

UNIVERSITY OF SOUTHERN QUEENSLAND

**Economic Development in the Kimberley Region
of Western Australia:
A History and Dependency Theory Perspective**

A dissertation submitted by

Les Sharpe

For the award of

Doctor of Philosophy

2004

Abstract

The focus of the research undertaken for this dissertation is the economic development of the Kimberley region of Western Australia. The period studied is, approximately, the one hundred years from 1900–2000. The region has many of the characteristics of an underdeveloped area and of a low income economy.

This research used dependency theory as a framework for examining the causes of underdevelopment in the Kimberley. The development that occurred in the region during the relevant period has been catalogued by the creation of a database. This has enabled the collected information to be examined and manipulated in many ways. The database has allowed the detail of development in the Kimberley to be studied with respect to time, place and type of activity. This made it possible to examine the five hypotheses proposed by A. G. Frank which he considered likely to lead to fruitful research. The detailed study of these hypotheses would not have been possible in the way described without the database.

It was found that dependency theory does help to explain and understand the development experience of the Kimberley region of Western Australia during the twentieth century. This was the clear and positive result of this study.

The extension to Frank's core dependency theory, the five hypotheses, were not found to be applicable to the Kimberley region nor supported by the data. The hypotheses, therefore, do not add to our understanding of the nature of Kimberley development during the period examined. This does not invalidate or devalue the usefulness of dependency theory in this study.

CERTIFICATION OF DISSERTATION

I certify that the ideas, experimental work, results, analyses, software and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

Signature of Candidate

Date

ENDORSEMENT

Signature/s of Supervisor/s

Date

Acknowledgements

There are many people who deserve my thanks and sincere gratitude. Without them this thesis could not have been completed. The following are a few of the many.

- My two supervisors Dr Rod St Hill and Mr John Searle who provided continuous guidance over a long period and across many kilometres. Their perseverance, experience and attention to detail have been of inestimable value. It has been distance education in the extreme.
- Ms Christine Bartlett who was always understanding in applying administrative rules over long and tenuous communication links.
- All of the staff, past and present, at the U.S.Q. Off Campus Library.

(One day I hope to meet at least a few of the above in person.)

- Everyone at the Derby Library, especially Stephanie Roe, Jane Edwards and Suzie Moffat.
- Robbie Meerman of D.I.T.S who kept my hardware going and loaned me spares as necessary.
- My son, Michael, who, from his home in U.S.A., was ready at any hour to electronically swoop into my machine to correct program errors, to install updates and to adapt and service my ageing operating system and software.
- My daughter, Yvonne, whose support at times of personal stress was invaluable.
- My wife, Stella, who made the real sacrifices.

TABLE OF CONTENTS

CHAPTER 1.....	1
INTRODUCTION.....	1
OBJECTIVE	1
BACKGROUND TO THIS STUDY.....	1
In General Terms.....	1
Special Features.....	2
DEPENDENCY THEORY	3
Justification for the Use of Dependency Theory	3
Advantages over Other Theories of Development.....	5
THE CONCEPT AND THE QUESTIONS.....	7
METHODOLOGY	8
OUTLINE OF THE STUDY	10
CONCLUSION.....	12
CHAPTER 2.....	13
THE KIMBERLEY PAST AND PRESENT	13
OBJECTIVES	13
THE KIMBERLEY GEOGRAPHICALLY AND HISTORICALLY	13
GEOGRAPHY OF THE KIMBERLEY	14
Position	14
Water	15
Hills and Ranges.....	15
Climate.....	15
HISTORY OF THE KIMBERLEY.....	17
Discovery	17
Population.....	18
Pastoral Industry.....	19
Incomes	21
Finance	22
Infrastructure.....	24
Communications	25
Transport	25
Air Transport.....	26
Shipping and Ports	28
Mining	30
Pearling.....	32
Agriculture.....	33
Aquaculture.....	34
Tourism.....	35
THE COLLECTION OF INFORMATION	36
Building a Model	36
Gathering Data	37
The Database Model	38
Database Design	39
Determination of an “Event”	40
SUMMARY	41

CONCLUSION	42
CHAPTER 3.....	43
THE PEOPLE AND MAJOR INDUSTRIES OF THE KIMBERLEY	43
OBJECTIVE	43
THE PEOPLE AND THE INDUSTRIES	43
The People	45
The Major Industries: An Overview	49
THE MINING INDUSTRY	53
THE PASTORAL INDUSTRY	62
THE PEARLING INDUSTRY	68
SUMMARY	76
CONCLUSION.....	76
CHAPTER 4.....	78
ASPECTS OF UNDERDEVELOPMENT AND DEPENDENCY THEORY	
PRINCIPLES	78
OBJECTIVES	78
DEFINITIONS OF DEVELOPMENT	79
Doctrines of Development.....	81
Kimberley Comparisons with Definitions of Development.....	83
QUALITATIVE ASSESSMENT OF DEVELOPMENT IN THE KIMBERLEY	85
Demography	85
Unemployment.....	86
Education	86
Income	87
Health	87
POSSIBLE ORIGINS OF UNDERDEVELOPMENT	88
Historical Origins.....	88
Colonial Origins	92
PERSISTENCE OF UNDERDEVELOPMENT	94
Geographical and Commercial Reasons	94
Political and Social Reasons.....	96
OLD CONCEPTS.....	99
ANDRE GUNDER FRANK	102
THE ORIGIN OF DEPENDENCY THEORY	103
DEPENDENCY THEORY PRINCIPLES	106
SUMMARY	110
CONCLUSION	111
CHAPTER 5.....	112
DEPENDENCY THEORY DETAILS AND APPLICATION TO THE	
KIMBERLEY	112
OBJECTIVES	112
DEPENDENCY THEORY	112
Core and Periphery.....	114
Dependence and Dependency	114
Dependency and Development.....	117
KIMBERLEY APPLICATION.....	120

External Reliance	121
Concentration	122
Internal Fragmentation.....	126
Satellite Status	128
Aspects of Development and Dependency	131
CLARIFICATION OF SIMILAR CONCEPTS	134
Integration.....	134
Export Enclaves	135
SUMMARY	139
CONCLUSION	140
CHAPTER 6.....	143
FRANK'S HYPOTHESES AND THE KIMBERLEY SITUATION.....	143
OBJECTIVES	143
THE HYPOTHESES.....	144
First Hypothesis	145
Second Hypothesis	145
Third Hypothesis	147
Fourth Hypothesis.....	148
Fifth Hypothesis	149
KIMBERLEY APPLICATION.....	149
THE PROXY	156
Possible Choices for the Proxy	157
The Proxy Choice	161
SUMMARY	163
CONCLUSION	164
CHAPTER 7.....	166
ANALYSIS OF DATABASE MANIPULATION.....	166
OBJECTIVES	166
METROPOLE ECONOMIC PERFORMANCE.....	166
PERIODS OF TEMPORARY POLITICAL AND ECONOMIC ISOLATION	169
KIMBERLEY DEVELOPMENT ACTIVITY	172
Events and Sources.....	172
DATABASE ANALYSIS.....	177
The Second Hypothesis.....	177
The Corollary to the Second Hypothesis.....	181
TABLE INSPECTIONS FOR SPECIFIC PERIODS.....	184
Second Hypothesis Results confirmed	184
Corollary Results Confirmed	194
SUMMARY	214
CONCLUSION	215
CHAPTER 8.....	216
CONCLUSION	216
OBJECTIVES	216
THE REVIEW.....	216
The Questions	216
The Methodology	217

The Past	217
Explanations Using Dependency Theory	218
Investigating the Hypotheses	218
RESULTS OF THE INVESTIGATION	219
THE PRESENT	220
THE FUTURE	222
IMPLICATIONS FOR GOVERNMENT POLICY	225
Lack of Data	225
Political Representation	227
CONCLUSION	229
REFERENCES	230
BIBLIOGRAPHY	237

APPENDICES

Appendix A
Appendix B
Appendix C
Appendix D
Appendix E
Appendix F
Appendix G

LIST OF TABLES

Table 2.1	
Kimberley, State and National Population 2001	20
Table 3.1	
Kimberley Population: Unadjusted Figures	46
Table 3.2	
Kimberley Population: Adjusted Figures	47
Table 3.3	
Population Growth	48
Table 3.4	
Gross Domestic Product at Factor Cost 1990–1991	52
Table 5.1	
Population per Bank Branch	136
Table 5.2	
Assessment of the Kimberley in Dependency Theory terms	142
Table 7.1	
Classification of Events	176
Table 7.2	
Numbers of Events in Periods	179
Table 7.3	
Numbers of Events in Periods for Particular Industries	180
Table 7.4	
Numbers of Events in Periods	182

Table 7.5	
Numbers of Events in Periods for Particular Industries.....	183
Table 7.6	
Events during period 1981–1984	185
Table 7.7	
Events during period 1973–1977	188
Table 7.8	
Events During Period 1960–1963	190
Table 7.9	
Events During Period 1964–1972	195
Table 7.10	
Events During Period 1995–2000	202
Table 8.1	
Frank’s Hypotheses and the Kimberley	219

LIST OF FIGURES

Figure 2.1	
Map of the Kimberley	16
Figure 3.1	
Industry Activities	50
Figure 3.2	
Employment by Industry - 1996	51
Figure 7.1	
Stock Exchange Movements.....	168
Figure A1	
Entity Relationships	A7
Figure A2	
Table of Contents.....	A8
Figure A3	
Overall Entity Relationships Diagram.....	A9
Figure A4	
Data Diagram.....	A10

CHAPTER 1

INTRODUCTION

Objective

The objective of this research was to investigate the history of economic development in the Kimberley region of Western Australia using, as a framework, the analysis of dependency theory suggested by Andre Gunder Frank (Frank, 1992, p 107–118) and others.

To the author's knowledge no similar study of the Kimberley or any other region in Australia has previously been undertaken. The findings of this research may, therefore, also indicate current and past development problems in other parts of Australia because the conditions found in the Kimberley in economic and development terms may not be unique.

Background to this Study

In General Terms

The Kimberley region of Western Australia is a large area which has lagged behind the rest of the country with respect to development. Australia is often described as a rich, industrially developed, first-world country. For the coastal rim of the country, particularly the east coast, this is correct. However, there are large areas of Australia for which this concept of the developmental state is far from accurate.

Although Queensland is the most decentralised of any state with at least half a dozen major cities along its coast, there are also vast areas which remain much as they were a century or so ago. The Cape York area north of Cairns, The Gulf region (bordering the Gulf of Carpentaria), the Channel Country south of the Shires of Mount Isa and Cloncurry and much of those two Shires themselves

are such areas. There have been brief periods when parts of these regions have been at the forefront of industrial development. Usually it was mineral discoveries which gave brief industrial prominence to such places. Gold found in the late nineteenth century gave rise to economic booms and development from the environs of Charters Towers, which once boasted its own stock exchange, north through the southern part of Cape York Peninsula, (The Weipa enclave on the Cape York Peninsula processing bauxite is a comparatively modern development.) west to Cloncurry and thence south to Boulia. Ernest Henry's exploits in the 1880s created an industrial region based on copper mining and smelting (Sharpe 1987, p 14). That no secondary industries developed as a consequence of this mining is not surprising. The primary industries exhausted their reserves within a very short period. The large Mount Isa lead, copper and silver mine now stands almost alone as a working and economically significant unit in inland Queensland and the city of Mount Isa is an island of industrial development in an otherwise large rural backwater.

In Western Australia the Kimberley region in the far north of the State is similar in some respects to these remote areas of Queensland but there are also significant differences. In the Kimberley industries that were established over a hundred years ago are still operating yet the region remains mostly underdeveloped. The pastoral, pearling and mining activities have not led to the creation of secondary industries in the Kimberley.

Special Features

Collected in chapters 2 and 3, probably for the first time in one place, is a concise history of the region in terms of the attempted development of the Kimberley. Development events over the past one hundred years are concisely assembled, displayed and manipulated according to various parameters in the database described in chapter 2 and in appendices E and F. This kind of presentation of facts about development in the Kimberley is unique.

This study attempted to explain the development problems of the region using the dependency theory of development and underdevelopment. Until now this

theory had been used with respect to South, Central and Latin America only. This was the area where the originator of dependency theory, Andre Gunder Frank, lived and worked whilst developing the theory, but there is no reason why the theory should not have wider application.

Dependency Theory

Justification for the Use of Dependency Theory

Dependency theory is, perhaps, more accurately described as an "*approach*" to the study of underdevelopment rather than a "*theory*" (Valenzuela, & Valenzuela, 1982, p 33) in the strict scientific understanding of that latter term. However, the macrosociological perspective of dependency theory will permit consideration of state, national and global systems and their relation to the Kimberley region. Other theories, such as those mentioned below, tend to be limited by a consideration of the local society as the unit of analysis. Within the scope of a study based upon dependency theory attention can be given to, inter alia, any relevant matters connected with the mode of production, patterns of national and international trade, political and economic linkages between elites in the peripheral region and central places and group and class alliances.

Frank's theory has been reviewed in detail by other writers. Some justify use of the theory explicitly, others implicitly. Valenzuela and Valenzuela (1982), Todaro (1994) and Ghosh (2001) promote dependency theory by way of their analyses of it. Dow (1990 and 1993) and Seers (1979) endorse the theory by themselves using it and adopting a similar stance respectively without offering total support for or agreement with Frank and the theory. Support can be inferred from Meier (1995) from his similarity in approach in including qualitative factors in his assessment of development. Wallerstein (1996) can be said to lend support by his reading into the theory prescriptive elements or indications of actions to encourage development as well as accepting qualitative parameters for the assessment of development. In these critiques are clear justifications for the use in general of dependency theory and, therefore, its employment to explain the development experience in the Kimberley during the

twentieth century is perfectly legitimate. Two important papers of this kind are Palma (1978) and Simon and Ruccio (1986).

The examination of the methodological basis of Frank's theory by Simon and Ruccio provides, inter alia, justification for its use. Indeed, even the work of a major critic of Frank's theory, Robert Brenner, mentioned in the discussion by Simon and Ruccio concedes such justification.

Brenner (1977) concedes at the beginning of his article that Frank's description of the mechanism of surplus transfer from the underdeveloped periphery to the developed core and the resulting distortions of the economies of the periphery "clearly capture important aspects of the functioning reality of underdevelopment".
(Brenner, 1977, p 3).
(Simon & Ruccio, 1986, p 204)

Palma's work provides a succinct reason for the use of dependency theory rather than many other theories.

Thus the dependency school offers an important critique of such approaches as Rostow's 'stages of growth', 'modern-traditional' sociological typologies, dualism, functionalism and in general all those which do not integrate into their analysis an account of the sociol-political context in which development takes place.
(Palma, 1978, p 911)

In the Kimberley development represented by such things as "weather proof" bitumen roads, air services and modern electronic communications including the telephone, radio, television and the computer based systems of e-mail and the world wide web co-exist with poverty, low educational achievement, poor health, life expectancy lower than the national average, high infant mortality and the social problems caused by the excessive consumption of alcohol and the use of illicit drugs. For many the development experience of the Kimberley over the past 100 years has not been positive. Only a broad-based theory which allows

for the consideration of a wide range of parameters by which to assess development can explain this situation in the Kimberley. Dependency theory is such a theory and its use is, therefore, justified in preference to all other theories including those which are mentioned, together with their shortcomings, below.

Advantages over Other Theories of Development

Dependency theory has advantages over other theories, for example, modernization theory, (which is largely capable only of descriptive comparisons) in that *"it is open to historically grounded conceptualizations in underdeveloped contexts"* (Valenzuela, & Valenzuela, 1982, pp 34–35). The structuralist theory attributes underdevelopment to internal factors only although the Dos Santos model does take account of external influences. The latter thus becomes an exposition of dependency theory but with some variations when compared with Frank's work (Ghosh, 2001, p 80). Neo-classical theory concentrates upon growth and upon the historical paths followed by currently developed countries. Social and economic externalities are either not addressed or are taken to be "natural" developmental consequences, temporary if negative and intentional and sustainable if positive (Caporaso & Zare, 1982, p 53). "New Growth Theory" is essentially a reconsideration of endogenous growth theories, particularly although not exclusively, Schumpeter's theories of innovation and entrepreneurship and the temporary development of monopolies via invention and patent rules (de Castro, 1998, p 70). There is a dependence by innovators upon modern and sophisticated funding mechanisms, both bank and non-bank, for successful research and development programs. Such financial institutions are not usually found in underdeveloped regions. These areas may eventually encounter the results of industrial research and development and the application of new inventions but development directly from involvement in such research and development work is not common. There may be, initially, the use of underdeveloped areas as "test beds" or "experimental venues" but such activity is not often sustained. The proposed and actual use of isolated areas for the experimental planting of genetically modified crops is an example of this.

Dependency theory may be defined as a set of propositions:

- (1) there are different economic conditions, some superior (found in “core” or “metropole” areas) and others inferior (found in “peripheral” or “exploited” areas) that can co-exist in the same area or be found as a relationship between areas that are not necessarily contiguous;
- (2) this co-existence is not transitional but, rather, is perpetuated by the causal relationship (this denies the validity of “stage theories” of economic development); and
- (3) the gap between the superior or advanced and inferior or underdeveloped areas tends to increase over time. This is because the nature of the “core” – “periphery” relationship is such that sustainable development projects/activities are not encouraged in the peripheral areas and can, indeed, aggravate the inferior condition.

Dependency theory focuses on the nature and history of the relations between regions which may be defined within or across state borders (Todaro, 1994, pp 78–81). Further comments on the broader approach to development matters that is possible with the use of dependency theory compared with other theories are mentioned in chapter 4 where definitions of development and dependency theory principles are discussed.

The Concept and the Questions

It is hypothesised that the "historical and structural approach" suggested by Frank (1992, p 112), if applied to the Kimberley region of Western Australia, will generate substantially the same five hypotheses that Frank's work in South, Central and Latin America has suggested to him. Although Frank (1992, p 117) hoped that his hypotheses would be confirmed both in the region in which he was interested and elsewhere it is the "*historical, holistic and structural approach*" (Frank, 1992, p 117) that he emphasises. He presents his hypotheses as "*...lines along which further study and research could fruitfully proceed*" (Frank, 1992, p 109). This seems to leave open the possibility that the hypotheses might not be confirmed in whole or in part with respect to some areas. Further, this work was done by Frank (1992, p 108) in the context of work on the penetration of underdeveloped areas by the capitalist system rather than on dependency theory per se.

Thus the explanatory capability of dependency theory, originated by Frank and subsequently developed by many others, is not necessarily diminished in circumstances where these five hypotheses, whether totally or in part, appear not to apply. The relevance to the Kimberley of the five hypotheses and dependency theory per se can therefore be examined separately.

The research questions are then:

Can development/underdevelopment in the Kimberley region be understood by reference to dependency theory and does this theory, then, point to ways to achieve further/improved development in the region? It is proposed that the central theme of dependency theory, the core-periphery structure, has been and is a major factor in determining the type of development that has occurred and continues to occur in the Kimberley. The secondary question is: do Frank's five hypotheses apply to or are they generated by the situation in the Kimberley now or over the past, approximately one hundred years?

Methodology

Frank made the point that most historians have studied only developed metropolitan countries, not colonial or underdeveloped areas. Therefore theories and guides to development policy have come from the experiences of advanced capitalist countries. This lack of knowledge of the past of underdeveloped parts of the world, Frank suggests, has led to an assumption that the past and present of such regions is similar to an earlier stage of the history of the developed world. This failure in historical studies and the consequent misunderstanding of the relations between core and peripheral areas is the cause of the inability of other current development theories to explain the development of the whole capitalist system, especially the simultaneous generation of development and underdevelopment (Frank, 1992, p 107–108).

Also questioned by Frank were the concepts that a “trickle down” effect would bring development to underdeveloped areas and/or that any expansion of the “modern sector” in a developed region would eventually lead to development in a peripheral sector. With respect to the latter, it was Frank’s contention that the capitalist system of the advanced countries had quickly and fully penetrated every corner of the world and brought with it underdevelopment in many countries and regions of countries. In short, underdevelopment is the product of a single and the same historical process of capitalist development that has brought advancement to the progressive areas of the world (Frank, 1992, p 109).

Frank’s work emphasised the core–periphery relationship between developed and underdeveloped countries and regions. His studies were concerned particularly with south and central America, but he did not limit the relevancy of his work to these areas. He proposed that the non-peripheral or non-satellite state of Japan during the Tokugawa or Meiji period was a reason for that country’s successful industrialization (Frank, 1992, p 113). His theory is based

upon the effects of the spread of capitalism throughout the world. Thus it could clearly not have been intended to have relevance only to that part of the world which Frank investigated in detail. Indeed he referred to “...*this world-embracing metropolis-satellite structure ...*” (Frank, 1992, p 112).

The historical and structural approach favoured by Frank should lead to “...*better development theory and policy by generating a series of hypotheses ...*” (Frank, 1966, p 112). These hypotheses must be examined in more detail with respect to the Kimberley region if its development and underdevelopment are to be explained. Frank proposed that fruitful study and research could proceed by investigating the five hypotheses that he developed (Frank, 1992, p 109). These hypotheses do not represent a definition of dependency theory. The usefulness of dependency theory in explaining the development history of a given geographical region is not conclusively determined by any concurrence or denial of the relevance of the hypotheses to the region. The paths indicated by these hypotheses must be followed, inter alia, to ensure that any study of this kind is comprehensive and complete. The investigation of these hypotheses as presented in this study was undertaken precisely for the sake of completeness rather than as a test of dependency theory using data derived from the Kimberley region of Western Australia. The initial requirement was for a study of the history of this region.

