
eventuate), as well as nascent access to the global information economy granted by the
‘technologies of change’ discussed in this dissertation. This research has been a first step
towards emphasising the importance of research into Indigenous residential migration for the
field of Indigenous demographic research in remote areas in general. Up to now this has
been secondary to concentrated efforts for understanding the causes and consequences of
short-term mobilities.

A good starting point would be to conduct detailed research according to the purview of the
seven D’s of remote demography presented in this dissertation. This would focus on the core
factors which make remote Indigenous communities delicate, dynamic, distant and so on;
keeping in mind that the factors influencing the relative weight of each of the ‘Ds’ in
bringing about demographic change at local levels are equally as important to overall
understanding. It appears, and was suggested in Chapter Seven, that micro simulation
modelling holds some promise for meaningful research along these lines. Within this field, micro simulation is clearly a contender for trialling and running scenarios which might describe and depict likely changes in demographic characteristics for individual communities, upon which aggregate trends can be built. The biggest challenge for agent-based scenario modelling is in the accurate portrayal of existing and changing migration behaviours. This dissertation comes out firmly in support of inter-disciplinary and multi-method approaches to informing such questions and to distilling down such knowledge so as to be represented in scenario and modelling parameters.

While some research organisations are engaged in long-term (in the research context) migration research for remote parts of Australia, these seemingly remain focused on the causes and consequences of short-term mobility. The CRC for Remote Economic Participation (CRCREP) for example, has a five year research program titled “Population Mobility and Labour Markets” (CRCREP, 2011). While the focus is indeed on short-term mobility, it is pleasing to see that a major aim of the project is to address the stereotypical image about short-term mobility and Indigenous people’s ability to access services and participate in the labour force in remote Australia (CRCREP, 2011). However, this approach is locked into a philosophy that ‘problematisation’ is somehow a mirage of popularist perceptions borne from the separation between the (rightful) passages of remote Indigenous travellers and the job opportunities which apparently exist ‘out there’. The supposition is that we simply need to link mobile travellers with the jobs in a range of flexible and ongoing ways. The reality is likely to be far from the case, given the limited, isolated and sporadic opportunities for job creation in remote Australia, as demonstrated in the abject failure of many decades of investment in remote economic development to deliver economies which benefit a good share of the population and which are sustained by endogenous investment. Nevertheless, exploratory research into ways of engaging people in remote areas with global business and employment opportunities are needed. The Internet ‘power user’ described in Chapter Eleven is a trailblazer in this respect and one cannot help wonder how many others in her community will be encouraged to seek out opportunities to benefit (economically, socially and experientially) from their life as remote living Indigenous Australians.

Following on from this, longitudinal research focusing on the aspirations and migration behaviours of youth in communities is clearly needed to track correlates between these and progress in education, employment, travel, and other forms of engagement with the globalised world. The time is most definitely ‘now’ given the rollout of the NBN and the dramatic pace of technology adoption. A suggested approach is to substitute longitudinal and smaller-scale research for some of the plethora of data collection activities currently

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duplicated over levels of government in support of (and to evaluate) what can only be described as a mind blowing range of policy and programs targeted at remote living Indigenous people in the NT.

13.5 Concluding statement

This dissertation has made important contributions to the theory and practice of understanding whether and how new Indigenous spatialities in the NT are likely to be influenced by complex demographic, social and economic factors. It has conceptualised the need to envision remote demographic modelling and research in light of the ways in which population systems there behave and change. Residential migration has been documented as reshaping Indigenous populations in developed countries across the globe and this should resonate with policy makers at all levels of governments. The size and characteristics of Indigenous communities mean that policy makers should be prepared for a range of eventualities to ensure benefits are maximised and the impacts on communities and those remaining are minimised. The thesis has made practical contributions to the methods and materials by which the changing demography of remote Indigenous Australia can be observed, analysed and tracked under such circumstances.

This dissertation identifies that the indelible human desire for the trappings of progress, economic development and individual gain in the globalised world is likely to bear fundamental influence on the choices of Indigenous youth. This is demonstrated across the globe, rightly or wrongly, in the primary force shaping human geography, steady and constant net migration to urban centres. The inferences found in contemporary policy and in the field of Indigenous demographic research are that cultures and their representations will facilitate remote living Indigenous Australians to ‘hold out’ against global forces. The irony portrayed in this research is that policies and programs aimed at mainstreaming remote populations are likely to increase the desire to migrate away. The abject failure of successive decades of policy to progress improvements in Indigenous socio-economic standards in remote areas should alert us to the need for alternative approaches. This dissertation suggests that Indigenous people should have as much say about the form of such approaches, given their history of ingenuity and adaptability in the face of change, and noting, as this thesis does, that technology access and other factors arm them with new means by which they can individually determine their own and their collective futures.
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