The methodology to be adopted here was, therefore, to analyse the history of the region over a significant period. This analysis required that information about the core-periphery relationship must be assessed both qualitatively and, where possible, quantitatively. The former analysis provided evidence to determine whether the history of the Kimberley over the past one hundred years demonstrated significant development or merely the development of underdevelopment. The second assessment made it possible to align what has happened in the region with Frank’s dependency theory. Also attempted was a general clarification of some key terms such as development, underdevelopment and the development of underdevelopment. The latter term is peculiar to

dependency theory and means the continuing and increasing underdevelopment of less developed countries compared with the developed countries. To some extent the meanings of these terms have become clouded in the large number of works by the many authors who have written on the subject.

Outline of the Study

The structure of this dissertation provides a logical pathway through the complex issues associated with dependency theory and with development in the Kimberley region. Details of the history of the Kimberley region are set out in the next two chapters. Also presented, in chapter 2, are the details of the data collection, storage and manipulation methods.

Chapter 2: *The Kimberley Past and Present.* In this chapter the historical context of the Kimberley is established by considering economic, social and environmental events of significance over, approximately, the past one hundred years. The intention here is to detail the range of activities that have been undertaken in the region. A method is devised to catalogue items of economic significance which indicate development. The resulting database is described together with the means of questioning and manipulating it.

Chapter 3: *The People and Major Industries of the Kimberley.* A more detailed history of the three activities which have been carried on throughout the same period on a more or less continuous basis is provided here. Also included is a consideration of the demographics of the region.

Chapters 4 and 5 deal with dependency theory and its application to the Kimberley.

Chapter 4: *Aspects of Underdevelopment and Dependency Theory Principles.* This chapter reviews the current situation in the Kimberley region specifically in the context of development. An assessment is made of the state of development of the region. Also included in this chapter is a review of the

meaning of the terms “development” and “underdevelopment”. An initial review of Frank’s dependency theory is undertaken here and a case is made for its application to the Kimberley region. This is done with particular reference to terms that are constantly referred to in dependency theory models, reviews and variations, that is, such terms as “core”, “periphery”, “metropole” and “satellite” regions.

Chapter 5: *Dependency Theory Details and Application to the Kimberley.* This chapter provides an analysis of dependency theory. The holistic nature of dependency theory (Caporaso & Zare, 1982, p 43) is clarified and the difference between dependence and dependency is established. It is therefore suggested that the piecemeal approach described by Ghosh is a confusion of these terms (Ghosh, 2001, p 133). There is also included a clarification of the meaning of some of the terms used by dependency theory writers. The basic tenets of dependency theory are then compared with the development record of the Kimberley.

Chapters 6 and 7 deal with Frank’s five hypotheses and use the database for interpretation and presentation of the collected data.

Chapter 6: *Frank’s Hypotheses and the Kimberley Situation.* In this chapter a comparison is made of the hypotheses that arose from Frank’s studies of South and Central America with the situation in the Kimberley (Frank, 1992, pp 112-116). Two possibilities arise from this. Either the hypotheses are applicable to the situation in the Kimberley or they are generated by an examination of the development situation there. The hypotheses may be said to apply to the Kimberley if the questions implicit in them are answered positively by this examination. They may be said to be generated if the examination of the region suggests the implied questions. These possibilities are not mutually exclusive. The concept of a quantitative approach to the testing of the second of Frank’s hypotheses and the corollary to it is introduced here and an appropriate

proxy for determining periods of temporary political and economic isolation of the Kimberley from its metropolises is selected.

Chapter 7: *Analysis of Database Manipulation.* Here the database is used to assess quantitatively the possible application of Frank's second hypothesis and its corollary to the Kimberley. Tables derived from the database by applying appropriate queries to it are reproduced here.

The final chapter draws conclusions from this study and includes some observations about the future.

Chapter 8: *Conclusion.* This chapter reviews the previous chapters and then draws conclusions from this study. Also included here, as a postscript, is a consideration of future possibilities for the Kimberley region as assessed by writers on dependency theory. Just as the theory is more an approach to the study of development so this last assessment suggests approaches and changes that may be necessary to achieve meaningful development.

Conclusion

Following the methodology described above it was found that dependency theory was useful in describing and explaining development in the Kimberley. However, Frank's hypotheses were found to be, predominantly, neither applicable to the Kimberley nor generated by this study of the region. As has been pointed out above, the usefulness of dependency theory is neither limited nor diminished by the non-applicability of the hypotheses to the Kimberley nor by the failure of this study of the region to generate these hypotheses.

CHAPTER 2

THE KIMBERLEY PAST AND PRESENT

Objectives

The objectives of this chapter are to:

- identify and locate the Kimberley region geographically;
- describe the economic and development activities that have occurred over the past, approximately, one hundred years; and.
- finally, devise a way of recording development activities in a useful and meaningful way.

Identifying the objectives begins the process of examining the history of the Kimberley region in order to assess development or the development of underdevelopment in the region. This is a necessary exercise in order to follow the path suggested by Frank (1992, p 109) *"...along which further study and research could fruitfully proceed."*

Frank developed his dependency theory of development in South and Latin America and with reference to that part of the World. This study was an attempt to apply that theory to explain what has happened in the Kimberley and to determine what the future possibilities for the region may or could be.

The Kimberley Geographically and Historically

Other than the headings "Position", "Water", "Hills and Ranges" and "Climate" the items below describe conditions at the beginning and the at end of, approximately, the last hundred years in the Kimberley. It is a "parenthetical" picture of the region with the start and final situations being the

"brackets" enclosing undescribed "parentheses". There was never a smooth progression over the period, never a steady march from the "primitive" to the "modern". Some of what was initiated at the beginning remains, if only, sometimes, by way of influence, but much has disappeared. Some things which happened early in the period under review are now, again, being tried. That there has been a progression of events is undeniable, but to date there has been no attempt to explain or list the parentheses enclosed within the above mentioned brackets. Greater detail of the persistent and continuing aspects of some of the more important headings mentioned below will be given in chapter 3.

Geography of the Kimberley

Position

The Kimberley region of Western Australia is easily defined in geographical terms. It is that part of the State to the west of the Northern Territory border and north of latitude 22° south. Separating the region from the rest of Western Australia to the south are the Tanami and Great Sandy Deserts, the latter extending to the sea at Eighty Mile Beach. To the north is the Timor Sea.

The Kimberley is, approximately 419,077 square kilometres in area (Australian Bureau of Statistics, 1996(a)) or almost twice as large as Victoria. It includes the towns of Broome, Derby and Fitzroy Crossing in the West Kimberley and Halls Creek, Wyndham, and Kununurra in the East Kimberley. There are a number of smaller settlements including Camballin and Kuri Bay in the West Kimberley and Warmun (formerly Turkey Creek) in the East. Also there are numerous aboriginal settlements including those which were originally, mostly Catholic, missions such as Mowanjum, near Derby and Bidyadanga and Beagle Bay near Broome. Former townships exist on offshore islands in the Buccaneer Archipelago. These include Koolan Island and Cockatoo Island (the latter now developing as a tourist resort as are other settlements including that at Cape Leveque, near Broome).

Water

The major river systems are those of the Fitzroy and Margaret Rivers in the west and of the Ord and Panton Rivers in the east. The Ord River has been dammed to form Lake Argyle, one of the largest man-made lakes in Australia. The Ord River scheme provides both irrigation and electric power. There have been rumours of plans to dam the Fitzroy River and Margaret River in spite of barrage schemes on the former that have proved unsuccessful.

Hills and Ranges

The sandstone and sedimentary rocks of the north of the region are some of the oldest in the world. The lines of ranges are intersected by gorges, waterfalls, patches of lush tropical vegetation including local palms and tranquil pools. To the south are limestone ranges, gorges and fossil remains which originated as coral reefs over 100 million years ago. In the east are the Bungle Bungles, a range of conical rock formations unique to this area.

Climate

The climate is tropical and the region comes under the influence of the monsoon from October to April. It is generally accepted that there are two seasons. "The dry" lasts from late March until early October and "the wet" spans the balance of the year.

It is during the wet season that the coast is threatened by cyclones. Such systems of deep low pressure can bring destructive winds and flooding rains. The average rainfall for Derby is 623 mm and for Fitzroy Crossing is 537mm (Agriculture Western Australia, 2002).

Map of the Kimberley



16

Aborigine. Only over the last one hundred years has the hunter-gatherer life style disappeared.

Current inhabitants of the region and their “modern” life styles are, however, well served by scientific meteorological methods which have improved especially since Cyclone Tracy destroyed Darwin in 1974. Warnings of such meteorological events can only mitigate damage and injury. They cannot prevent such happenings.

History of the Kimberley

Discovery

Much of the region has changed little since it was probably first sighted by Europeans in 1688 from the vessel *Cygnet*. Over a decade passed before Dampier returned to the area aboard his ship the H.M.S. *Roebuck* in 1699. More than a century and a half slipped away until 1861 when the *Pinctada Maxima*, the world’s largest oyster, was discovered in Nicol Bay (Broome Advertiser, 24/08/1997). This is on what is now the Pilbara coast, but the pearling industry grew to significance in the Kimberley. The pastoral industry in 1879 in the west Kimberley and 1884 in the east (Kimberley Echo, 03/06/1999) and pearling in 1887 (Broome Advertiser, 24/08/1997) were the first two major activities in the Kimberley and they remain important to this day.

Mining on a small scale began in 1885 with the gold discovery by Hall & Slattery near what is now Halls Creek. The gold field was not so rich as was first thought and the successes elsewhere in the State, such as in the Coolgardie and Kalgoorlie areas, soon enticed miners away from this harsh region.

Prospecting for minerals and oil continues to the present. Few of the discoveries have resulted in production, although some of the reputed reserves of, for examples, coal (Broome Chronicle, 30/10/1909), tin (Broome Chronicle, 18/02/1911) and bauxite (Boab Festival Program, 1968) are very large. Zinc,

diamonds and oil are examples of mineral deposits which have been developed to the production stage (Department of Minerals and Petroleum Resources 2002).

Population

Initially the population of the region comprised solely Aborigines living as hunter gatherers. Since 1879 the number of other ethnic groups represented in the Kimberley has varied greatly. According to the 2001 Census a total of 41,969 persons were in the region on census night of which 1,316 were overseas visitors (Australian Bureau of Statistics, 2003). Figures for the four shires of the Kimberley and for the State of Western Australia and Australia are given in table 2.1.

The population of particular places has varied considerably over time for many reasons. The opening of the Halls Creek gold field caused the population of the area to rise to some 3000 men in 1886. A year later this number has fallen to 600 owing to richer deposits being found at Coolgardie and Kalgoorlie.

An influx of pearlers to Broome in 1904 pushed that town's aboriginal population from just over two thousand to almost four and a half thousand (Clement, 1999). Prior to this the pearling centre was at Cossack. A downturn in the industry which began in 1910 resulted in 1000 names being removed from the electoral roll and it was 1917 before the population recovered although the depressed conditions continued until the 1920s (Clement, 1999).

Over the decades spanning the turn of the century the European population at Wyndham grew from 95 in 1898 (Kimberley Echo, 08/07/1999) to 160 in 1912 (Kimberley Echo, 29/07/1999). During a similar period from 1889–1913 the population of Derby apparently grew from 100 to 228.¹

¹ There is no precise reference for this information. It was obtained from the archives of Derby Public Library. It is consistent with other information of its type, so there is no reason to doubt its veracity.

There has always been a cosmopolitan flavour to the population of the Kimberley. In the west, Thursday Islanders, Aborigines, Japanese, Chinese and Europeans were involved in pearling and general trading. In the east, although not counted among the 95 strong population of Wyndham, there were also Aborigines, Chinese and Afghans (Kimberley Echo, 08/07/1999). According to the 2001 Census there were in the Kimberley representatives of some 28 countries not including the 1,316 overseas visitors mentioned above, 1,716 born elsewhere than in the enumerated countries and 3,759 for whom a place of birth was not stated (Australian Bureau of Statistics, 2003).

Pastoral Industry

Cattle are the only important livestock on Kimberley stations (large, leased rural properties) today. This has always been the case on the stations in the east Kimberley. The first herds, about 4,000 beasts in total, were driven overland from Queensland and New South Wales to the Ord River Station in 1884. The Durack family in 1884 and Charles McDonald in 1885 arrived with 5,000 head of cattle and settled on Argyle Downs, Lissadell, Dunham River and Ivanhoe Stations.

In the west the first settlers arrived on the Fitzroy, Meda and Lennard Rivers as early as 1879. The Murray Squatting Company established Yeeda Station in 1880 with sheep driven overland from a landing point on Beagle Bay. The 1884 official Year Book for Western Australia states that there were 46,839 sheep, 960 cattle and 287 horses on the Fitzroy and Lennard Rivers (Registrar General, 1884).

Table 2.1

Kimberley, State and National Population 2001

Place	Persons	Aboriginal & Torres Strait Islander
Broome	18,507	4,179
Derby-West Kimberley	9,138	4,127
Halls Creek	4,118	2,506
Wyndham-East Kimberley	10,206	2,344
Kimberley	41,969	13,555
Western Australia	1,851,252	58,496
Australia	18,972,350	410,003

Source: Australian Bureau of Statistics, 2003

Sheep did not, eventually, survive in the Kimberley. By the late 1960s cattle remained as the only pastoral animal in the region (West Australian 08/09/1984). Lambing percentages declined from an original 70% to 46% in 1944 and then to 29% in 1959. The last bales of wool to be exported from Derby were shipped in 1969 and in that same year the Australian Land & Cattle Company replaced 42,000 sheep with cattle.

The Kimberley cattle herd numbered 489,000 in 1997. The majority of the turn-off of 138,558 head in 1999 was exported live to the Middle East and South East Asia and was worth \$54 million (Agriculture Western Australia, 2002). The delivery of the product to markets has always been a major problem for Kimberley producers. This, added to the fact that the free range production method has suited the output to narrow niche markets, has meant that

sometimes unusual delivery methods and local processing were developed prior to the current method of exporting live cattle.

Incomes

Wage rates in the Kimberley have always been high compared with capital city rates. In 1885 the labour cost for digging a well was \$2.00 per hour and fencers charged \$30.00 per kilometre.^{2,3} According to the 1996 Census (Australian Bureau of Statistics, 1996b) the median individual weekly income in the Kimberley was \$296, varying between \$390 in the Wyndham-East Kimberley and \$197 in the Halls Creek census districts (officially termed “statistical local areas”). Comparative figures for Western Australia and Australia were \$307 and \$292 respectively.

The bare figures do give the true picture of incomes in the region. There is a great disparity between the incomes of Aborigines and non-Aborigines. Approximately 81% of the Aboriginal population had an annual income in the range \$0–\$20,000 compared with only 42% of the non-Aboriginal population (Crough & Christophersen, 1993, p 34). Many residents of the Kimberley enjoy the benefits of various allowances such as district allowance, electricity subsidies and taxation zone rebates but many Aboriginal people do not receive such benefits mostly because the benefits accrue only to people in employment (Crough & Christophersen, 1993, p 38). The rate of unemployment among Aborigines is very high. Ethnically based statistics are difficult to obtain from later census surveys but in 1993 figures from the 1991 census showed that only 24% of the total Aboriginal population of the Kimberley was employed. For the non-Aboriginal population 50% of the total was employed (Crough & Christophersen, 1993, p 25).

² See footnote (1) on page 20.

³ These figures were quoted in “£” -pounds sterling- and miles and simple arithmetic conversions have been performed with no attempt made to adjust to present day equivalent values.

The cost of living in the region is high compared with that in the State capital, Perth. A Health Department of Western Australia survey found that in 1993 the cost of a "market basket" of basic food and non-food items was 65% more in the west Kimberley and 83% more in the east Kimberley than in Perth (Crough & Christophersen, 1993, p 39). A more recent report shows that on average the prices of goods and services in Derby are the highest in the state at 14.6% more than the price of similar goods and services in Perth. Broome is not far behind at a 13.2% premium over Perth prices (Linm, 2002).

Finance

From 1788 to 1901 the Kimberley was just part of a British colony. Neither an independent State nor Federal government existed. Private capital financed early expeditions of discovery. The hope was that cheap, productive land would be available that would increase in value and support profitable business ventures whether of a pastoral, trading, mining, or shipping nature. The colonial government also funded some expeditions and some infrastructure projects and the British rule of law soon followed the early settlers.

The best known expedition and survey of the region was undertaken by Alexander Forrest. He later acquired Meda, Gilgurra and Oobagooma stations (Broome Advertiser, 18/2/1998). The early history of land allocation and settlement was not an example of good governance or success (Clement, 1991, pp 15–16 & p 316). Forrest became a land agent whilst still working for the Land Office creating for him a clear conflict of interest between his public and private life (Clement, 1991, p 359).

By the turn of the century and the start of Federation the major coastal towns of the Kimberley all had jetties, some tramways had been built and there was a frequent (Kimberley Echo, 03/06/1999) if not a regular shipping service (Registrar General, 1889). All towns had the basic infrastructure of post and telegraph offices, police stations, hospitals and other government offices. All of these services and infrastructure were government funded. Government control was extending to the Kimberley as is evidenced by the fact that, by 1889,

seventeen government departments were represented in Derby (Registrar General, 1889).

The structure of the finance arrangements for the Kimberley today is defined by the three levels of government – local, state (and territory) and federal—as is the case for all regions over the whole of Australia. All levels of government raise revenue. Local government, the city, town and shire councils, collect revenue based on the value of rateable property. The state governments rely on a variety of taxes such as stamp duty, payroll tax and mineral royalties and now the goods and services tax (GST) collected on their behalf by the Federal Government. The Federal Government also collects income tax, company tax and customs and excise duties. Only the Federal Government collects more than is necessary for its expenditure. The excess is passed on to the other levels of government via the State Governments.

The difference in the taxation capacities among the three levels of government is known as vertical fiscal imbalance. The difference between the taxation capacities of the states and local governments is known as horizontal fiscal imbalance. The Federal Government provides both general purpose and specific purpose grants to the States and Territories. With the help of the Commonwealth Grants Commission—although the latter's role is much reduced since the introduction of the GST with that revenue replacing the general purpose grants—the Federal Government attempts to reduce horizontal fiscal imbalance so that a standard range and quality of services can be provided all over Australia. In 1992/93 Western Australia received 10.4% of Federal funding to the States and Territories and this accounted for 40.7% of all West Australian public sector spending (Crough & Christophersen, 1993, pp 69 & 70). Apart from specific purpose payments local government in Western Australia receives funds from the State's general purpose grant according to the recommendations of the West Australian Local Grants Commission. In 1992/93 the four Kimberley Shires received considerably more—in fact over three times

more - on a per capita basis than was the average for all State local government entities (Crough & Christophersen, 1993, p 120).

Infrastructure

The services that are accepted as normal and which, now, are considered to be indispensable to modern everyday life tend to accumulate gradually. It is a perceived public need and its reflection in political imperatives that causes infrastructure items to be funded and made available. Usually public funding is necessary although it is becoming more common for the private sector to be involved with large public projects.

The first post office in Derby was constructed in 1884 (Johnson, 1988) and in Halls Creek a mud brick Post Office was built in 1896 (Kimberley Society, 2001).

Bureaucratic delay seems not to be just a present-day phenomenon. There were first thoughts about a police station at Fitzroy Crossing in 1885 (Stevens, unpub, undated), but it was not until 1894 that a tin shed was made available for this use (Broome Advertiser, 09/09/1988). The first bush hospital in the region was constructed at Wyndham in 1894 (Kimberley Echo, 29/07/1999) and a small "native hospital" was established in Derby two years later. By 1898 Halls Creek had a residency, post and telegraph office, court house, gaol, police station and a hospital (Suba, 1998).

Other things, such as schools, public electricity supply, radio broadcasting services, improved communications and medical services capable of delivery to remote and isolated areas followed as they were invented, developed or needed. Today the major towns in the Kimberley have access to services similar to those available in capital cities although many are often restricted in capability, more expensive to access and less reliable than their metropolitan counterparts.

Communications

In this context this term is taken to mean communication by electric/electronic means. Road, air and sea communication will be described below.

A single wire telegraph system was brought to the Kimberley in 1889 from Northampton via Roebourne. It was extended to Wyndham in 1893 (Johnson, 1988). The Fitzroy Crossing telegraph office opened in 1902 (Stevens, unpub). A radio telephone service to the Kimberley was not established until after world War II (Johnson, 1988).

STD, ISD, telex, computer data links, facsimile and e-mail services were not available to the more remote parts of the region until 1990 (Shire of Derby-West Kimberley, 1990). A cheap telephone service, although not equivalent to untimed local calls as available in most centres in Australia, was not available between station properties until 2001 (Broome Advertiser, 28/02/2001).

Transport

No roads, as that term is now understood, whether of the bitumen or gravel type, existed in the region in the late nineteenth century. Travel in the wet season was almost impossible and in the dry season arduous and difficult. Flooding during the wet contrasts with “dry” rivers from May to November. Perhaps the best indication of the transport problems is that in 1887 the freight rate from Derby to the Halls Creek gold field was \$300 per ton.⁴ Expeditions of discovery followed rivers where possible. In the Kimberley the difficulty in this practice was that the rivers all flow north to the sea whereas the required direction of travel for exploration was west–east or vice versa.

At present there is one major bitumen highway connecting all major centres in the Kimberley from Broome to Kununurra. Towns such as Broome, Derby and Wyndham are on spur roads just off the main highway. Although most low level bridges or fords have been replaced with high level bridges this “all weather”

⁴ See footnotes (1) on page 20 and (3) on page 22.

road is usually still cut by floods at various places during the wet season. In the west flooding often occurs at the Fitzroy River crossings at Willare near Derby and at Fitzroy Crossing. In the east the road is most often cut where the highway crosses the Ord and Pantijan Rivers.

The most important gravel road is the Gibb River Road from Derby to Wyndham. This road gives access to the major tourist beauty spots and the many gorges in the Oscar, King Leopold and Phillips Ranges and centres of the increasingly popular eco-tourist establishments such as the El Questro Ranch near the Wyndham end of the road. The road to Kalumbaru and the coast at Admiralty Gulf and Napier Broome Bay branches north about half way along the Gibb River Road.

There are other roads in the region. The Duncan Highway, an unsealed road, runs east from Halls Creek and then north, to the east of Lake Argyle, to rejoin the Great Northern Highway (the black top) in the Northern Territory. The Canning Stock route, also unsealed, runs from Halls Creek to Wiluna, east of Meekatharra. Almost all gravel roads are closed during the wet season. All of these roads can be identified in Figure 2.1.

Air Transport

At the turn of the century the Wright Brothers had not yet made their historic flight at Kitty Hawk. This occurred in the first decade of the twentieth century. It was only just into the third decade, 1921, when the site for an airport at Derby was selected. It was taken over by the Commonwealth Government in 1922. The first flight from Perth to Derby via Geraldton in 1921 preceded the first commercial flight in 1923. This service carried mail to the Kimberley. Since then air transport has played an important community and commercial role in spheres as varied as health, by the Royal Flying Doctor Service, and the pastoral industry, by the air-beef scheme, respectively.

Until September 2001 both Ansett and Qantas serviced the region, predominantly via Broome. The former carrier had curtailed its services to other Kimberley towns when exposed to competition from Qantas in the early 1990s. At the same time the use of the Curtin Royal Australian Airforce base, an unmanned facility south of Derby so far as the Defence Department is concerned, ceased. Feeder flights to Broome by Skipper Aviation provided Derby's air service until recently (2003). These operated from the Town airport which was being damaged by the large regular passenger aircraft introduced by Ansett (Department of Transport, 1989). Operations by the latter airline commenced from the Curtin base in 1989 to prevent further deterioration of the Town strip. The hitherto "charter only" operator, Golden Eagle, now flies the Derby/Broome and return feeder services to connect with flights out of the Kimberley.

Broome Aviation (also known as Northwest Regionals) provides services between other towns in the region and to some centres in the Pilbara, such as Exmouth, Port Hedland and Karratha. Air North provides a regular service from Broome to Kununurra and on to Darwin. All of these aviation businesses also undertake charter flights and Golden Eagle provides charter service for other local firms and for tourists (Traveland, 20/02/2002).

Ansett provided the majority of seats to and from Broome until its demise in 2001. The failure of Ansett was a major setback for the local tourist industry although it occurred towards the end of the local "high season". In 2004 an international service to Bali was introduced by AustAsia Airlines. Flights are weekly from both Broome and Karratha (in the Pilbara) and connections to the rest of Asia and thus the rest of the World are now available directly from the Kimberley.

Charter operations are important in the region. The major mining operator, Argyle Diamonds Ltd, uses charter flights to transport its fly-in-fly-out workforce.

Until its operations were closed recently Western metals Ltd also used charter flights for the same purpose. Such operations are also important so far as

tourists are concerned, as mentioned above, to enable visits from main centres to remote sites of interest within the Kimberley.

Most station properties have airstrips as do many of the remote Aboriginal communities although these are usually not “all weather” surfaces. There are a number of helicopter operations providing such services as mustering, aerial reconnaissance and photography and, again, tourist flights. Coast Watch flights, which are a part of Australia’s coastal defences, make use of an old World War II runway on the Mitchell Plateau from which to stage and re-fuel surveillance flights along the coast.

Shipping and Ports

The first place to be considered for port facilities was Camden Harbour but it was never developed and was abandoned in 1865. The port of Derby was surveyed by John Forrest in 1883 (Boab Babbler, 29/04/1988). By 1884 ships were frequently visiting Cambridge Gulf near what would become Wyndham (Kimberley Echo, 03/06/1999). The Adelaide Steamship Company was making irregular calls there by 1887 and there was a regular service from Fremantle to Derby (twice a month) by 1889 (Registrar General, 1889). The Adelaide Steamship Company and W.A. Steam Navigation Company were both using the port of Derby by 1893 (Boab Babbler, 29/4/1988).

Jetties had been built at both Broome (Lawton K. 1997) and Derby (Registrar General, 1889) by 1889. At Wyndham the simple initial landing was rebuilt to an “L” shape in 1894 (Kimberley Echo, 08/07/1999).

Only Broome and Wyndham now continue to operate as full general cargo ports with regular services from Fremantle. Derby ceased to function as a general cargo port, although not officially closed until 1994, after the grounding of the S.S. Pilbara in 1981 (News of the North, 11/11/1982) and the subsequent suspension and then cessation of the State Shipping Service to Derby a year later (West Australian, 26/11/1983).

Neither Broome nor Wyndham is capable of handling large bulk carriers of the kind that are loaded with iron ore and iron briquettes at Port Hedland. Vessels of the order of 250,000 DWT (Dead Weight Tonnes) are dealt with at Port Hedland which, on the basis of tonnage shipped, is the largest port in Australia. The maximum capacity of the ports in the Kimberley is approximately 20,000 DWT (News of the North, 11/11/1982). There are large bulk grain silos at Broome but they have never been used because the agricultural production project for which they were built failed.

Just 32 kilometres north of Derby is Black Rocks, near Point Torment. There is here the possibility of a deep water port capable of handling ships of up to 60,000 DWT and of a size up to 100,000 DWT from a single bouy mooring facility similar to that which handles large bulk oil carriers at Durban in South Africa. A proposal to develop a port at Black Rocks was accepted by the West Australian Government at the turn of the century provided that the Federal Government would fund half the cost. Although this concept has been revived several times, the last being in 1983 (Kimberley Times, 17/03/1983), there has never been any agreement between the State and Federal Governments with respect to cost sharing.

In 1997 the Shire of Derby-West Kimberley took over the port of Derby and developed an "Export Facility" (Boab Bulletin, October 1997). The facility was opened by the then Premier of Western Australia, the Rt. Hon Richard Court M.L.A., in December 1997 (Kimberley Echo, 24/12/1997). Western Metals Ltd. shipped zinc and lead concentrates from Derby by a highly mechanised barge-loading operation. The barges moved the cargo to large carriers moored in the deep waters of King Sound. With the sale of Western Metals Ltd to a Canadian concern the mining operation has been mothballed and thus shipments through Derby have ceased. The port is now idle other than for occasional barge traffic of machinery and other industrial supplies to the Cockatoo Island mining operations being undertaken by Henry Walker Eltin Ltd.

Mining

There was something of a successive nature to gold discovery in Australia in the nineteenth century. As the Victorian goldfields began to decline so the precious metal was found in Queensland. Towns such as Clermont, Charters Towers and Croydon boomed and just as quickly waned and turned to other activities. Prospectors moved on as deposits were worked out or promising areas proved disappointing. Henry, McPhail and Johnson were finding copper in central Queensland where Cloncurry and Mount Isa would subsequently be built. There were enthusiastic reports of the probability of gold with the copper, although it would be silver and lead with the copper that would prove to be the basis for the development of Mount Isa. Mulligan, who had discovered the Palmer River gold field was attracted to the area but by 1884 he had decided that no large deposits were to be found. He left the area for the Croydon discovery because that was a shorter journey than going to the Kimberley goldfield near what was to be Halls Creek (Sharpe, 1986, p 18, unpub).

Many did go to the Kimberley field. A year after the initial discovery by Hall and Slattery in 1885 the population of the area was some 3000. This number had declined to six hundred by 1887 after the discovery of gold in the Coolgardie/Kalgoorlie area in what was seen then and has subsequently proved to be much richer deposits.

A major problem for mineral production is the long lead times involved. The Argyle diamond mine in the eastern Kimberley is now a major producer of both gem and industrial diamonds. By 1992 the Argyle venture was producing diamonds worth just over \$550 million (Crough & Christophersen, 1993, p 46). It had produced its first diamonds in 1984 after having started its search for deposits in 1974 (Sunday Times 13/06/1976).

The same situation occurs so far as oil is concerned. Oil Drilling and Exploration Pty Ltd was drilling on WAPET (W. A. Petroleum) leases in 1967. The No. 1 well at Blina, 105 kms east of Derby was drilled in 1981 (West

Australia's North, 1984) and produced an oil flow that same year (West Australian, 12/05/1981), the first in the Kimberley.

Western Metals Ltd was the only other major mineral organisation in production until after the end of the twentieth century. It started its Cadjebut operation near Fitzroy Crossing in 1988, a year after announcing its intentions (Boab Babbler, 25/9/1987), and operated a number of both underground and open pit mines producing zinc and lead. These were exported as concentrates via Derby's Export Facility. After surviving for a number of years only with the support of a small number of American debenture holders the parent company finally sold the Kimberley operations to a Canadian buyer in 2003. The whole venture was immediately placed on a care and maintenance basis until such time as international prices for zinc and lead improve.

There is also a small operation to recover undersea iron ore at Cockatoo Island. This in part constitutes a resumption of mining after BHP Ltd ceased operations on this island in the mid-1980s. The venture is carried out by Henry Walker Eltin Ltd on behalf of Portman Ltd.

Kimberley Diamonds Ltd began mining in 2003 at its Ellendale prospects near Derby. The company was prevented from opening earlier owing to legal problems over the ownership of the leases with Argyle Diamonds Ltd. The date of the commencement of production by Kimberley Diamonds Ltd puts it outside of the period being considered in this study but the operation is worthy of mention so far as the ongoing development in the Kimberley is concerned.

It is probably the prospecting for minerals that has been the major contributor to the economy of the region. It was expected that exploration would inject \$10 million–\$15 million into the Kununurra economy in 2000. Over the previous eight years Strikers Resources had spent \$14 million on its 5000 sq. kms of tenements in the north Kimberley and anticipated outlaying a further \$6 million in the subsequent six months (Kimberley Echo, 15/06/2000). The actual net

benefit of mining operations to the Kimberley region, Western Australia or Australia as a whole is difficult to assess (Crough & Christophersen, 1993, p 48). Whereas exploration activities employ and spend locally the productive operations have usually employed fly-in-fly-out staff and they truck in parts and supplies and export raw product or barely improved concentrates (Crough & Christophersen, 1993, p 49). Further comment is made on this point in chapter 3.

Pearling

Pearling was the earliest industry established in the Kimberley, although this was to some extent by accident. After poor fishing in the Torres Strait the Thursday Island fleet moved to West Australian waters. The major port in the north west at the time was Cossack in what is now the Pilbara. The skin diving phase of pearl fishing was fading out but the Thursday Island crews still had an advantage over most locals in using deep dress suits (Lawton, 1997).

Successive and frequent changes to the Pearling Act from 1882 were designed to raise duties on goods carried on board ships and to prevent evasion of taxes on exported pearls and pearl shell. It was pearl shell which was the important product in the early days of the industry rather than the pearl itself. The effect of the changes to the legislation was to keep boats at sea and to encourage the sale of gems and shell at sea in spite of this being specifically forbidden. Even the Government subsidised vessel "Australind", operating between Singapore and Australia, engaged in this trade which was contrary also to Company rules (Broome Advertiser, 18/08/1997). Staying at sea during the monsoon season put the boats at great risk and in 1887 the fleet was struck by a cyclone. To avoid contact with the authorities repairs were undertaken in Roebuck Bay where a temporary camp already existed. This established Broome as the centre for pearling activities (Lawton, 1997).

The pearl itself has now replaced the shell as the primary product of the industry. The shell was displaced by plastic in button making some forty years

ago.⁵ Although still centred on Broome the industry has operations in a number of places in the Buccaneer Archipelago. Cultured pearls are now the major output.

Twelve companies are members of the Pearling Producers Association. That organisation is a voting member of the South Sea Pearl Consortium. The twelve West Australian companies have sixteen licences which allocate the 922 quota units of 1000 shells each. The quota total is for 572 wild units and 350 hatchery units. Two companies dominate the local industry, Paspaley Pearls Ltd with 36% of the local quota and M. G. Kailis Ltd. with 18%. These companies have been in the business locally for 30 and 20 years respectively (Sunday Times, 05/08/2001).

Agriculture

There have been attempts at agricultural production in the Kimberley from the days of earliest settlement. Experimental rice, bananas and sugar were grown on Liveringa Station in the West Kimberley as long ago as 1892.⁶ There were trials of cotton near Derby by 1909. Forest River Mission was successful with cotton by 1917 and it was spun to yarn by Aboriginal residents. The Mission had also been able to supply Wyndham with fresh vegetables since 1915 (Broome Chronicle, 07/08/1909).

The Ord Scheme remains the greatest hope for the development of large scale agriculture in the Kimberley. The construction of the Ord River project was completed in two stages over some ten years in 1972 with a total area of irrigable land in excess of 62,000 hectares. It has not been a success other than for some small scale farming and horticultural ventures undertaken in recent times. The latest plan for broad acre sugar cropping as a joint venture between Wesfarmers Ltd and the Japanese Marubeni Corporation has recently been abandoned although approval for this project by the West Australian

⁵ See footnote (1) on page 20.

⁶ See footnote (1) on page 20.

Environmental Protection Authority was given (Kimberley Echo, 28/06/2001). This is unfortunate because the insect pest problems that plagued earlier farming ventures in the Ord Irrigation Area have been largely overcome with more effective control methods and improved varieties of seeds.

There have been ventures as different as ostrich farming (West Australian, 09/08/2000), herb farming (West Australian, 20/09/1997) in the west Kimberley near Broome and a sandalwood plantation in the east Kimberley (Sunday Times, 06/05/2001). A difficulty now is the tendency for there to be opposition on environmental grounds to any proposed trial or venture. The suggestion that cotton should be tried again in the west Kimberley brought immediate adverse local community comment (Environs Kimberley Inc, 2001). A new organic, holistic approach to the raising of cattle and to agriculture is being pursued at Birdwood Downs Station near Derby (West Australian – Magazine Section, 20/09/1997).

Until and unless a major venture succeeds in the Ord River Irrigation Area neither agriculture nor horticulture will be major players in the economy of the region. This is in spite of natural advantages in the Kimberley such as short nine month growing season for bananas compared with an eighteen month period elsewhere, early ripening giving access to markets when produce from other areas is not available, a production quantity already equal to 10% of the West Australian crop and suitable growing areas from Broome in the west to Kununurra (the Ord Irrigation Area) in the east (West Australian-Magazine Section, 20/09/1997).

Aquaculture

This is a new industry. It did not exist and possibly was not contemplated within the bounds of then available knowledge and technology at the end of the nineteenth century. There has been interest shown in aquaculture projects by the State Government. A co-operative project by Fisheries W. A. and Kimberley College of Technical and Further Education (T.A.F.E.) produced 60,000 larvae of barramundi at Broome Aquaculture Park in 1997 (Fisheries W.A., 2000).

Three years later 90,000 fingerlings were raised from larvae imported from the Northern Territory (Fisheries W.A., 2000).

In 1994 a local businessman submitted a proposal for a prawn farm at Derby. Final approvals from the various regulatory authorities were expected in 2001 (Broome Advertiser, 11/04/2001). Southern Cross Aquaculture Pty Ltd proposed to start operations on a 1000 hectare site near Wyndham in 2000 (Kimberley Development Council, 2000). This venture seemed to fare better than the prawn farm proposal in so far as dealing with government departments was concerned in that all necessary licences were obtained by 2001. The major difficulty was having to deal with some fourteen different government departments (Kimberley Echo 22/02/2001).

Lake Argyle Fisheries aquaculture program was started in 1991 although no commercial production was expected before 1998. Sixty tonnes of barramundi were produced in 1999 and this was expected to double in 2000 (Fisheries W.A., 2000).

Five applications to farm fin fish, such as barramundi, were made to Fisheries W.A. in 2001 but all were rejected because the applicants lacked technical and economic resources (West Australian, 07/06/2001). Aquaculture would seem to have potential in the Kimberley but government regulations and a lack of capital and expertise appear to be the problems.

Tourism

Visiting the Kimberley for pleasure was probably not contemplated as a possibility at the end of the nineteenth century. The advances in passenger air transport, the construction of good bitumen roads, improvements in communications and the capabilities of modern motor cars, especially four-wheel drive vehicles have made tourism an expanding activity in the region.

In 1991-92 the expenditure by tourists in the Kimberley was \$129.2 million. This was second only to Perth in value for regions in Western Australia. At that time

there were 27 hotels/motels and guest houses, 8 hostels and 19 caravan parks and the visitors are local (intrastate), national (interstate) and international tourists (Kimberley Development Commission, 1994, p 21).

The quality of the facilities in the Kimberley can be judged by the fact that in 1999 twenty-three of the seventy-eight finalists for State tourism awards were from the Kimberley. In 2000 all four finalists for the Sir David Brand Award were from the Kimberley region: Slingair Heliworks, El Questro, Kimberley Wilderness Tours and Eco Beach Wilderness Resort (Broome Advertiser, 10/05/2000). Unfortunately this last business was totally destroyed in 2000 by Cyclone Rosita which narrowly missed the town of Broome (West Australian, 22/04/2000). Further damage was done to the local tourism industry by the demise of Ansett Airlines in September 2001 even though this was towards the end of the short (six month) high season from mid-April to mid-October.

The Collection of Information

Building a Model

A model is a structure used to represent reality. Often it is smaller than the object that it represents. It may be of the same material as the real object or of something which is easier to manipulate. The complexity of a model may match that of the real object or it may be much simpler. The tools available with which to work the model must be easily available but need not be the same tools as those needed to shape reality. History is reality. It cannot be shaped or changed after events have happened. However, it is sometimes difficult to see patterns as they develop in historical periods because the elements often occur randomly. Trends or progress over time can be missed or misinterpreted. A good model can facilitate the examination of history. A model representative of the history of the Kimberley could thus be as simple as a list of significant events.

The intention initially was simply to compile a list of events of economic significance and to put it in chronological order. It was thought that this simple

model of the history of the Kimberley, carefully inspected, would be sufficient for the purpose of defining periods of concentration of development events and periods without such events.

Gathering Data

Facts were gathered from many sources. These included the archives of the public libraries at Derby and Broome, museums, historical societies, shire records and publications, newspapers and individuals with an interest in the history of their areas, towns, shires and occupations. The list soon became extensive. A great deal of information was available. The only limitation was in deciding the amount of time that should be allocated to collecting it. In the initial stages of this research it was impossible to know what would ultimately be useful information.

It became obvious that certain categories of information were very important in the development of the Kimberley and remained so for the whole 100 year period to be studied. Examples of such categories are information on: shipping/ports, the pastoral industry, mining and pearling. Some categories of information became important over time: transport, communications and air transport. The frequency of some kinds of events was the important factor whereas with other events it was their overall or lasting effect that was vital. It is the frequency of mineral discoveries that is important. The more such events the greater is the development potential of a region. It is the effect of establishing a port at a place that is important because its existence encourages development in many fields. More information on the topic of categories of information will be presented in chapter 8.

In collecting the information each piece was individually identified and dated and provision was made to associate with it the place (town, shire etc) most relevant to it, a particular product or commodity, the source of any funding provision and the source of the information itself. A brief description of the information was also added to the notes made on each item collected. The items of information were collected from all sources and simply listed in the order in which they were

found. After a few months a large number of items had accrued and were in random order. This was clearly unsatisfactory for research purposes since no clear picture of the history of the Kimberley could be seen and, therefore, no conclusions could be drawn. Some kind of order had to be established.

It proved to be an almost impossible task just to re-arrange the information into chronological order. It was obvious that it would be even more difficult and very time consuming to extract separate lists for particular towns or given industries or over specified periods for given towns or industries.

The Database Model

It was soon obvious that the only solution to these problems was to create a database. The advantage of adopting this course of action was that the items of information could be entered into the database in any order. This included the possibility of entry into the database in no particular order or, simply, in the order in which the items had been recorded as each was collected. The important fact about a database is that the information that it contains can be re-arranged at will by addressing appropriate queries to it.

Some information, particularly that which is limited in extent, can be entered into separate small tables in the database and related to the main table in a shorthand or abbreviated form. Thus, although there are many individual items of information, there are only a relatively small number of geographical places with which these items can be associated. Thus a short table can be constructed containing the names of the shires and the towns in the Kimberley and any other relevant geographical areas plus any other useful information about these places. The main table need then contain only an identifying reference to the particular place with which an entry is associated. Duplication of information relevant to the place is thus avoided but the relationship between any item of information and the associated place can readily be recovered by the use of an appropriate query. This is the major useful feature of a relational database. Short tables can be constructed to contain other information relevant to each item of information that may be useful such as the product concerned,

the information source and the funding source. Such a database also allows for the relation between secondary items to be recovered. Thus it is possible to discover the number of items of a particular category that happened in a particular town. The full list of queries that were developed is given in appendix F. Some information that is stored in a database may eventually prove to be either of no value or it may not be possible to collect sufficient information on a particular point to make it useful. There is little more effort required to store such ultimately redundant information in the database. Thus initial possibilities can be pursued and subsequently abandoned as and if necessary without much waste of time or effort.

Having made the decision to create a database to contain all collected information it remained simply to choose an appropriate computer program. The program chosen for this purpose was *PostgreSQL (version 6.5.1)*, an object-relational database management system. This facility was provided as a standard inclusion with the *Red Hat Linux operating system (version 6.1)*. The program has a graphical user interface, *PGAccess (version 0.98)*, written by Constantin Teodorescu. This database can be queried by using the Structured Query Language, SQL.

Database Design

The database contains information relevant to the development of the Kimberley region of Western Australia. The design of the database is specified in appendix A. It is comprised of, essentially, lists of events of economic significance and other relevant information. How an event of "economic significance" is determined is discussed below.

The lists, in the form of primary tables in a relational database, can be "questioned" by addressing queries in the appropriate form or language to the database program. The queries determine the extent and nature of the information which needs to be displayed. Secondary displays or tables produced by querying the database can provide information relevant to

particular purposes and/or particular times. The primary tables are reproduced in appendix E and the queries are listed in appendix F.

Determination of an “Event”

The main table in the database contains a list of events of economic significance that have occurred in the Kimberley over the past, approximately, one hundred years. It is not a complete or exhaustive list. Such a list would probably be impossible to compile and some events would probably be included as a matter of subjective judgement. It is suggested that it is a statistically significant number of events and is therefore representative of all such events. Further it is also the case that the samples on an annual basis are also representative samples. From it conclusions may reasonably be drawn with respect to development in the region over the period for which the events of economic significance are indicators.

The determination of what was an event of economic significance was very broadly interpreted. In the late 19th and early 20th centuries almost anything that occurred in the Kimberley could be described as an event of economic significance. It might be the arrival off the coast of a survey ship, the establishment, formal or otherwise, of a pastoral station, the proclamation of a township, the construction of a government building or the opening of a store, shop, hotel or tradesman's business. A glance at the “events” table (see appendix E) shows how widely the parameters were set in order to define an event as of economic significance. It also shows how the definition of an event of economic significance has changed over time. The opening of a new shop or store would probably not now be an event of economic significance. Equally the sale of a pastoral property might not be of current economic significance. Although the criteria for inclusion as an item of economic significance was broad it was neither random nor arbitrary. The fact that the occurrence of an event had been recorded at all tended to make it an event of some significance. Certain recorded events were not of economic significance. Births, marriages and deaths were generally not considered to be of economic significance even though such items are usually diligently recorded in many places by multiple

authorities. Unusual weather events are often mentioned in local records but these also were not always of economic interest. However, the impact of, for example, a cyclone which causes the loss of both lives and property or a large number of ships engaged in a significant local industry is of economic significance. Time also affects the decision about whether or not an event is of economic significance. At the turn of the 19th/20th century the establishment of a new store or shop was an important event. It signalled new economic activity and the promise of growth and permanence of the settlement or town in which it was established. The sale or lease of land, whether a block in town or the acquiring of a pastoral lease, was also an event indicating growth and permanence. Such events were a sign of security for those who may have been thinking of establishing a long term presence in the area. Now, at the beginning of the 21st century such events would not be of economic significance unless the shop or store was one of the major national chain stores or supermarkets or if the pastoral lease changed hands owing to the effect directly or indirectly of native title legislation or because of the operation of similar or consequent legislation. Thus to some extent the determination of what was or was not an event of economic significance was a matter of judgement based upon local knowledge and an understanding of the history of the region. The event had to be unique and it had to have a bearing, even if indirectly, on the economy and development of the region. These criteria allowed the creation of 23 categories of events. These categories are listed in table 7.1 chapter 7 where there is further discussion concerning the nature of the categories.

Summary

This chapter has described the Kimberley geographically and historically. It has also specified a method of examining in detail what has happened in the region during last, approximately, one hundred years. The events that have occurred during the last century are the contents of the main table of the database described above. This database has been designed and constructed specifically to facilitate the investigation of development in the Kimberley region of Western Australia.

To the author's knowledge no tool of this kind to facilitate such an investigation has been devised previously. Application here is to the general economic and developmental state of the region. With the collection of other and different information the database should be capable of facilitating investigations in other areas. Such fields may be as specific as, say, health or education or as broad as general social and ethnic studies. Only the emphases of the data collected need to vary. The storage and manipulation of the information would be similar to that used in this study.

Conclusion

Change has occurred in every field of human endeavour in the Kimberley region of Western Australia over the last hundred years. What has to be decided is whether or not what has happened is development, sustainable development or the development of underdevelopment.

Three industries, mining, pearling and the pastoral industry have been pursued in the region continuously over the past century. A detailed examination of these activities follows. This continues with the course recommended by Frank (1992, p 109).

CHAPTER 3

THE PEOPLE AND MAJOR INDUSTRIES OF THE KIMBERLEY

Objective

The objective of this chapter is to examine in depth the three industries that have existed in the Kimberley on a more or less continuous basis for the last, approximately, one hundred years. This continues the path which may lead to fruitful research as suggested by Frank and completes the historical assessment of what has happened in the region over this period. Also described here are the demographics of the region. This and the previous chapter provide descriptive information of evidence of development or the development of underdevelopment in the Kimberley. This is the basis for the qualitative assessment mentioned in chapter 1.

The People and the Industries

If the economic development of a place or an area is to be meaningful it must benefit the local people. The people must also want development, want development of the type that is likely to be available and be capable of initiating or, at least, sustaining it. These comments need to be made with respect to this region because, often, those engaged in modern industrial ventures are not of or from the Kimberley. A fly-in-fly-out workforce is the norm with Kimberley mining ventures. That gainful employment of the majority of the population is a usual parameter of a developed region was mentioned in the previous chapter. Fly-in-fly-out employment practices are not conducive to the development of a region.

This is an important consideration in exploring development in regions such as the Kimberley. Also brought in from outside the region are the plant and machinery, spares and even the consumable stores to feed, clothe and house

the staff who are brought, periodically and temporarily, to worksites. In the past major mining ventures brought lasting development to the areas in which they were established.

The example of the town of Newman is proof of this. The town was, initially, created and owned by the iron ore mining venture at Mount Whaleback in Western Australia. Businesses in both the productive and service fields were created to service both the mining venture and the people who live in Newman. This produced diversified opportunities for the population which could continue well after the original mining operations have ceased. The township is no longer owned by the mining operator, having been turned over to the State and the residents some years ago. Its status, administratively, is now no different from that of any other town in Western Australia. This represents, potentially, sustainable long term development.

That such townships are sustainable over the long term is indicated by the extreme example of Wittenoom in the Pilbara region of Western Australia. Although the town has been officially closed because of the dangers inherent in the recovery and handling of blue asbestos there remains a residual population and there is sufficient remnant infrastructure to provide an electricity and water supply. The small population now make a living almost exclusively from tourism. The major commercial venture is probably the caravan park. This suggests that towns such as Tom Price and Paraburdoo will have a future after the iron ore mining ventures, which are currently their *raison d'être*, have ended.

The creation of such townships as those mentioned above seems unlikely to be repeated in the Kimberley. The fly-in-fly-out methods now employed increasingly in the Kimberley and other remote regions point to the fact that development does not now follow production. This is a new and vitally important factor which must be recognised when assessing the impact that any venture might have on a region and its people. The first thing to establish, then, is just

who are the local people. In this case it must be established what is the true demographic base of the Kimberley. In chapter 2 the bare population figures for the four shires and the whole region of the Kimberley are set out (table 2.1) from information gathered in the 2001 Census. However, simple statistics do not show the whole, more complex picture.

The People

The Australian Bureau of Statistics collects its census statistics on the basis of collector's districts and classifies its census statistics, inter alia, on the basis of Statistical Local Areas (SLAs). In the Kimberley these areas correspond to the constituent four shires of Broome, Derby-West Kimberley, Halls Creek and Wyndham-East Kimberley. Residents at every dwelling on a census night are enumerated according to their "usual residence". People may, therefore, be: at home; visitors from the same SLA; visitors from SLAs in the same or other states and territories; or overseas visitors. The figures from the 1991 and the 1996 censuses suffer from the same difficulty in that both were conducted at the peak tourist season so far as the Kimberley is concerned. Unadjusted figures therefore overstate the population of the region. Table 3.1 shows these unadjusted figures for the Kimberley region. The figures in table 3.2 exclude people who were visitors to the region from other SLAs or who were from overseas. Both tables were derived from the 1991 census.

Quality and comparability problems exist with respect to the figures to come from the 1986 and 1991 censuses. In addition to the seasonal factor mentioned above there are many non-stated or inadequately stated responses in the 1991 census so far as ethnicity is concerned (Crough & Christophersen, 1993, p 20).

Table 3.1

Kimberley Population: Unadjusted Figures

Place	Aboriginal	Non Aboriginal	Total
Broome	3,168	7,426	11,152*
Derby-West Kimberley	3,737	3,555	7,722*
Halls Creek	1,920	1,000	3,027*
Wyndham-East Kimberley	1,881	5,078	7,710*
Total Kimberley	10,706	17,059	29,611*

*These totals are not the sum of the previous columns because 1,846 people out of the total of 29,611 did not state whether they were aboriginal or non-aboriginal.

Source: Crough & Christophersen, 1993, p 23.

Reference is made below, predominantly, to the 1991 census figures. This is because some contemporary independent population estimates are available. There is no similar independent information with which later statistics can be compared.

Obviously any possible inaccuracies so far as the numbers of aboriginal and non-aboriginal persons should extend beyond the range of usual statistical errors. This would allow the consideration of alternative population estimates to be taken with more seriousness than might otherwise be the case when comparing the Bureau's figures with this other source. In a 1992 survey of national housing and community infrastructure needs commissioned by the Aboriginal and Torres Strait Islander Commission (ATSIC) and conducted by Australian Construction Services, the aboriginal population of the Kimberley was estimated to be 15,242. This is some fifty per cent higher than the Bureau's

1991 census estimate (Crough & Christophersen, 1993, p 22). This point emphasises the conclusion of Crough and Christoperson when considering the 1991 census with respect to "just who are the local people of the region".

Table 3.2
Kimberley Population: Adjusted Figures

Place	Aboriginal	Non Aboriginal	Total
Broome	2,984	4,766	7,750
Derby-West Kimberley	3,616	3,031	6,647
Halls Creek	1,885	648	2,533
Wyndham-East Kimberley	1,796	4,125	5,921
Total Kimberley	10,281	12,570	22,851

Source: Crough & Christophersen, 1993, p 23.

Table 3.3**Population Growth**

Source: Kimberley Economic Perspective, Dept. of Local Government and Regional Development and the Kimberley Development Commission, 2001, p 4.

Estimated Resident Population Growth Rates 1981 to 2000								
Shire/Region	1981	1986	1991	1996	2000p	Short Term Growth Rate* (1996-2000)	Medium Term Growth Rate* (1991-2000)	Long Term Growth Rate* (1981-2000)
Broome	4,280	5,923	7,887	9,766	11,571	4.33%	4.35%	5.37%
Derby-West Kimberley	6,330	6,501	7,019	6,512	7,883	4.89%	1.30%	1.16%
Halls Creek	2,540	2,748	2,679	2,910	3,593	5.41%	3.32%	1.84%
Wyndham-East Kimberley	4,790	5,952	5,790	6,484	7,492	3.68%	2.90%	2.38%
Kimberley Region	17,940	21,124	23,375	25,672	30,539	4.44%	3.01%	2.84%
Regional WA	383,090	415,432	455,549	480,391	514,215	1.72%	1.36%	1.56%
Western Australia	1,300,057	1,459,019	1,636,067	1,798,129	1,883,860	1.17%	1.58%	1.97%

p = preliminary

* = average annual growth rate

Source: Australian Bureau of Statistics – Estimated Resident Population

Of the 19,171 people aged five years and over in the Kimberley region at the census, 10,596 people were at the same address, or in the same SLA, five years ago. Almost two-thirds of these people were Aboriginal people. The Aboriginal population aged five years and over was 8,245, and 83 per cent of these people were either at the same address, or at an address in the same SLA, five years ago. Only 35 per cent of the non-Aboriginal population were at the same address or in the same SLA five years ago. In the absence of any major future non-Aboriginal population growth, the Aboriginal population can be regarded as the long term demographic base of the region (Crough G & C. Christophersen, 1993, p 23).

The population of the region is increasing as indicated in table 3.3. In fact the Kimberley population is growing faster than any other region in Western Australia and faster than the State as a whole. The figures in table 3.3 are broadly in line with those shown in table 3.2 above for 1991 and may thus be accepted as at least as reliable as those of the Australian Bureau of Statistics.

It can be argued that meaningful development in the Kimberley will have to benefit this population and it will have to be with its consent. It remains to be seen whether any development to date has been of this nature and whether any

future plans are likely to fulfil these criteria. Whether or not the people are “development oriented” and, if so, whether they are capable of starting or maintaining the momentum of development may be matters for research by those practising disciplines other than economics or development economics.

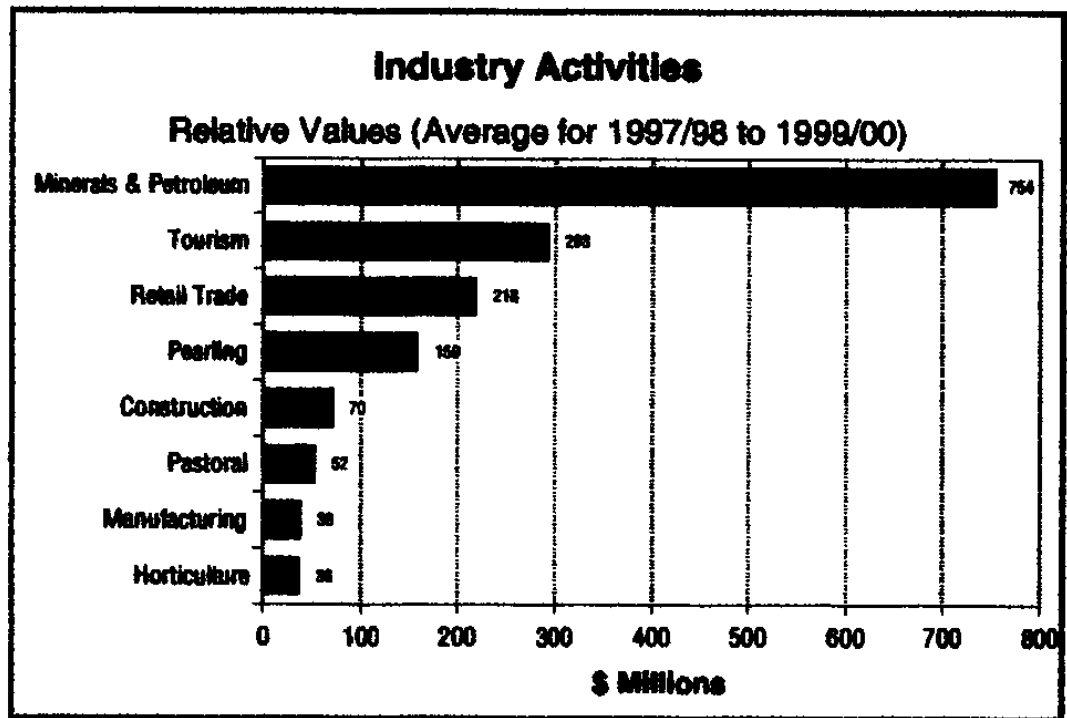
The Major Industries: An Overview

Three industries have existed in the region for over a hundred years. They are: pearling, mining and the pastoral industry. The emphasis of pearling has changed over time from pearl shell production to gem output. Included under the broad heading of “mining” is the more recent oil and gas industry. The pastoral industry now concentrates entirely on cattle, sheep having been phased out since the 1960s. Production is still for a “boutique” type market, the live export trade. Live exports go mainly to South East Asia. This contrasts with the previous Kimberley export trade which was for the American hamburger market from local slaughter. The value of production of each of these industries in the Kimberley region is shown in Figure 3.1. Employment by reference to activities is shown in Figure 3.2. Although the details shown in Figures 3.1 and 3.2 are not directly comparable it is evident that the oldest industries are not the major employers in the region and nor are they those which apparently contribute most to the economy in dollar terms. By far the greatest number of people are employed in what may be termed “consequent” occupations. That is, the employment is there as a consequence of the fact that there are local people requiring the services provided. There is no possibility of economic development being promoted or initiated by such work, although it would not be discouraged by the existence of such infrastructure. The three major employers in figure 3.2 are of this “consequent” type of activity.

To gain some perspective with regard both to the economy of the Kimberley region compared to that of the State and to activities within the Kimberley, Table 3.4 is of interest. Table 3.4 is not an indication of the value of production. It is the sum of gross payments to the factors of production (land, labour, capital, enterprise) and is thus part of the cost of producing the gross domestic product (Jackson & McConnell, 1980, p 170).

Figure 3.1

Industry Activities

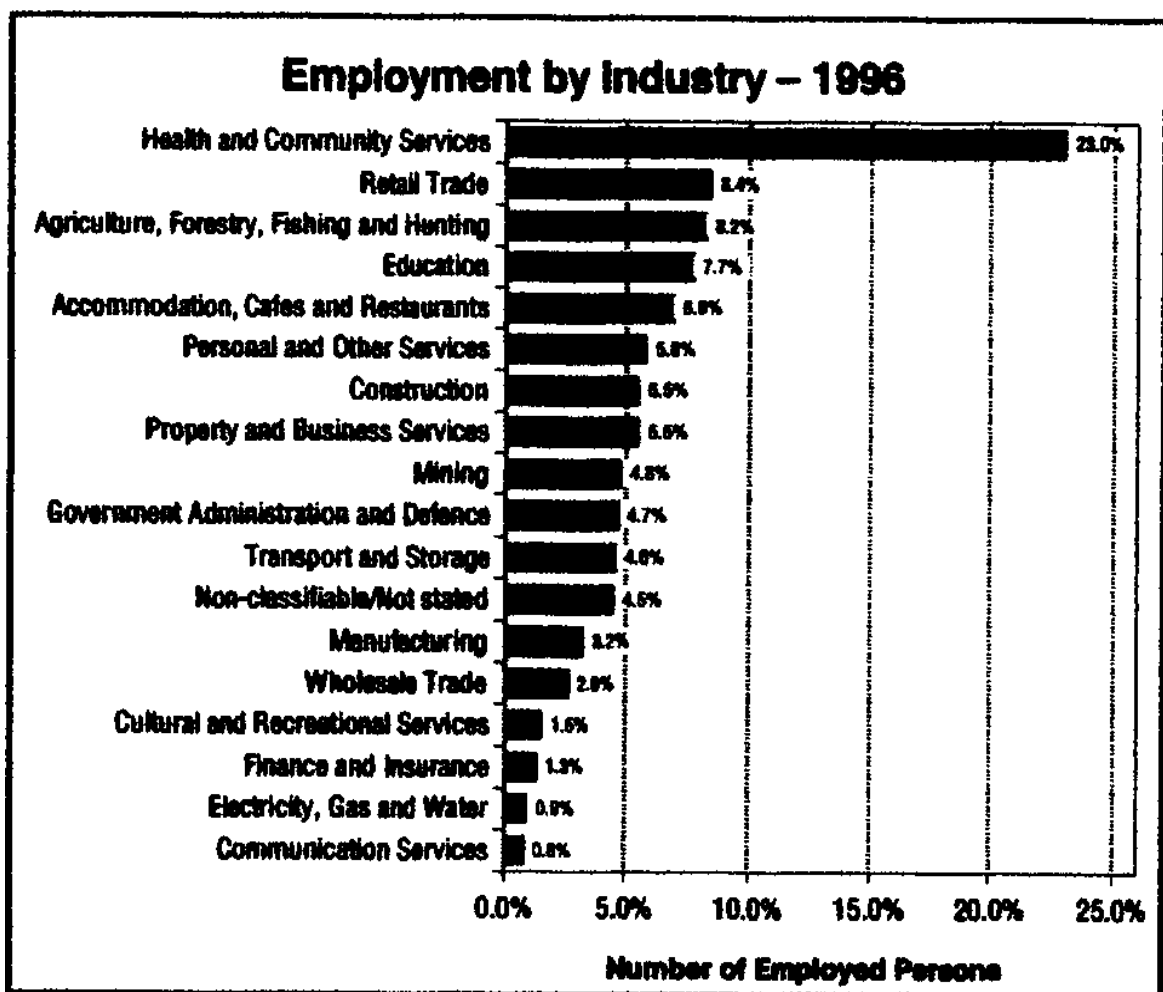


Source: Kimberley Economic Perspective, Dept. of Local Government and Regional Development and the Kimberley Development Commission, 2001, p 3

Figure 3.2

Employment by Industry - 1996

Source: Kimberley Economic Perspective, Dept. of Local Government and Regional Development and the Kimberley Development Commission, 2001, p 4.



From table 3.4 it can be seen that the major contributor to the gross domestic product of the Kimberley region, mining, is less than 4% of that industry's contribution to the State's gross domestic product. The pastoral industry is subsumed in the figures for "Agriculture". The similar Kimberley/State comparison for this industry is 3%. Pearling also is not separately mentioned in

table 3.4 although it is the Kimberley's third highest revenue earner according to the statistics produced by the Kimberley Development Commission (see Figure 3.1). Although table 3.4 would seem to emphasise the value of mining to the Kimberley region it is to some extent misleading. Local businesses and the residents of the Kimberley are not the major beneficiaries of the economic value of this industry.

Ownership, financing, supply and replacement of plant and equipment and residency of the workers determine the destination of the financial rewards from the industry. Very little of the payments for these items enrich the people and businesses of the Kimberley region (Crough & Christophersen, 1993, p 44).

Table 3.4

Gross Domestic Product at Factor Cost 1990–1991

Activity	Kimberley Region		Western Australia	
	G.D.P. (\$million)	Per Cent	G.D.P. (\$million)	Per Cent
Mining	189	34.8	4842	16.2
Agriculture	34	6.3	1115	3.7
Pub. Admin, Defence & Comm. Service	88	16.2	4621	15.5
Construction	63	11.6	2821	9.4
Wh' sale & Ret	38	7.0	4080	13.7
Tnspt & Comm	41	7.6	2785	9.4
Elec., Gas & Water	28	5.2	1106	3.7
Manufacturing	20	3.7	3986	13.3
Finance &	22		3283	

Activity	Kimberley Region		Western Australia	
	G.D.P. (\$million)	Per Cent	G.D.P. (\$million)	Per Cent
Business Serv		4.1		11.0
Recreation, Accommodation & Personal Services	20	3.7	1208	4.0
TOTAL	542	100.0	29856	100.0

Source: Crough and Christophersen, 1993, p 44.

The pastoral and pearling industries are not large employers and the ownership of such ventures is usually not vested in the Kimberley. Thus, again, little of the earnings of these industries remain in the Kimberley.

The Mining Industry

It is exploration or prospecting which has maintained the presence of mining as a potential major industry in the Kimberley region over the past century. Although mineral deposits of many kinds have been discovered most have not been considered to be economically viable owing to the remoteness of this region and the lack of supporting infrastructure. Power supplies in the region are adequate (just) for town domestic and light industrial purposes. Most towns are supplied with electricity by local diesel generators and there is no mains gas supply. The mining ventures that have matured from discoveries have thus had to be more internally self-sufficient than would have been the case had they developed nearer to main centres. This has meant that local benefits from such operations have been limited. Indeed businesses in the Kimberley have probably benefited more from exploration than from actual mining operations. Prospecting teams are usually dependent upon local supplies and accommodation. An example of this relates to the Argyle diamond deposit. To prevent rivals from gaining access to diamond discoveries immediately after

The Ashton Joint Venture's identification of the Argyle deposit every four wheel drive vehicle in Kununurra, Derby and Broome was hired and locked in a company camp, all helicopters that could be found were also hired and all copies of the relevant map sheet in the State, including those at the Lands Department in Perth were purchased (Duffy, circa 1985, p 4). The mining operation itself is now minimally dependent upon local facilities.

There is now just one major mining project in the Kimberley. This is the Argyle Diamonds Australia mine in the East Kimberley and it earns more revenue than any previous operation in this industry in the region. Western Metals Ltd, a lead and zinc miner in the West Kimberley, was the second largest venture in mining until its operations were closed in 2003. There was iron ore mining at Cockatoo and Koolan Islands in Yampi Sound from 1951 and 1965 respectively. Recovery from tailings still continues at Cockatoo Island. Work started at Koolan Island in 1938 but was abandoned after restrictions on iron ore exports were imposed prior to the Second World War. Mining operations on this Island ceased in the early 1990s although there are often rumours of work starting again because of the quality of the ore and some preparatory work began during the first couple of years of this century.

A second diamond mining venture by the Kimberley Diamond Company Ltd began steady diamond production in July 2002. This is at Ellendale in the West Kimberley. Development of this mine was delayed owing to disputed ownership of the right to mine the lease between the Kimberley Diamond Company Ltd and the previous owner of the lease and subsidiary of Rio Tinto Ltd, Argyle Diamond Mines Pty Ltd (West Australian, 10/05/2002).

It is usually alluvial diamonds that are found first in any given region. This was so in South Africa in the region around the town of Kimberley in the Orange Free State. Both the South African town of Kimberley and the Kimberley region of Western Australia were named after Lord Kimberley, the 19th century British Colonial Secretary. After the alluvial discoveries in South Africa the true source

of diamond was realised. It is in volcanic pipes of kimberlite, an ore named after the South African town of Kimberley near where the diamond pipes were first found. Such pipes are not often obvious from the surface and are usually small in area. The largest known is only about 110 hectares and many are less than 20 hectares. The similar diamond-bearing rock in Australia is known as lamproite (Shigley, Chapman & Ellison, 2001, p 29). The usual pattern of discovery is the finding of small quantities of alluvial diamonds and/or indicator minerals in "mobile zones" and then the following of such zones, which are often creeks or rivers, "upstream" to the source or pipe. More sophisticated methods are available now (aeromagnetic mapping and geochemistry) and these were used to confirm the Australian discoveries in the Kimberley region (Department of Minerals & Energy, 1996).

The Ellendale deposits were the first to be discovered but at the time, 1976-980, these were not considered to be adequate for economic exploitation. They were, however, sufficient to encourage continued exploration in the Kimberley. In 1979 the Argyle pipe was found in the headwaters of Smoke Creek in the east Kimberley. This has proved to be the richest diamond pipe known with grades of up to 6.5 carats per tonne ⁷ (Department of Minerals & Energy, 1996),(Duffy, circa 1985, p 4). After the mining of the surface deposits the working grades of the pipe itself averaged 2.9 carats per tonne in January 2001. By comparison typical grades at the Premier, Finsch and Kimberley mines in South Africa average 0.5–1 carats per tonne.

Diamonds have a double economic value. As gems their value is well understood. Only the larger stones can be of gem quality. Much of the value depends on the colour of a stone and on the internal faults which determine the shapes into which it can be cut and the number of jewels that can be made from

⁷ For diamonds and other gemstones, 1 carat = 200 mg; that is 5 carats = 1 gram. The largest diamond found, the Cullinan, weighed 3106 cts or 621 grams. It came from the Premier mine in South Africa in 1905 and was cut into nine large gems and nearly 100 smaller stones.

the uncut stone. Other stones have industrial value because diamond is the hardest naturally occurring substance. It is capable of scratching or abrading all other minerals. Of the total production at the Argyle mine 5% of stones are of gem quality, 25% are industrial and the rest are of near gem quality. The proportion of the latter has increased owing to improvements in technology and skill at the cutting and polishing stage (Shigley, Chapman & Ellison, 2001, p 37)

The Argyle mine is now 100% controlled by Rio Tinto Ltd. Until late 2000 it was a joint venture between Rio Tinto Ltd (56.8%), Ashton Mining Ltd (38.2%) and the Western Australian Diamond Trust (5%). Production at Argyle has varied from a peak of 42.8 million carats in 1994 to 26.5 million carats in 2000. In comparative terms this is a variation of between 40% and 25% of world annual production (Shigley, Chapman & Ellison, 2001, p 26). In value terms the sale of rough and polished stones in the year 2000 was a record at \$US440 million (Argyle Diamonds, 2001, p 14). Production began in 1983 and just before the peak (volume) year in 1994 the value of production in 1991/2 was \$564.7 million (Crough & Christophersen, 1993, p 46). It was clear that the Argyle deposit was a major one after an evaluation study in 1982 (Shigley, Chapman & Ellison, 2001, p 33) . This being the case marketing the output would present a problem.

For many years the marketing of diamonds had been managed as a near monopoly by De Beers, a company set up with the involvement of the giant Anglo American Corporation in the early days of diamond mining in South Africa. De Beers controlled the quantity of diamonds coming onto the world market and thus preserved the value of the product. In the first instance the Australian producer came to a marketing agreement with De Beers in 1983 and this was renewed in 1991. Both agreements allowed for some marketing independent of De Beers. With the expiry of the second agreement in 1996 it was decided that the success of the independent marketing operations was such that further involvement with De Beers was unnecessary (Shigley, Chapman & Ellison, 2001, p 39).

Obviously this mining venture has been a great success. How much of an economic benefit it has been to the Kimberley region is unclear. It has probably of little benefit locally. As with any multi-national company such as Rio Tinto Ltd the net benefit to any host country is difficult to determine. Certainly royalties have been paid to the Western Australian Government. In 1991–92 \$31 million or 11% of the royalties paid by the whole mining industry in the State and in 1992–93 \$41 million or 10% of the State's total receipts of mining royalties were paid by diamond producers (Crough & Christophersen, 1993, p 46). To put this into perspective it must be remembered that, at that time, there was no royalty on gold production. Royalties are not of direct benefit to the Kimberley region and even more remote is any proportion of company tax paid to the Commonwealth Government by Rio Tinto Ltd. As has been mentioned above there are undoubtedly large payments for imports required to produce the output and to this must be added outflows to foreign shareholders and other overseas firms related to the manufacture and marketing of the raw stones before any benefit to Australia can accrue. So far as the Kimberley is concerned payments to interstate and intrastate beneficiaries are also subtractions before any contribution to local development can be assessed.

The *Industry Review 2001* published by Argyle Diamonds indicates the extent of overseas operations. In addition to Argyle Diamonds Australia in Perth are listed Argyle Diamonds India in Mumbai, Argyle Diamonds Europe in Antwerp and the Indo Argyle Diamond Council in Paso Dobles, California. Initially rough stones are sorted in Perth, predominantly by machines capable of handling 12,000–30,000 stones per hour. Larger stones, in excess of 1.5 carats are sorted by hand (Shigley, Chapman & Ellison, 2001, p 37). Antwerp remains the centre for the manufacturing and marketing of gem stones (Argyle Diamonds, 2001, p 11). India is the hub of processing for near gem stones used in cheaper jewellery. The Argyle production of about \$US400 million is easily absorbed into the Indian market which is worth about \$US4.6 billion (Argyle Diamonds, 2001, p 15). The rise of India in this field is due to its low labour costs (Shigley,

Chapman & Ellison, 2001, p 38). Japan and the United States of America have been equal major consumers of diamond jewellery accounting for about 60% of total world sales in 1995. Japan has since contracted to account for about 19% of world retail diamond jewellery sales whereas the United States has increased to about 44% of world consumption (Argyle Diamonds, 2001, p 12). Rio Tinto Ltd's expertise in United States' markets has done much to increase Indian sales via the Indo Argyle Diamond Council (Argyle Diamonds, 2001, p 16). Quite clearly none of this extensive activity directly benefits the Kimberley region other than by assuring a future for the company's diamond mining operations there.

In addition to ready markets, other factors also determine the life of any mining venture. The 1982 evaluation study by Shigley, Chapman and Ellison suggested that mining methods could be adapted to sustain a 20 year mine life. It was also thought that changes to mining methods, from opencut to underground operations could reduce costs and thus extend the economic life of the mine (Shigley, Chapman & Ellison, 2001, p 35). Some changes and reduced production has extended the life of the mine to 2006 and the discovery of further underground resources may allow production to continue for twelve more years (Argyle Diamonds, 2001, p 14). The mine operates on a 24-hour-per-day, 7-day-per-week basis. The workforce is about 750 strong made up of both permanent and contract workers. At any time some 300 workers are on site (Shigley, Chapman & Ellison, 2001, p 36). About 90% of the personnel commute from Perth on a 14 day on, 14 day off working cycle. Thus the Kimberley region benefits little from either the employment opportunities created by the mine or from the wages paid (Crough & Christophersen, 1993, pp 46–47).

The other major mining operation in the region was Western Metals Ltd's Lennard Shelf operations in the west Kimberley. The product was, compared with diamonds, the less glamorous and less valuable lead and zinc concentrates. The first mine opened at Cadjebut, some 80 km south of Fitzroy

Crossing in 1988. The company also operated a copper mine at Mount Gordon in north west Queensland.

The original mine and milling plant at Cadjebut have closed. From early 2001 the previous 3-mine/2-mill operation became a 2-mine/1-mill operation, although all still in the Fitzroy Crossing area. The Goongewa mine which came on stream as the Cadjebut mine was declining also closed, leaving production to come from the Pillara and Kapok mines. Milling was carried out at an expanded Pillara plant. Exploration continued and good reserves were subsequently found at Fossil Downs just 20 km north of the Pillara operation (Western Metals Ltd, 2001, pp 4 & 10).

A combination of good grades of ore and efficient production methods ensured that the Lennard Shelf operation's zinc cash costs were within the bottom quartile of the cumulative world production cost curve. A total of 2.663 million tonnes of ore were mined in the year to 30th June 2001. It is difficult to be precise about the value of the Kimberley product because the accounts show figures relevant to the company, including Mount Gordon operations, and to consolidated figures which include some 25 controlled entities in Singapore, Indonesia and Vanuatu as well as Australia (Western Metals Ltd, 2001, p 48). The Company made a profit of \$11.486 million in the year ended 30th June 2001 whereas the consolidated accounts show a loss of \$1,818 million for the same period (Western Metals Ltd, 2001, p 30). It is impossible to estimate whether any net benefit, if it existed, accrued to the Australia or the State of Western Australia from the published accounts. The situation remained as it was in 1993 when low world prices for the metals zinc and lead and debt threatened the viability of the venture (Crough & Christophersen, 1993, p 46) until the company was sold in 2003 and placed on a care and maintenance basis by the new Canadian owners.

Compared with the Rio Tinto Ltd diamond operations the Western Metals Ltd venture was more closely contained in the Kimberley region. Some local benefit

did, therefore, accrued. Zinc and lead concentrates were always exported from Kimberley ports. Initially this was via Wyndham. After the construction of the Derby Export Facility in 1997 Western Metals has opted for the shorter truck journey to Derby. At Derby a barge operation moved the concentrate to larger vessels in King Sound. Derby is a “dry” port at low tide. The port operation was highly mechanised and employed very few workers. Like Rio Tinto Ltd’s diamond mine, Western Metals Ltd’s zinc and lead mines also operated on 24-hour-a-day, 7-days-a-week basis with a fly-in-fly-out workforce. The total number employed as at 30th June 2001 was 440 (including contractors) of whom some 250 were from Derby, Broome and Fitzroy Crossing (Western Metals Ltd, 2001, p 12).

After all of the mining operations mentioned above have finished their economic life there will be little legacy of economic or social consequence left. As was the case with the Mary Kathleen uranium mine and township near Cloncurry in Queensland, environmental plans are in place to return mined areas as nearly as possible to their previous state (Sharpe, 1987, p 81). Rio Tinto Ltd has (Shigley, Chapman & Ellison, 2001, p 36–37) and the Western Metals Ltd (Western Metals Ltd, 2001, p 12) had ongoing and final rehabilitation plans for areas that have been mined in the east and west Kimberley respectively. There will be no enduring or continuing reminder of the operations such as the Newman township in the Pilbara or even the ghost town of Coolgardie in the West Australian goldfields near Kalgoorlie.

There will also be little in the way of a residual skilled workforce. As has been mentioned above the long term demographic base of the Kimberley region is the aboriginal population. In 1991 only 32 of 770 employees in the mining industry were aboriginal people (Crough & Christophersen, 1993, p 47). In 2001 aboriginal employees represented only about 7% of the Western Metals Ltd workforce (Western Metals Ltd, 2001, p 12). Although Western Metals Ltd made reference to training and apprenticeship opportunities and to close ties with communities living near their Lennard Shelf operations, (Western Metals

Ltd, 2001, p 12) and in spite of small payments to local communities under the Argyle diamond mine "Good Neighbour Policy" (Crough & Christophersen, 1993, p 47), the contribution to long term development in the Kimberley of either of these operations would appear likely to be minimal. From this it would seem that the long term population of the Kimberley is not a major beneficiary of the mining industry.

Both governments and the mining industry tend to talk in terms of the value of production and exports. Politicians tend to ally the well being of the mining industry with that of the state and the country. Very little is said about the cost of production. It is difficult, therefore, to gauge the net economic benefit of mining nationally let alone so far as the state or a region of it is concerned. While a commissioner of the Aboriginal Deaths in Custody Royal Commission Patrick Dodson also wrote, in 1991, the "Regional Report on Inquiry into Underlying Issues in Western Australia". Included in his report was a chapter entitled "The Impact of Mining "all we get is the dust" .". Even so the value of mineral production is not seriously challenged. Even Dodson went on to emphasise that his problem was not with the production of wealth by the mining industry but with its distribution (Crough & Christophersen, 1993, p 47).

The petroleum industry is not significant in the Kimberley. This is in spite of persistent searching and rumours of interesting prospects from as early 1925 (Broome Chronicle, 10/10/1925). There has been a small production field at Blina near Derby since 1981. The output is trucked to the Kwinana refinery near Perth. Total employment at the Blina field is less than half a dozen. Oil exploration is more often a failure than a success and the lack of a significant industry in the Kimberley region is thus not surprising. Of 1557 wells drilled in Western Australia only 168 or just less than 11% were producing wells in 2001 (Geological Survey Dept, Perth).

For an industry that has been in existence in one form or another for over 100 years mining has given rise to little concrete development in the region. That

situation seems likely to remain the case in the future. Although small and less successful than most Australian goldrush instances the Halls Creek rush of 1885 at least produced the enduring township after which it is named.

The Pastoral Industry

This industry is important to the region because pastoral leases cover about 52% of the land area (Crough & Christophersen, 1993, p 53). The pastoral stations in the Kimberley (and probably elsewhere) came to be roughly equivalent to the latifundia—the large landed estates—of South America. It was a mixed sheep and cattle industry in the west Kimberley until the late 1960s. The east Kimberley had always been a “cattle only” area as is, now, the whole region.

The earliest attempts to settle the region were in 1864 by the Roebuck Bay Pastoral and Agricultural Association and the Camden Harbour Pastoral Association. These settlements were abandoned in 1867 (Clement, 1991, p 233–239). Successful settlement was complicated by problems with the pastoral lease allotment system adopted by the West Australian Government which was less than honest and which resulted in much confusion (Clement, 1981, p 93–123). In the west Kimberley Meda and Yeeda Stations were the first established in 1879 and stocked with sheep. The landing point then was Beagle Bay. In the east Kimberley cattle were driven overland from the eastern States, the first arriving in 1884—the stations first settled being Argyle Downs, Lissadell, Dunham River and Ivanhoe stations. In 1883 there were almost fifty times as many sheep as cattle on the Fitzroy and Lennard Rivers (Registrar General, 1884). By 1885 this ratio had reduced to about 25 times in favour of sheep over the whole of the Kimberley as the overland cattle started to arrive from the east. By 1886 there were over 66,000 sheep in the west Kimberley. In 1893 2,000 cattle were exported from the region and 24,000 fat sheep and lambs (Boab Babbler, 29/4/1988). This trade had an effect on infrastructure development. A cattle race was built in 1895 at the holding yards in Derby to assist with animal

embarkation. This was, then, a major addition to port facilities. By 1902 cattle shipments had overtaken wool in terms of export value. Cattle numbers had increased in 1905 over the 1900 levels although sheep numbers had remained steady. The Canning Stock Route from Halls Creek to the Murchison Goldfields was opened in 1909 (Kimberley Echo, 22/07/1999) and the following year Myall's Bore was constructed to water cattle before shipment from Derby to Fremantle (Boab Babbler, 29/4/1988). Meatworks which were commenced at Wyndham in 1913 but delayed by the First World War were completed in 1918 (Kimberley Echo, 22/07/1999). Also a pattern was developing in the market wherein the east Kimberley supplied the United Kingdom via Wyndham and the west Kimberley catered for southern customers via Derby and Broome. It was 1939 before meatworks were commenced in Broome which were fully operative by 1943. The major problem for the Kimberley pastoral industry was that it was too far from markets for production to be economically viable. Overland drives to the shipment ports caused the cattle to lose condition and therefore also value.

The air-beef scheme was trialed in 1946 by MacRobertson Miller Airlines and Gordon Blythe of Glenroy Station. The idea seemed likely to succeed and Second World War transport aircraft were used in 1949 to move carcasses from Glenroy Station to Derby. In the same year an abattoir was built at Glenroy Station. This scheme continued until 1961 when the construction of the Gibb River Road allowed the transport of carcasses by road 50% cheaper than by air. Originally, prior to the road opening, the comparative costs were \$28 per ton by road and \$12 per ton by air. Chiller trucks eventually gave way to larger road transports carrying live animals.

Derby Export Meat Works (DEMCO) opened in 1961 as the Kimberley herd of free range cattle on unimproved pastures was directed to the machine beef market in the United States of America. DEMCO was not fully operational until 1966. Glenroy Station finally ended its slaughter and chilling operations in 1963. In 1964 Broome Meatworks was re-modelled with the capacity to take

the whole of the Kimberley turnoff. By now the emphasis was entirely on cattle. Sheep in the west Kimberley had declined to about 300,000 in 1944 and to 125,000 in 1954. Lambing percentages had declined to less than 30% (West Australian, 08/09/1984). The final flock of 42,000 was replaced by cattle in 1969.

The cattle trade continued with the United States of America (US) being the major customer for machine beef for hamburger meat. The nature of the trade to this single market meant that any change in regulations in the US had to be complied with in the Kimberley. Changes in US regulations resulted in substantial expenditure at all three major Kimberley meatworks in 1970 so that exports could continue (West Australian, 21/10/1970).

Broome Meatworks, the last in the Kimberley, closed in 1994 (Broome Advertiser, 11/08/1999) as the trade turned to the export of live cattle and markets other than the United States of America. Although now vital to the pastoral industry in the Kimberley the national total of live exports accounts for only 10% of Australia's gross beef turnoff (Nickels, 2002, p 1). Of an annual turnoff currently numbering 150,000 in the Kimberley 115,000 go to the live export trade. The Kimberley output represented some 33% of the State's live cattle export trade which was in turn about 41% of the national export total of live cattle. Compared with live exports nationally the Western Australia live trade represents about 45% of the total State turnoff of some 750,000 head (Nickels, 2002, p 2). In terms of value the Western Australian exports were worth \$210 million of a national total of \$550 million (Nickels, 2002, p 1). The Kimberley ports of Broome and Wyndham handle most of the Kimberley exports. In 2001 shipments via Broome amounted to 80,306 head worth \$49.8 million. The Wyndham figures for the same year were 56,892 head worth \$35.3 million. A small proportion of the Kimberley production is shipped via Darwin and Port Hedland (Nickels, 2002, p 4).

Australia's major live cattle export destinations, by volume, are Indonesia, 35%, Egypt, 25%, Philippines, 12% and Malaysia, 9%. The balance of 19% goes to

Israel, Saudi Arabia, Bahrain and Mauritius (Nickels, 2002, p 2). By value the market leaders are ranked slightly differently. On this basis the leader is Egypt at 29.8% followed by Indonesia, 29%, Malaysia, 17.9%, Israel, 8.2%, Saudi Arabia, 4.6%, Philippines, 4%, Jordan, 3.4%, Mauritius, 1.7% and the balance represents 1.4% (Nickels, 2002, p 5). The difference between the rankings is a consequence of the kind of animal that is required by a particular customer. Egypt requires a prime steer at 350–550 kilograms slaughter weight (average 420 kilograms liveweight, maximum 4 tooth) and this tends to set high per head values. The lower Indonesian value reflects a mixture of steers, heifers, cows and bulls as well as a percentage of young feeder cattle. The Israeli market prefers young bulls with a maximum live weight of 260 kilograms and thus although the price per head seems low at \$450 compared with Egypt at \$744 the price per kilogram is high. There has been a steady rise in prices over the last few years. The national price per kilogram for live cattle exports has risen from \$1.32 in 1999/2000 to \$1.48 in 2000/2001 and up to over \$1.60 in 2001. On a per head basis for these years this is \$507, \$560 and \$620 respectively (Nickels, 2002, p 5). So far as the Kimberley is concerned the average price per head in 2001 was about \$590 and the live weight price per kilogram range was \$1.30–\$2.20. This compares with a production cost per kilogram range of \$0.80–\$1.10 (Price, 2002, p 1).

As mentioned above pastoral leases cover about 52% of the 419,077 square kilometres of the Kimberley. The total number of leases available to operate as pastoral/cattle enterprises is 95 spread over the four shires of the region. Of these leases nine are small and are not considered to be viable as pastoral businesses. They have a carrying capacity of less than 1000 head of cattle and are unable to generate sufficient profit to support a family without non-pastoral income. Seven of these properties are owned by aboriginal communities. There are thus 86 pastoral leases capable of being self-supporting. Of these 24 are owned by aboriginal communities. Thus a total of 31 of the 95 leases are owned by aboriginal communities. There is much multiple ownership. Sixteen

businesses operate 39 leases and so the 95 separate leases are operated by only 72 enterprises.

The total recommended carrying capacity for the Kimberley is approximately 700,000 head. This is made up of 693,500 head on the 86 viable leases and some 5100 on the nine smaller leases plus other non-pastoral capacity. Carrying capacity recommendations are made on the basis of good rangeland conditions and sufficient water point development to make all pasture accessible to the stock. During the early 1980s up to 800,000 cattle grazed the Kimberley, on degraded pastures owing to the long term high numbers of the heavier and older beasts that were economical for the machine beef trade (Kimberley Development Commission, 2001, p 7). The herd size decreased in the 1990s as the American requirements declined. Currently, cattle numbers are about 500,000. Aboriginal community owned leases are presently running about half the number of cattle compared with of their long term recommended capacity (Price, 2002, p 2). This does not reflect a lower financial return. Pastures have recovered with the lower numbers and coupled with changes in the type of cattle carried, better management, improved on-lease infrastructure and the faster turnoff for the live cattle trade, income has increased and there is capacity for growth. This may result in a 30% increase in production numbers over the next ten years (Price, 2002, p 1–2).

Overall this represents a great improvement on conditions in the mid-eighties when 48% of Kimberley leases were not producing sufficient cash flow to maintain an owner-operator pastoral enterprise (Crough & Christophersen, 1993, p 54). The Legislative Assembly Select Committee into Land Conservation in its paper on the “Pastoral Region of Western Australia” commented on the extent of corporate ownership of Kimberley leases and on the presence of speculators in the cattle industry. In its submission the Shire of Derby-West Kimberley commented that although the local economy is dependent on a healthy cattle industry:

The turning point for the industry will arrive when station ownership stops at being a game of monopoly, and they decide they are in the game to produce beef (quoted in Legislative Assembly Select Committee into Land Conservation 1991, 282)
(cited in Crough & Christophersen, 1993, p 53).

This situation indicates that a great deal of the earnings of the pastoral industry leave the Kimberley as was seen above to be the case with respect to the mining industry.

Employment in the pastoral industry has always been difficult to estimate. Prior to 1972 most stations employed stockmen and general purpose hands for such duties as mustering, fencing and other work. The "wage" system was not consistent from station to station but usually comprised part cash and part payment in kind. This second part consisted of rations and accommodation for the employee. Taken into account in such allowances also was the extended family for which most workers were responsible. Limited hunting for traditional foods on the station supplemented the rations provided. Subsequent to the application of the "award wage" system to all those formally employed by the stations employment dropped dramatically and the willingness of station owners to permit large numbers of aborigines to live and hunt on their stations declined.

Since then the need for a large number of employees has fallen away owing to the use of helicopters for mustering rather than horsemen. Also there is now a tendency for the stations to make use of services from relatively close towns for such things as fencing, the drilling of bores, water tank supply and installation and major construction work. The fact that most of this activity must take place during the dry season is no different from the previous situation where much of such work would be undertaken "in house".

Native Title legislation has also changed things considerably. There are an increasing number of stations now owned by aboriginal communities. Most such stations are attached to or have on them a number of Community Development Employment Projects (CDEP). It is difficult to distinguish between

those employed on such projects and who are being paid wages for work on such projects and those who operate the stations for the purposes of cattle production. Australian Bureau of Statistics Census figures are also unable to clarify this situation (Crough & Christophersen, 1993, p 24). The number of people employed in agriculture, fishing and hunting totalled 1220 in 1991 of whom only 164 were recorded as being aborigines (Crough & Christophersen, 1993, p 28). So far as the agriculture element is concerned, this is likely to refer only to agricultural workers in market gardens and in the Ord River Agricultural Area farms rather than station hands. What employment is attributable to the pastoral industry is difficult to gauge and what wages from the pastoral industry remain in and benefit the Kimberley region is impossible to estimate. Even where researchers have had access to the accounts or financial statements of the aboriginal owned pastoral enterprises it was impossible to separate wages paid from ATSIC funds to CDEP workers from wages paid by the cattle enterprise to station employees (Crough & Christophersen, 1993, p 56).

There have been some lasting benefits to the region from the pastoral industry. The Gibb River Road from Derby to Wyndham, a gravel, dry season only thoroughfare which opened up the station country to large livestock-carrying transport vehicles is a boon to tourism. It provides access to the many scenic gorges of the various mountain ranges that cross the region as well as entry to the minor and less well maintained roads to the north coast. The industry itself seems now to have developed the potential for growth and it is also providing opportunities directly and indirectly for the long term Kimberley population.

The Pearling Industry

It is the pearling industry that may be credited with the establishment of Broome. This was not because of the facilities available for there were none prior to the gazetting of the Broome townsite in 1883 (Shire of Broome, 2001, p 283). It was the lack of government representation and thus the impossibility of the law being enforced that attracted the pearl luggers to use Broome as a rest and repair landing place. The Thursday Island luggers, which had moved west

owing to poor fishing in the Torres Straits, tended to stay at sea to avoid the application of the various Pearling Acts passed during the 1880s. These had the effect of limiting their trading in pearl shell and also requiring the payment of taxes on shells and goods on board obtained in international waters and at foreign ports respectively (Broome Advertiser 13/08/1997).

Staying at sea was dangerous during the cyclone season. The Thursday Island fleet suffered damage from a cyclone in 1887 near Broome (Kevin Lawton, 1997). A cyclone in 1908 caused the loss of 40 luggers and 150 pearlers, in 1910, 25 vessels and 40 crew went down and in 1935 21 luggers and 140 lives were lost (Shire of Broome, 2001, p 301). As late as 2000 cyclone Rosita damaged pearl boats at the present jetty and caused heavy losses of developing shell at the pearl farms (Shire of Broome, 2001, p 300). Some repair and maintenance work could only be carried out when the vessels were beached. The sheltered waters of Roebuck Bay were ideal for the luggers. In those early days boats would simply ride the tides of up 9 metres onto the beach and sit on the bottom (Shire of Broome, 2001, p 283). More often than not they were “dry” at low tide.

The first jetty was built in the late 1880s (Kevin Lawton, 1997) at Mangrove Point and it was over ten years before a better structure with a cattle race from the nearby stockyards and a tramway enabled steamers from the south to come along side at high water in 1897 (Shire of Broome, 2001, p 294). It was not until 1966 that a “deep water” or “all tides” jetty was opened at Entrance Point (Shire of Broome, 2001, p 283). Progress with respect to infrastructure is sometimes slow. The pearl operators asked for a new crane to be installed at the Broome jetty in 1909 but it was not till 1999 that the first such new machine was supplied. Perhaps this should not be a surprise because it was not until 1970 that Broome port made a profit after 109 years of operation (Broome Advertiser, 11/08/1999).

The West Australian pearl industry began in Shark Bay in 1850 with the collection of the *Pinctada Albina* oyster from sand banks at low tide. This oyster was small and the shell was of not useful commercially. Only the small pearls were of value (anon, n.d., p 1). By 1860 the *Pinctada Maxima* had been found in Nicol Bay. It is from this oyster that the large, translucent South Sea pearls are obtained. Top quality mother of pearl also comes from this oyster. It was the shell that was the basis of the industry at first. Pearls, that is, “keshi” or natural pearls, were in the nature of an occasional by-product. Mother of pearl was needed for buttons and inlay work. Subsequent to the First World War plastics began to usurp the position of mother of pearl for button making and the pearl itself became the principal product of the industry.

Other oyster species such as the *Pteria Penguin*, *Pinctada Margaritifera* and the Japanese *Akoya* produce smaller pearls and half-pearls (Fisheries W.A., 2000, p 1). Also the *Pinctada Maxima* occurs in other places such as Tahiti, the Cook Island and Indonesia (Andersen, 1996, p 4). The natural colour of pearls varies from black, as produced in Tahiti and the Cook Islands, (Fisheries W.A., 2000, p 2) through to blue, yellow and brown in Japan (Andersen, 1996, p 8). Japanese pearls are usually bleached and then dyed to a slightly pink hue but the Australian product is never treated. Shape, lustre and blemishes are the value enhancing factors for pearls. Size and colour are a matter of personal taste (Andersen, 1996, p 8).

The foundations of the modern pearl industry were being laid as early as 1887 in Japan. Kokichi Mikimoto had begun to experiment with oyster seeding. The object was to introduce a foreign body into the oyster to induce it to cover the “seed” or “nucleus” with layers of nacre, the material of pearls. The perfection of the technique took a long time but by 1910 Mikimoto was selling large quantities of cultured pearls. The reaction of the Western Australian Government was to amend the 1912 Pearling Act in 1922 to prohibit the producing, selling, owning or in any way dealing in pearls produced artificially. Any equipment used in pearl culture was also then subject to confiscation. This

section of the Act was not repealed until 1949 (anon, n.d, p 3). The Western Australian legislation was in reaction to activity in Europe when a pearl with a greenish tinge amongst a consignment from Japan that was traded in Hatton Garden, the London gem trading centre, was cut in half to reveal an artificial nucleus (Lawton, 2002, p 28–29). Pearls do not have to be cut, polished or in any way processed to produce the final gem and that meant that the cultured pearl, almost indistinguishable from the natural pearl, soon became a commercial fact with which the industry had to deal.

Until comparatively recently the industry was uncontrolled. There was a danger of destroying the industry when as much shell as could be gathered was taken. The fishery recovered during the market crash in the 1920s and 1930s, owing to the perfection of plastic and plastic button-making techniques (Fisheries W.A., 2000, p 1), and during the Second World War when pearling was suspended (anon, n.d., p 1). This last break occurred because many Japanese, who were the majority of the diving employees in the industry, were interned for the duration of the war and also because Japan was, previously, a major market for the product. Today the industry, worth about \$200 million, is tightly controlled (Fisheries W.A., 2000, p 1).

In 1982 the Pearl Producers Association was formed. Patricia Grey and Brian Foley were the initial movers behind this organisation and Ms Grey was the secretary and executive officer of the Association for many years. The Association is a conservative organisation and gaining membership is not easy. Recently a potential entrant to the pearl industry found it necessary to start up on islands off of Indonesian Irian Jaya because of the closed nature of the industry here (The Today Program, March 2000). The Pearl Producers Association is a member of the South Sea Pearl Consortium which includes two of the largest Japanese companies and one company each from Hong Kong and the United States of America. The objective of the Consortium is to promote Australian pearls and to educate those who sell them (Andersen, 1996, p 8).

It was originally formed as a lobby group and dealt firstly with safety matters. The pearl industry has always been a dangerous one. Losses to bad weather have already been mentioned. Deaths from the decompression sickness, "the bends" were also high (anon, n.d., p 1). In the same year that a decompression chamber was acquired by Broome Municipality, 1914, some 33 divers died from the bends. There are other risks against which precautions are difficult to take. In 1995 a diver died from a shark attack. At the isolated pearl farms located near islands in the Buccaneer Archipelago and in other northern waters beyond the Kimberley salt water crocodiles are always a problem (Andersen, 1996, p 3).

Control of the industry is administered by Fisheries W.A. with the cooperation of the Pearl Producers Association. Strict controls are imposed on both wild and hatchery shells. In 2001 a total of 922 units of 1,000 shells each could be taken. This comprised 572 units of wild shells and 350 hatchery units (Sunday Times 05/08/2001). This quota is shared among the sixteen members of the Association. Paspaley Pearls and Broome Pearls (the Kailis Group) are the largest members of the Association who enjoy 36% and 18% of the quota respectively. Modern techniques have greatly relieved pressure on the fishery.

Wild shells are collected during March and dumped on the seabed near the pearl farms to recover for about three to four months. The oysters are then seeded either in the laboratory or at sea in appropriately equipped vessels. After a year shells are checked by X-ray to see if the seeding has been successful. Any which have rejected the implantation of the nucleus are re-seeded. When seeding has proved successful the oysters are kept suspended in wire cages. Two years growth is required before harvesting. Oysters can be re-seeded three or four times for the production of round pearls. In the last year of production they are seeded for "mabe" or half-pearl production by seeding with the nucleus adjacent to the shell. Sometimes six or seven such half-pearls can be produced by one oyster (Andersen, 1996, p 6). The environmental

conditions of sheltered water, in case of cyclones, sufficient depth, a good tidal flow to flush the waters around the oyster and no industrial or sewerage pollution are found in the waters off of the Kimberley coast. The many islands in these waters have proved to be ideal bases for the personnel who operate the pearl farms where life has become much more bearable with the advent of satellite television and telephones (Andersen, 1996, p 3) and speedy transport to the mainland by helicopter when necessary.

There is research being done and trials being conducted with the collection of "spat" or "baby oysters" (Fisheries W.A., 2000, p 3), Currently each company is licensed to use 20,000 spat. Given the success of breeding projects it can be foreseen that there may be a "crop rotation" system. The use of hatchery bred oysters will allow the recovery of wild stocks. At that time it will probably become more economic to take wild shell than to breed. With the eventual depletion of wild stock breeding would then be, again, economically viable (Andersen, 1996, p 4). The present controls maintain the supply and price of pearls. In addition to the gems and the shell oyster meat is also of value particularly in Asia (anon, n.d., p 2).

As with the mining industry the figure emphasised with respect to the pearl industry is its gross worth rather than the profit or the benefit nationally, to the State or to the region. Also it is difficult to assess just what expenses go to overseas interests for plant and equipment. Paspaley Pearls went to Japan in 1974 to build "Paspaley 1", the first fibreglass, state-of-the-art pearling vessel and now has seven such vessels (Andersen, 1996, p 3). This company has a different need compared with others in the industry. Its grow-out farms are near Darwin and so shell transport, an aspect which caused problems in the early 1970s, is important (Andersen, 1996, p 4). Even a smaller company such as Maxima Pearls has two major vessels permanently at sea which contain operating (seeding) rooms, X-ray, transport and fishing facilities. Added to this is a smaller fishing vessel for the Exmouth region, an accommodation vessel in Yampi Sound and many smaller boats with 6–8 crew working at the farms

(Andersen, 1996, p 3). Most of these vessels and the equipment would be obtained overseas. Although there are some offices and company shops retailing pearls and jewellery in Broome head offices, shareholders/proprietors and manufacturing jewellers are usually not resident in the region (Andersen, 1996, p 9).

Because of the small number of companies in the industry statistics are difficult to obtain. With respect to such industries as pearling and uranium mining the ABS produces no information that could possibly infringe commercial confidentiality. Employment figures have been estimated at about 1,000 (Paspaley Pearls 13/05/2002). Although many are Broome based there is probably no particular preference for those of aboriginal descent. Thus although the fly-in-fly-out practice common with mining companies is not the case in the pearling industry it is only a small contributor to employment in the Kimberley. It was mentioned above and in chapter 2 that the gainful employment of a majority of the population is a feature of developed regions. The positions in the retail trade directly concerned with pearls and jewelry and some office appointments are in the nature of "second jobs" taken by the wives of employed males (not necessarily employed in the pearl industry). Such jobs are often part time only. This is far from the boom times around 1910 when some 400 luggers operated out of Broome and 3500–4000 out of a population of 5000 were connected with the pearl industry. Improving technology has had opposite effects on employment at different times. The use of diving suits in the early 1890s eliminated skin divers and reduced the number of divers per se. The introduction of mechanical air pumps after the luggers became predominantly motor rather than sail propelled by 1936 doubled the number of divers that could be used compared with that possible with hand driven air pumps. Production per voyage was almost quadrupled by this innovation from 3.5 tons per boat in 1912 to almost 12 tons per boat in 1936 (anon, n.d., p 2).

The industry began to deteriorate in 1912, although prices were still high, owing to economic conditions in Europe (Clement, 1999). It remained depressed

throughout the First World War and into the 1920s latterly because of the development of plastics to replace pearl buttons. Political policies had their effect on the industry. After the introduction of the White Australia Policy the pearl industry, to which a blind eye had been turned owing to its dependence on Asian labour and expertise, was required to comply with the racial policy of the day. In his book "*The White Divers of Broome*" John Bailey describes the fatal experiment of the introduction in 1912 of European divers trained by the Royal Navy to pearling. After this failure little was said or enforced with respect to racial policy until the internment of the Japanese closed the industry for the duration of the Second World War. By 1939 there were only 73 luggers working out of Broome and industry employment had fallen to 565. The industry ceased operations owing to the Second World War and on its restart in 1946 there were only 15 vessels providing employment for about 200. The repeal in 1949 of those sections of the Pearl Act preventing dealing in cultured pearls led to the establishment of the Pearls Proprietary Ltd cultured pearl farm at Kuri Bay, 420 kilometres north of Broome. This was a joint Japanese–Australian venture. In Kimberley waters there are some 11 cultured pearl ventures at Kuri Bay, Port Smith, Cygnet Bay, Roebuck Bay and Willy Creek (anon, n.d., p 2). This development has raised employment to current levels from the immediate post Second World War lows.

Probably the port of Broome may not have developed so rapidly had the pearl industry not adopted it as its headquarters. Other than that, some retail shops, a minimal number of offices, a museum, a small tourist venture in Broome and the occupation of some very isolated islands by a few personnel rotated out of Broome the pearl industry has contributed little to the permanent features of the Kimberley region.

Summary

This analysis has established the nature of the demographic base of the region. It has also demonstrated the relationship between the Kimberley's human capital and its industries.

Described above are the three industries which have operated in this region on a continuous basis for at least the last one hundred years. It might be expected that they would have produced an obvious and lasting effect on the development of the region. It would seem that this may not have been the case.

The mining industry is by its nature an extractive industry. When workable deposits are exhausted all that the region may be left with could well be just the dust referred to by Patrick Dodson (Crough & Christophersen, 1993, p 47). So far as the pearl industry is concerned the net result in the region of this continuing and sustainable business could be just some evidence of human habitation on a few remote islands in the Buccaneer Archipelago. The shops and offices in Broome could disappear with out any adverse effect on the industry. The pastoral industry has brought the lasting benefit of some good gravel roads to the region. These are now benefiting tourism as well as cattle exports. This industry is, like the pearl industry, based on a naturally renewable resource although it is subject to a more rigorous and variable international market demand regime than is the pearl industry.

The important feature that development does not now follow production has also been established. This is a new phenomenon that will have to be taken into consideration when any analysis is made of the development of a region.

Conclusion

This and the previous chapter have been essentially and intentionally informative in nature. The history of the region has been described and, so also, has that of its three major and long term industries. It is a history that has occurred because of the needs of the capitalist system. Its source and origin

are exogenous to the Kimberley region. Frank argued that the deficiencies in other theories of development occurred because too little attention was paid to the history of underdeveloped areas (Frank, 1992, p 107). This criticism has now been avoided in this study by the work presented in chapters 1 and 2. In Frank's and dependency theory (the latter now having evolved beyond the former's original enunciation of it) terms it is arguable that the historical events in this region happened because the requirements of the metropolises, local and overseas, have been imposed upon the satellite Kimberley region. Thus, predominantly, the early and ongoing developmental states of the Kimberley are functions of core-periphery relationships.

The informal evidence would seem to indicate that the major long term industries in the region have contributed very little to the lasting development of the Kimberley. Whether this evidence is consistent with the dependency theory of development has yet to be seen. Andre Gunder Frank's dependency theory of development originated in areas dependent upon world markets for their products. That is in areas which, in Frank's terms, had the demands of capitalism thrust upon them. The Kimberley is such a region and with the great pastoral stations approximating to the latifundia of Frank's South America his theory would seem to be a useful one by which to evaluate whether the experience of the Kimberley region suggests development or the development of underdevelopment.

In the following chapter dependency theory is examined in detail and its application to the Kimberley is assessed in chapter 5.

CHAPTER 4

ASPECTS OF UNDERDEVELOPMENT AND DEPENDENCY THEORY PRINCIPLES

Objectives

In chapters 2 and 3 the geographical, historical, demographic and economic contexts of the Kimberley region were outlined briefly. With this background, it is now possible to consider aspects of development and underdevelopment in detail.

The first objective of this chapter is to consider the meaning of the terms “development” and “underdevelopment”. This will be done by reference to a number of accepted authorities and writers on the subject of development. Then an assessment of the developmental state of the Kimberley will be based upon the various definitions of development, what has been described in the previous two chapters and on accepted statistics gathered by usually reliable sources - predominantly the Australian Bureau of Statistics. A comparison of the major features of the region with the common characteristics of underdeveloped areas will indicate whether or not the region is underdeveloped.

The objective then will be to examine the origins of the developmental state of the region. This will be done with a view to examining the meaning of the terms “development” and “underdevelopment” as they are currently understood. Reasons for the persistence of the current state of the region will be examined.

Lastly, alignment of the state of the region over time with the concepts of Frank’s dependency theory will be considered. This will follow a short biographical note on Andre Gunder Frank.

Definitions of Development

Development is a term rather like barometric pressure. Absolute pressure values are necessary information for the drawing of isobars on maps but not so important at any given location as the direction of changes. Falling pressure is indicative of approaching stormy weather but rising pressure suggests that fine conditions will prevail. Whereas barometric pressure is easy to measure, even though it is done so indirectly or by proxy⁸, this is not the case with development. Development must be defined before it can be measured. A natural corollary to any definition of the term "development" is a definition of "underdevelopment". (The term "undeveloped" is taken to mean, simply, "not used by man" and to apply specifically and only to areas set aside intentionally for only natural forces to work upon. National parks are such areas.)

Development has been described and defined in many ways. The meaning of the term can probably never be stated in absolute terms. It has varied from time to time and may well vary from place to place. A place or region that was well developed a hundred years ago is unlikely to be so now if it has not maintained a continuous effort to keep up with social norms and changes in industrial and commercial practice over time. Chinese history provides an example of this. An area of Asia or Africa which is now considered to be well developed may not be so recognised were it a part of Europe or America. There is a preference among both politicians and economists for an all encompassing phrase or numerical unit or index to indicate a particular state of development at any given time in any given place. Attempts to produce such a measure or description have always been open to criticism and probably are of questionable value.

Rostow has given the most graphic definition of a developed country: one that has reached the age of high mass consumption (Todaro, 1994, p 70). This is certainly descriptive of those countries which are now considered to be

⁸ See any good elementary physics textbook to see how barometric pressure may be measured by reference to the height of a column of mercury that can be supported by the atmospheric pressure.

developed. The problem with Rostow's theory, as with all "stages of growth" theories, is that there is the implicit assumption that all countries and regions must pass through the same historical process to achieve developed status. Frank argues that this is axiomatically erroneous (Frank, 1992, p 108). "The now developed countries were never underdeveloped, though they may have been undeveloped" (Frank, 1992, p 108).

Defining development in terms of the setting of numerical goals has been attempted particularly in order to satisfy the needs of politicians and economists. In 1969 Seers doubted the validity of setting a growth target in developing countries of 5% of national income for the first development decade (Seers, 1969, p 2). He felt that the concentration on national income as the base for an indicator of development, although convenient for politicians and economists, was too narrow to capture the broad nature of development. A cursory glance at a country such as, for example, Saudi Arabia shows that economic growth must not be confused with economic development nor the latter with development *per se* (Seers, 1969, p 2). Almost ten years later Seers was still pointing out this confusion (Seers, 1979, p 26). He was then suggesting that a more qualitative and less quantitative approach be taken towards the assessment of development—albeit based on such quantifiable parameters as unemployment, inequality and education in addition to national income _ to cope with differences in the social and political norms between countries and over time (Seers, 1979, p 26).

In his later writing (The New Meaning of Development) Seers sees the development paradigm—the neo-classical paradigm—as one serving the interests of theorists from across the political spectrum (Seers, 1979, pp 25–26) rather than those suffering from the effects of underdevelopment. Andre Gunder Frank had come to this conclusion in 1963 (Frank, 1996, p 26). Frank went on to enunciate his own development theory, dependency theory.

Having much in common with Seers' concept of development is that of Meier (1995, p 7). His definition of development as "growth plus change" includes economic expansion, social advancement and sustainability. He also proposes that any changes should result in no adverse effects on income distribution. Qualitative factors are as important for Meier as economic statistics.

Wallerstein provides the most simplistic definition of development related to the aspirations of "real" or "ordinary" people rather than to requirements of politicians or economists for an easy, all encompassing, abstract, assessment figure. For most people development was a matter of becoming prosperous and approaching the lifestyle of those in The United States of America or one of the other "developed" nations such as the United Kingdom or France or Germany. From the viewpoint of those in developing countries even the poor in the developed world seem to be better off than the majority of them (Wallerstein, 1996, p 355). This is less a definition that can be measured, rather than one that can be felt or experienced by living in the underdeveloped area being described.

Doctrines of Development

A major obstacle to a definition of the term "development" has always been that its meaning varies from person to person. There has always been a basic difference between those who see development as that which simply happened and those that see it as that which is caused to happen. That is, development may be simply an inevitable historical fact or it may be a deliberate or man-made change in the course that history, but for the change, might have been expected to take. Development as a confusion of the terms "economic development", "economic growth" and development *per se* has been mentioned above. For Marx it was a society or an economic system that develops. For Milner it was a natural resource that was developed (Cowen & Shenton, 1996, p 173). Arndt is quoted by Cowen and Shenton in reference to the former's opinion that, in the colonial territories of Australia and Canada, the overarching policy was a doctrine of development before settlement (Cowen & Shenton, 1996, p 174). Arndt's thought was that development was necessary

to attract immigration to the colonies and that the state had to act to implement it. Cowen and Shenton pointed out that in Europe the state practice of development was designed to deal with surplus population and they contend that this was also the case in Australia and Canada. In the latter places the "over-population" occurred in limited areas owing to previously failed ventures or changed circumstances. In Victoria the decline of the goldfields gave rise to a risk of mass emigration in 1856 (Cowen & Shenton, 1996, p 174). In Quebec the French-Canadian population began what threatened to be a mass emigration to the United States of America owing to the collapse of the timber trade in the late 1840s (Cowen & Shenton, 1996, p 202). The Victorian authorities attempted a development policy of industrialisation and in Quebec an agrarian policy of development was tried, both to arrest the loss of population. Thus the development policies were intended to deal with a surplus population, or what amounts to the same thing, a loss of unemployed productive forces, as had been the case in Europe.(Cowen & Shenton, 1996, p 174).

These historical situations counterpoint the fact that there has never been a doctrine of development so far as the Kimberley is concerned. The opportunity existed, although to a lesser extent than in Victoria and Quebec, at the time that the Halls Creek goldfield began to decline from its peak when there was a population of some 3000 in 1885.

Perhaps the time of this decline of the Halls Creek gold rush was the only possible opportunity. There has never again been so many people with such varied skills available in the region. In 1885 the Kimberley was more remote, in terms of accessibility, from the centre of government than it is now. This is probably the reason why similar attention as was given to the Victorian goldfields was not given to the Kimberley. According to Graham no credible doctrine of development for the north-west of Western Australia exists today and this issue is constantly avoided by the State Government (Graham, 2001, p 2).

Creating a doctrine of development to retain an existing population and skill-base is obviously possible from the examples of Victoria and Quebec mentioned above. Instituting one to attract such a population in adequate numbers and with such a skill-base is far more difficult. It has happened in macroeconomic development terms or the, for examples, ex-British territories of America and Canada would not now be first world developed economies. However, such developments over long periods were less the result of preconceived doctrines of development on such scales as advantages taken of serendipitous events such as mineral discoveries and the finding of good agricultural land in areas not occupied in the Western sense although arguably owned by earlier inhabitants. Native Title legislation has just given “western” legal recognition to such occupation in Australia and similar legal frameworks exist in Canada so far as the Inuit (Eskimo) population is concerned and in America so far as the native Indian race is concerned. None of these frameworks is wholly satisfactory or necessarily conducive to sustainable development in the areas concerned for the people most involved or affected. So far as Australia is concerned this point is well made by Duncan (2003, p 314) and it will be pursued more fully later.

The people disappeared quickly from the Kimberley. By 1887 there were just 600 in the Halls Creek area. The fact remains that no doctrine of development was put in place for the Kimberley then and there has not been such a policy since.

Kimberley Comparisons with Definitions of Development

Having looked at some of the ways of defining the term “development” consideration must be given as to how the description of the Kimberley given above as based upon the previous two chapters may be assessed with respect to the definitions mentioned. Implicit in Rostow’s definition is that the origin of the goods being consumed is from within the developing area or they are paid for by the export earnings of local capital. Clearly this is not the case with respect to the Kimberley. In chapter 3, mention was made of the fact that little of the earnings of mining, pearling and pastoral operations accrues to the

Kimberley. It is also the case that so far as the pastoral industry is concerned even the product is and always was unsuitable for local use even if there were now any abattoirs in the region.

With regard to Seers' and Meier's qualitative assessments of development it has been pointed out above and in the previous chapters that the Kimberley lags well behind the rest of the Country in matters such as employment, health and education. Even in socio-political terms the people of the Kimberley are poorly represented in the National Parliament. The Kalgoorlie electorate, of which the Kimberley is a part, is the largest, in area, in the country. The major town of the electorate is a few thousand kilometres distant from the Kimberley and, by regular passenger transport, is a couple of days' travel away. The current State government is in favour of changes to State electoral boundaries and to the weighting of rural votes both of which will reduce the representation of non-metropolitan areas, including the Kimberley, in the State legislature.

Wallerstein's definition of development is very subjective and it is thus difficult to apply to any particular place. From a consideration of the lack of ease of access to goods and services for people in the Kimberley compared with those living in capital cities and from the differences with respect to the qualitative aspects mentioned by Seers (health, education, income etc) it can be fairly argued that the people of the Kimberley should feel that their quality of life lags behind that of people in major centres (Lloyd, Harding & Hellwig, 2000, p 23). The parameters mentioned which give rise to these feelings are discussed more fully below and it will be seen that, on average, the people of the region are disadvantaged compared with the rest of the state and country in general.

Dependency theory defines underdevelopment as the incorporation of a country or area into the world capitalist system in a subordinate position (Brewer, 1980, p 18). This is clearly the situation with respect to the Kimberley region. The trading position of all of the major industries plus the lack of the return of profits

to the region indicates the subordinate status of the region compared with the State of Western Australia, Australia and the Developed World in general.

The state of the Kimberley in terms of development issues can, therefore, be assessed according to the parameters of income, health, education and socio-political conditions of its human capital. Of all the various theories of development only dependency theory contemplates such a broad assessment on all of these parameters. The narrowness of the approaches of other theories, such as the modernisation, neoclassical, structuralist and new growth theories, was specified in chapter 1. Use of dependency theory is, therefore, well justified in the case of the Kimberley.

Qualitative Assessment of Development in the Kimberley

With respect to the following analysis it is useful to be aware of the most common characteristics of an underdeveloped region. These are: low education, low income, poor health (including low life expectancy) and unreliable and undetailed statistical information.

Demography

The Kimberley region of Western Australia is an easily definable area geographically. It is located in the far north of the State and is comprised of four shires: those of Broome, Derby-West Kimberley, Halls Creek and Wyndham-East Kimberley. There are three major towns: Broome, Derby and Kununurra; three lesser towns: Fitzroy Crossing, Halls Creek and Wyndham; and a few smaller settlements such as Camballin and Warmun (formerly Turkey Creek). With an area of approximately 419,077 square kilometres the Kimberley is almost twice as large as Victoria but with only 40,653 persons (ABS, 2003) it has less than one per cent of that State's population (ABS, 2003, web site). Of that population 33% are aborigines or Torres Strait islanders (ABS, 2003). This is well above the concentration occurring in most major urban areas and is probably an underestimate as has been noted in chapter 3.

Unemployment

It is difficult to relate the unemployment figures of the Kimberley as given in census figures with those given for Australia from the ABS monthly Labour Force surveys owing to the differences in the definition of an "employed person"⁹. There is often a difficulty in third world countries comparing statistics on most subjects to similar figures produced in first world industrialised countries. The problem is usually concerned with the definition of terms. For labour force statistics, for example, a subsistence farmer and any associated family may be reported as unemployed in one situation but not unemployed in another. The situation is similar in the Kimberley with respect to extended families who live on cattle stations or in other communities. Thus in gross terms only 42% of the population in the Kimberley were employed according to the 2001 census figures (ABS, 2003) although at any time the reported unemployment figure in ABS monthly publications is much less than 58%. This is because many who make up this gross figure of 58% are defined as being "not in the labour force". The difficulty mentioned above remains and therefore also does the problem of assessing the true unemployment position other than in general terms. However measured the impression that unemployment in the Kimberley is higher than in the rest of the state and country, it is difficult to avoid.

Education

So far as education is concerned, in 1996 78% of persons in the Kimberley had no post-school qualifications (ABS, 2003) compared with the national average of 65% (ABS, 2003, web site). Only 7.8% of persons have a bachelors degree or higher educational qualification compared with 9.7% with a bachelor's degree and 3.2% with a postgraduate degree nationally according to the Australian

⁹ Definition in Monthly Labour Force publication: "any person who has worked for one hour or more in the survey reference week".
Definition 1996 census Community Profile: "any person who worked 35 hours or more (full time) or less (part time) in the week preceding the census".

Bureau of Statistics Basic Community Profile from data derived from the 2001 census.

Income

The median weekly income in the Kimberley at the 2001 census was \$300–\$399 (ABS, 2003) per person. This is the same as the national figure (ABS, 2003 web site). It should not be surprising that the income per employed person in the Kimberley is similar to the national average because some 44% of those employed were in government or quasi-government employment (ABS, 2003) which attracts large locality allowances and benefits. The low percentage of employed persons suggests that an overall low income figure is probably the case.

Health

With regard to health, the problem of adequate comparison with the rest of Australia is compounded by a lack of detail. In relation to cardio-vascular disease, for example, only Western Australia, the Northern Territory and South Australia were adjudged by the ABS to have satisfactory identification of indigenous people to allow for separate reporting of their statistics. In 1977 the median age for death from circulatory diseases in the indigenous population was 59.6 years whereas it was 81.1 years among the general population (ABS, 2000, web site). The rate of diabetes mellitus among the indigenous population was 7–8 times that for the non-indigenous persons in the age range 25–54 years and twice that rate in those over 55 years (ABS, 2000, web site). Later figures from the most recent census (2001) on this subject are not available. The high proportion of indigenous persons in the Kimberley thus makes it highly likely, and informal evidence from many sources suggests that the Kimberley is probably a less healthy place than the main centres of population in Australia¹⁰.

¹⁰ See "The Health of Western Australians", a report by the Health Department of W.A., (unpublished) 1995.

Thus from the facts derived from an examination of the Kimberley region in the previous two chapters as assessed above and from a comparison of those facts with various definitions of the term “development” the region is underdeveloped.

In short the Kimberley seems to suffer from some of the most common attributes of an underdeveloped region. It is a large, empty (of people) area¹¹, with high unemployment, low education, below average income, less than average¹² health and available statistics are not always sufficiently detailed for adequate analysis and may not be reliable. It may fairly be concluded that, on empirical evidence, the Kimberley is an underdeveloped area. It is also clear that this condition has been the case for at least the last, approximately, one hundred years.

Possible Origins of Underdevelopment

Historical Origins

The question that must be asked is whether or not the Kimberley was always underdeveloped. If not then the questions begged are when did underdevelopment begin, why has it persisted and how can the Kimberley be sustainably developed?

As Frank found with respect to Brazil, underdevelopment in the Kimberley region cannot be said to be because of the survival of archaic institutions (Frank, 1992, p 111). The way of life in the region prior to the arrival of the European was that of the aboriginal hunter-gatherer. This lifestyle is now available to only a tiny minority of aborigines who live on outstations (Fisk, 1985,

¹¹ It should be noted that not all underdeveloped areas are sparsely populated; to the contrary many are grossly overpopulated (eg Bangladesh) .

¹² That is, average for the state, or country however that might be assessed.

p 9, table 2.1). Even where there is a contribution to aboriginal income from a traditional lifestyle there has been since 1981 a considerable additional income from the social security system (Fisk, 1985, p 63). Duncan, (2003, p 322) estimates that 90% of private and public income comes from the government. Thus a common explanation of the reason for the underdevelopment of a region does not exist here. Dingle argues that hunter-gatherers, particularly in Australia, did not occupy an underdeveloped land. It may have been undeveloped in the sense that Europeans then and now understand that term but it was, for those who held sovereignty over it and who lived off it, not underdeveloped (Dingle, 1988, p 4).

There were foreign influences, prior to that of the European, which occurred before the eighteenth and nineteenth centuries. Those from Indonesia and/or East Timor, who still attempt to fish in the Kimberley waters, have probably done so for hundreds, perhaps thousands, of years (Burling, 1965, p 20). Those who still attempt to take trochus shells have always done so for a similar period. There is evidence of incursion by unknown peoples. The Bradshaw paintings on rocks and in caves in the north of the region are neither claimed nor valued by local aborigines (Walsh, 1994, p 13). These images are quite unlike the aboriginal art of the region and are much older than the rock paintings of Wandjina figures attributed to the ancestors of the current local tribes (Walsh, 1993, p 18). Figures similar to the Bradshaw paintings are now being incorporated into works by local artists from the Mowanjumb Community among whom they are known as "Gjorn Gjorn" figures. Even the characteristic Boab trees, which are, in Australia, found growing naturally only in the Kimberley region, may be evidence of early visitors. Similar trees are found in central Africa and Madagascar where they are known as Baobab trees. They may have been deliberately brought to the Kimberley by early travellers using the nuts as a long lasting food item. Equally likely is the possibility that the large Boab nuts or seed pods drifted from Africa to Australia across the sea. None of these actual or possible visitors changed the land from an "undeveloped" region supporting the hunter-gatherer life style.

It is possible that none of the earlier visitors were capable of bringing about change in the region. This is unlikely. There has been a continuous movement of people, sovereignty and beliefs north from Java to Cambodia and east from Arabia and India to the Moluccas over thousands of years. Cambodia was ruled variously from the first century A.D. to the twelfth century by kings who originated initially in China and latterly in Java (Coedes, 1963, pp 1–6). Theravada Buddhism spread from its origins in Ceylon to mainland South-east Asia over the period 3 BC–1300 AD (Lester, 1973, p 66). From its origins in Medina in 622 A.D. (Gibb, 1978, p 2) Islam gained a footing in Sumatra and Java via traders in the thirteenth and fourteenth centuries (Gibb, 1978, p 14). This was preceded by Hinduism from India which still survives as the major religion in Bali, a part of Muslim Indonesia, today.

The buildings of Angkor Wat and other places in Cambodia, the styles of architecture associated with different particular creeds in other places, the social, administrative and educational systems of the major religions of South-east Asia suggest technologies and organisational capabilities that would have been able to develop the Kimberley region of Australia in many ways. Although the Kimberley is at the southern and eastern extremes of South East Asia and is separated from it by sea and a six month monsoon season during which cyclones preclude safe sea voyages it was clearly not ability that prevented the northern peoples from colonising the region.

The hunter-gatherers whose home the Kimberley then was could probably not have effectively resisted any attempt at a permanent incursion if subsequent history with respect to European colonisation is an indication. The many small family groups, albeit extended families, which were the basis of aboriginal living groups, could not have been expected to put up any united front against even a small organised force. It must be concluded, then, that for reasons unknown, the desire to colonise or at least exercise nominal suzerainty¹³ (Coedes, 1963, p

¹³ Suzerainty: A non-occupational, almost informal, form of influence

91) over the Kimberley region was missing. The existence of prior or archaic institutions in the Kimberley region or in proximate areas cannot explain the current state of development/underdevelopment here. Still less then can underdevelopment be dated from any of the above periods. From this it can also be concluded that for colonisation to occur there must be present in a potential coloniser both the ability and desire to colonise.

History suggests that Britain in common with some other European nations did have both the ability and desire to effect control over and to change the parts of the world that it occupied. Usually the changes that occurred in British owned or controlled territories were less to do with the development of these areas than with the economic advancement of Great Britain. It is arguable that land tenure reforms would have (and probably still would) result in sustainable development for the majority in the populations of many countries but the issue was simply not addressed by most colonial powers. Other forms of development were considered to be more important. Like the other great colonial nations, such as Spain and the Netherlands, Great Britain was interested only in asset-stripping its colonies for its own advantage. This is implicit in Roxborough's (1981, pp 17 & 44) comments on Frank's opinion of the existence of a chain of exploitative relations between advanced and backward sectors of society and on Lenin's view of imperialism (1981, p 56). Roxborough (1981, p 58) makes the "asset stripping" accusation explicit by reference to data on net capital flows benefiting only the imperial powers. In his address to the Canberra Press Club on 4th February 2004 professor Amin Saikal referred to the economic imperatives of the colonial regimes in the middle east, with Britain being a major representative of this group, as being so predominant in the occupation of many countries that almost no political or administrative infrastructures were left in place when the colonists left although such structures remained in, for example, India. Although this may be considered a harsh verdict on colonialism it is not without support at least in the nature of the ultimate effect of colonial rule. Legge (1980, p 124)

over a distant land often exercised by south east Asian rulers such as the Khmer kings.

confirms the self-interest of the Dutch in Indonesia. The control of the Spanish over its territories in the Americas and the Far East is well known and it is from the relaxation of trade regulations to and from the colonies in the late eighteenth and early nineteenth centuries that the severity of it can be gauged (Frank, 1978, pp 184–186). So far as Britain is concerned Weber, in discussing capitalism, refers to the British Empire in terms of colonial capitalism which profited from the commercial exploitation of conquered territories (Gerth & Wright Mills, 1977, p 66). Mathias (1977, p 86) mentions the regulations controlling trade between Britain and its colonies which were intended to ensure that commercial activities were in the interests of the metropolitan economy. Baran (1977) gives the socio-political reasons for the success of the imposition of colonial power over ruled territories and their societies. The benefits to the metropolitan powers were secured variously by way of trade or by the direct removal of natural resources.

If the great colonial powers saw the regions that they controlled as potential extensions of themselves then underdevelopment may be said to have occurred instantly upon acquisition by the controlling power. All that could have happened from this point would then have been development towards the state of the colony being indistinguishable from that of the metropolitan power. This did not happen. Controlling enclaves were established to oversee the transfer of resources to the “home” country. These outposts never extended to the limits of the areas which were controlled from them. They provided indigenous populations with a glimpse of a quite different and possibly more attractive way of life, free from many of the accepted problems of disease and subservience to the elements. This privileged lifestyle was never in any large degree extended to the indigenous populations. It was these islands of affluent advancement that gave rise to such ideas as the “trickle down” theory which has proved to be of little value in promoting development.

Colonial Origins

European colonisation introduced western commercial and capitalist influences to controlled, ruled and owned areas of the world (Frank, 1992, pp 108–109).

This is the nub of the dependency theory argument. The fact that “modern” enclaves were created as controlling outposts but not extended to the geographical limits of the colonised areas does not mean that western capitalist influence was not so extended. One authority suggests that the initial stages of underdevelopment occurred immediately after European settlement and continued for nearly three quarters of a century from 1788 to 1850 (Dingle, 1988, pp 59–60). It may be thought that it is drawing a long bow to date underdevelopment in the Kimberley from 1788 but its origins may fairly be sourced back to that date. It appears that at no prior time was the continent “acquired” with a view to permanent settlement by representatives of Western capitalist interests even though it may have been visited by others before then. Underdevelopment, therefore, may be said to have occurred or begun at the time that European influence was brought to bear upon the region. Whether that date is set at 1788 or 1879, the date of Forrest’s first expedition to the Kimberley, is relatively unimportant as is the assessment of whether or not underdevelopment occurred instantly or over a period. The fact appears to be that a state of underdevelopment in the Kimberley has persisted for over a hundred years and still exists today. That is, the state of underdevelopment has existed here for much longer than is suggested above by Dingle.

Casual observation of all of the Kimberley towns shows improved and increased housing and infrastructure compared with the situation that existed a hundred years ago. The population of the region has increased, services of all kinds have improved and many modern innovations in transport and communications have been introduced. Even so all such development has been well behind similar events in the capital cities and the densely populated eastern coast of the continent. There has been a passing series of events in the mining, pastoral and pearling industries of which some economic advantage has been taken from time to time. Other than the fact that these three industries have remained active in the region in many guises by virtue of many different ventures there has developed no major sustainable economic pursuit that might provide the increasing number of long term residents of the Kimberley with a dependable

livelihood. The development of underdevelopment is not simply a matter of the stagnation of economic, social and political activity. A falling behind relative to the situation in other areas is a more common representation of the phenomenon. It is in this sense that the Kimberley region is and has always been underdeveloped.

Persistence of Underdevelopment

Geographical and Commercial Reasons

It has been pointed out previously that national censuses are usually conducted at times which can lead to distortion and errors so far as the Kimberley is concerned. The possibility of inaccuracy has also been mentioned. Also, with respect to matters such as health and education, there is often insufficient detail with respect to the aboriginal population to allow assessment of the problems peculiar to this long term demographic base of the region (Crough & Christophersen, 1993, p 22). The collected statistics for the region may therefore be said to express the state of the region from the viewpoint of or by reference to the parameters of the metropolitan areas in the country rather than from the perspective of the Kimberley. This is the way in which underdeveloped areas are often assessed and which leads to inappropriate solutions to achieve development being tried. The Ord River project is an example of this. It was an imperative of state and federal politics but with current production valued at just \$30 million annually it is still not a major economic or development success.

There are many small towns in, for examples (but not restricted to), the coal, wheat and wine producing areas of Australia. Similar to the Kimberley towns, such places are supplied by road over trunk routes and they may also be less well served than metropolitan centres. Indeed many have recently been losing services, such as banking outlets and government agencies, to computer-based internet services, larger towns or capital cities. These towns are also service centres for sparsely populated areas, again, similar to the Kimberley towns. The latter places lack one major attribute that the others possess and that is "linkage".

The small towns in the productive areas of Australia are services centres for regions that provide large cargoes for export via the major ports of the capital and large cities or raw material for the industries of these cities or goods for consumption in the cities. Sometimes the produce fulfils more than one role. Wine is consumed in this country and exported; wheat is exported and used in manufacturing to produce goods as different as bread, pasta and ethanol; coal fuels power stations, industrial plants and is exported. The small towns may be disappearing slowly owing to improved communications infrastructure or even coalescing into larger towns but there will always be a need for collection, distribution and organisational centres in the productive regions so long as the latter continue to produce. These towns are thus linked to major centres, by virtue of the indispensable nature of the goods which the areas in which they are situated supply to the large cities and their ports and industrial estates. These supplying areas are not underdeveloped although the activities may not represent sustainable development.

This is not the case with respect to the Kimberley towns. There is nothing produced in the Kimberley upon which any industry or port elsewhere in Australia depends or upon which any large scale domestic consumption is based. The towns of this region have no linkages with the rest of the country.

Live cattle are exported directly from the Kimberley ports of Broome and Wyndham and occasionally from Darwin and Port Hedland. The lead and zinc concentrates from the Western Metals Ltd Mines near Fitzroy Crossing were exported exclusively from the Derby Export Facility. Diamonds and pearls do not constitute high volume or heavy exports despite their high value. Pearls require little processing and the biggest loser should anything interrupt the volume of rough near gem diamonds would be India, where most of them are cut and polished. The smaller quantity of major gemstones is usually processed in Antwerp although they are sorted from other stones, mechanically, in Perth. The volume of horticultural produce from the Ord River Irrigation Area is small.

State and Federal interest in tourism is predominantly restricted to international visitors to capital cities or to overseas visitors for particular sporting, commercial or political events in these centres. In any event internal Australian air fares and air services are a severe deterrent to excursions from main centres. It is also the case that the tourist season in the Kimberley is short. It extends at best from mid-April to mid-October, being shortened by the wet season, high temperatures and humid conditions over the rest of the year. In short there is no activity in the region which might keep it before the minds of those, whether public or private, with capital to invest in development projects. Such potential investors are situated usually in capital cities. (See references to Dow, 1990 and the “information gap” below.)

Political and Social Reasons

Native Title legislation and practices also have a negative effect on development possibilities. Few would now seriously question the justice of the legal decisions that led to the Native Title laws but for aborigines this can only be considered to be a “work in progress”. Undoubtedly the acquisition of land is important for the economic development needed to improve the welfare of Aborigines (Duncan, 2003, p 311). There is also the view that land ownership alone is insufficient to cause the necessary improvements in the living conditions of many of the aboriginal population.

An economic takeoff by the indigenous sector, Australia-wide will not occur because of native title. Land alone cannot guarantee economic development: capital accumulation, human capital and entrepreneurial expertise will also be needed to promote the development of the indigenous land base (Altman, 1995, p 298 cited in Duncan, 2003 p 311).

Duncan (2003, p 311) goes further than this with respect to the factors necessary for economic development to take place. So far as land tenure is concerned the communal ownership of land, which is generally what a native title award grants, is not sufficient to ensure development. Some form of

individual title must evolve before development can become a possibility (Duncan, 2003, p 314).

That the application of these laws is complex, often leading to lengthy legal or mediation processes, but is not so contrary to development as is the psychological effect on those to whom native title may be granted. The problem occurs because of the requirement of the legislation to prove long and continuous attachment to land over which native title is claimed. This often requires reference to traditional and cultural practices and there is no denying that such practices are important to aboriginal people. After the success of the process to lodge a claim and even more so after the settlement of a claim there seems to be an increased desire by the group claiming or obtaining title to want to maintain the land according to traditional and cultural practices. This tendency is evidenced by the detailed and protracted negotiations that have been necessary to secure agreement of the traditional owners of land on the Burrup Peninsula near Karratha in the Pilbara to industrial development projects there. Negotiations to achieve the relocation of Broome airport faltered owing to the failure to obtain agreement with Native Title holders on the use of the site required by the airport authorities. Similar difficulties were encountered by Western Power with respect to the area of land that was needed for the siting of a new power station in Broome. In many ways such problems and the lifestyles that go with them are not consistent with the practices subscribed to by those who enjoy the benefits of the modern ways of the western developed countries.

There is no suggestion here that aborigines should abandon their culture. However, it may be necessary for this culture to be remembered and practised with the same emphasis or intensity as the English practice Morris dancing or re-enact annually the battle of Hastings of 1066 or the Druids maintain their language and religious practices or the way in which many European towns and cities keep their traditions alive in processions and festivities by way of carnivals and feasts and saints' days. There are many other examples of traditions which are maintained from generation to generation by such vehicles as

eisteddfods and festivals during which traditional song, dance and literature are recalled and renewed. This change in lifestyle is particularly important and relevant in areas such as the Kimberley where the long term demographic of the region is the local aboriginal population. There can be little doubt that the social norms of the residents of the developed nations have been shaped by the process of their development. This may also be the case in the future with respect to areas where Aborigines constitute the majority of the population or have only communal rights to the land on which economic development could occur. Dependence upon the land and a deep spiritual attachment to it are features of subsistence economies (Duncan, 2003, p 316). It could be that the traditional and cultural norms of Native Title holders may inhibit or prevent western style industrial and commercial development and therefore prevent movement towards western lifestyles. The possibility is that this is what is desired by the local population but it is then difficult to gain from or achieve the educational, health or political development enjoyed in areas that have predominantly non-aboriginal populations.

To leapfrog from the current state of underdevelopment or to avoid any "stage" process it would seem to be important to adopt the appropriate lifestyle even though this may be only peripheral to achieving development. This is because it seems from observation and what little experience there has been of the actions of Native Title holders that there is often a tendency to oppose western style development. It is a fact that those who have the necessary capital to invest, whether public or private, are from the developed world. They are more likely to invest in areas wherein the way of life, customs and social practices are understood by them. This is particularly the case where the underdeveloped area is part of what is otherwise considered to be a developed rather than a developing country. In such apparently developed countries competing investment opportunities are often numerous and close to hand in main centres. It is also easy and inexpensive for multinational companies to buy or lease resources in underdeveloped areas simply to prevent competitors from developing them. Some form of title to land for individuals will be necessary to

dilute traditional lifestyles, avoid restrictive practices currently available to potential developers and achieve progress towards the better health, educational and social outcomes enjoyed by those in developed areas of the country via industrial and economic development (Duncan, 2003, p 316).

The lack of any discernible doctrine of development or policy from overseas or local authorities is another reason for the persistence of underdevelopment in the Kimberley. Instead, for much of the last century the region has been treated like a vast monopoly gameboard with outside interests buying and selling large areas for short term profit (Crough & Christophersen, 1993, p 53).

For all of the above reasons underdevelopment persists in the Kimberley. Clearly one or other reason may be more important than any others at one time or another. In view of the historical difficulty of achieving "developed" status all inhibiting factors should be addressed.

Any explanation of development/underdevelopment in the Kimberley must consider the historical facts, the present situation and the qualitative matters incorporated in any broad definition of development. Dependency theory provides an appropriate framework for analysing the current state of development in the Kimberley and possible future approaches to development because of the extent and nature of the parameters that it includes.

Old Concepts

There are towns in the Kimberley wherein some may argue that there is evidence of dual societies. This is a concept which Frank denies as in any way useful in promoting development (Frank, 1992 p 108) so the concept will not be further pursued here. Even when United Nations' proposed development targets were reached, using national income growth as a gauge, in a number of countries during the 1950s and 1960s, the narrow achievements of specific projects did not improve things for the masses of the people (Todaro, 1994, p 15). It has been generally noted that successful development has not been achieved by waiting for a "trickle down" effect to work (Todaro, 1994, p 149).

There are specific projects and operations in the Kimberley which point to the failure of the “trickle down” effect. The Ord River Dam is a major project in the extreme north east of the region. It is only now perhaps beginning to fulfil some of its potential as an agrarian development project (currently \$30 million worth of output annually) of horticultural and agricultural produce (Agriculture W.A., 2000, advertisement). It was undoubtedly a political rather than a development project in both its first and second stages in 1959 and 1967 respectively (Davidson, & Graham-Taylor, 1982, p 25). For forty years, after proved initial failure (Davidson & Graham-Taylor, 1982, p 14), the project was unviable and unsuccessful (Davidson & Graham-Taylor, 1982, p 19).

The Argyle Diamond Mine, also in the north east of the region is a success if size and value of production is any gauge. It is the largest diamond mine in the world and it is independent of the De Beers diamond marketing cartel. However, as has been stated previously, in chapter 3, none of the activity at or production from the mine is of any real developmental benefit to the Kimberley.

The Western Metals Corporation operated zinc and lead mines near Fitzroy Crossing. The same limited outcomes as at the Argyle Diamond Mine hung over these operations from the sustainable development viewpoint. There is unlikely to be any “trickle down” effects from the current mining operations in the region even at a very limited local or personal level owing to the “fly in–fly out” nature of the operations.

At the limit no “robber or extractive industry” can be considered to be a project for sustainable development unless it spawns secondary industries which can process primary material from other than the original source. A “robber or extractive industry” may be defined as one which must eventually cease because the object of its operations disappears owing to its removal. Nauru phosphate mining is an example which suggests the correctness of this assessment of such ventures with respect to sustainable development. The

plight of Nauru might have been avoided had the earnings from the exploitation of its only natural resource been appropriately re-invested in real estate and financial assets. These could have provided the secondary and more sustainable elements derived from the proceeds of the first industry there.

The pearling industry, not a "development project" as such, is very restrictive in its operations in the Kimberley. The lack of new entrants prevents any "trickle down" effect to induce development in the region. Even Western Australian based companies in this industry tend to conduct their operations off shore as is the case with the North Fremantle based pearl farmer Atlas Pacific. This company has major and expanding operations in Indonesia (Prior, 2002).

The pastoral industry cannot be considered to be a "development project". Cattle stations are still the largest and most widespread activity in the region, sheep having disappeared from the area by 1969 (Grill, Evans & McIver, 1985, p 15). Absentee owners held almost half of the businesses in this industry in 1985 and they controlled more than half the land and more than half the cattle (Grill, Evans & McIver, 1985, p 36). There is no "trickle down" effect as a result of this industry so far as the local population is concerned in spite of some cattle stations now being owned by aboriginal interests. No expertise or experience has been passed on by non-indigenous owners to the present operators of aboriginal owned properties. This is because of the lack of aboriginal employment after it was determined that award wages would apply to them in the mid-1970s. Also the increasing application of mechanised methods, such as the use of motor cycles rather than horses and helicopter mustering, stopped the employment of successive generations of aboriginal stockmen. Although not a robber industry or one from which "trickle down" effects have been or are likely to be of significance the product of the pastoral industry is at least based upon renewable resources. It is doubtful whether there is much room for significant expansion in terms of turn-off even from an increased herd nor for any secondary processing of the product, for the latter has been tried and abandoned. Indeed it must be considered possible that current customers for Kimberley cattle may one day produce their own livestock, leaving the region

without markets for its product as it was left when the machine beef market in the United States was no longer viable.

Tourism is in a similar category to the pastoral industry. Again this industry is not of itself a “development project”. Its success also runs counter to development in the region. The attraction of the area is of the nature of “eco-tourism”. This depends on the maintenance of the “wilderness” nature of the Kimberley. The region is often marketed as one of the last “frontier” areas in the Country. Any development towards the Kimberley becoming a modern industrial region must therefore conflict with the current selling points of tourism in the Kimberley. Expansion of the tourism industry will likely involve increasing participation by national and international hotel and resort chains and airlines to the exclusion of local participation in other than small local ventures. This suggests that there will be no “trickle down” effects in the tourism industry in the Kimberley. There may be some increased, if seasonal, local employment but this is hardly sustainable development on a scale that will change much in the region for the local population.

Andre Gunder Frank

Andre Gunder Frank developed his theory from the principles established by Paul Baran (Ghosh, 2001. p 1). Frank, whether or not intentionally, took the political emphasis out of his work by not referring specifically to either class or the capitalist mode of production (Ghosh, 2001 p 52). Consequently Frank’s work was criticised by both the political left and right. The reasons for this are best understood from Frank’s own description of the beginnings of his theory:

I wrote my first three theoretical works in Brasilia and later in Rio, where our first son was born in 1963. They were directed at once against development theory and policy derived from neoclassical and monetarist development theory; against Keynesian and structuralist explanations; and against CEPAL/ECLA, Alliance for Progress, and orthodox Marxist and Communist Party theory, policy and praxis. I put them all in the same sack. The reason was that whatever their differences,

they all shared the view that underdevelopment was original or traditional. They all posited that development would result from gradual reforms in dual economies/societies, in which the modern sector would expand and eliminate the traditional one. Like Foster-Carter (1976), Hunt (1989) regards my critique as "an archetypal example of a paradigm shift" (p .172). She wonders whether I had read or even heard of Kuhn's book. I had not. (Frank, 1996, p 26).

Thomas Kuhn proposed in his work *The Structure of Scientific Revolutions* that the progression of science was not an incremental journey towards the truth but was, rather, periods of acceptance of current ideas terminated by violent revolutions precipitated by new explanations of observed phenomena. Clearly Hunt was of the opinion that Frank's new theory of development was such a "paradigm changing" event.

Frank's approach was an historical and structural approach which in his studies of South and Latin America generated for him a set of hypotheses (Frank, 1992, pp 112–117). It was Frank's hope that the adoption of his overall approach would lead to a better understanding of development and underdevelopment and the development of underdevelopment.

The Origin of Dependency Theory

It may be worthwhile in passing to look at the origins of dependency theory. This may at least explain why its application has been limited to south and central America.

There may be a conceptual problem in attempting to apply dependency theory to the Kimberley but this initial description of the theory should assuage any such difficulty. In Australia, development, as it is commonly understood, has reached its zenith only in the densely populated, urbanised, predominantly coastal, large cities. The general conception of the term "developed" is a product of the political and concomitant economic practices of, particularly since the end of the cold war, the "west" or "first (as distinct from "third") world" and

from these have come the generally accepted ways forward for the development of underdeveloped regions. That Frank was of the political left cannot be denied. His association with the Allende government in Chile (Chew and Denemark (eds), 1996, p 32) and his subsequent treatment by the Pinochet regime (Chew, and Denemark (eds), 1996, p 33) confirm this. It is predominantly because dependency theory can be said to be from Marxist roots that it has been less than widely examined or applied in the old "free world". However there is no reason, by virtue of its political origin, why dependency theory or any other theory should not be applied to any part of the world. Dependency theory has scant respect for the development theories which tend to place the cause of underdevelopment anywhere but on the shoulders of the developed world. Todaro (1982, pp 79–80) traces the progression of thought and theoretical development from Marx and Engels to Baran, Sweezy and Magdoff to Amin and Frank. Thus the thoughts of Amin and Frank are twice removed from the classical theories of Marx and Engels and once from those of the neo-Marxists such as Baran, Sweezy and Magdoff. This lightens the political burden that dependency theory may, at first sight, seem to carry and thus should ease its appreciation and application by those who are ideologically to the right of its originator. It has been examined in some detail predominantly with respect to South America. Chile, Peru, Argentina, Cuba, Mexico and Brazil have been studied by Frank, Brazil also by Celso Furtado and others, such as Dos Santos and Cardoso, have also examined the situation relevant to Latin America. Its political origins should not have been allowed to interfere with its theoretical and empirical assessment but a change of paradigm is often, initially, too challenging, especially for vested interests, to accept or even consider.

It is difficult from within to appreciate or accept that the current condition of the developed world may well not be the ultimate state to which all should aspire. *Laissez faire* or free market capitalism may not be the final or ideal (if that exists in practice or concept) economic state. A few years ago, to suggest in the West that capitalism carries within it the seeds of its own destruction would be to invite the dismissal of one's views on the grounds of offering support to the opposing

political camp or of, which amounted to much the same thing, paraphrasing Karl Marx (Bottomore & Rubel, 1979, pp 152–153). Now it can be seen that the increasing size of multinational corporations, globalisation and industrial and commercial concentration are in fact eroding a basic tenet of the capitalist world, namely, competition. Single organisations monopolising the production and distribution of various classes of goods may in the more distant future coalesce into one identity supplying all that mankind can obtain. This is a speculative concept and is not the only possible ultimate conclusion to current trends. Communism may be said to have failed the test of time. Capitalism may only be said not to have failed as yet although its adaptation over time to changing conditions is evidence of its continued strength. These two are political constructions. Each contained within it economic ideas some of which may not have been dependent upon the core political structure. Testing rival economic paradigms has been constrained by the political overtones to which they have been subject. *"...Paradigm-testing occurs only after persistent failure to solve a noteworthy puzzle has given rise to crisis."* (Kuhn, 1970, p 145). It can hardly be denied that there is a crisis now with respect to the development of underdeveloped regions of the world and that it has persisted for at least a couple of decades. Theories of and apparent successes in development have proved to be ineffective and illusory respectively in dealing with the consequences of underdevelopment in human terms (Henriot, 1976, p 5). Underdeveloped regions are not only found in the Third World. They exist also in what are accepted as developed or "First World" nations. The Kimberley region of Western Australia has been identified in previous chapters as exhibiting most of the characteristics of an underdeveloped area and yet it is a part of Australia, not usually considered as an underdeveloped country. Australia, and therefore, the Kimberley region have experienced only the capitalist system of administration. Development has inevitably taken place only by reference to the theories and practices acceptable to Western or *laissez faire*, free market oriented governments. The application of dependency theory in the Kimberley region may thus be revealing so far as past development

efforts are concerned and indicative of new approaches for the future. Testing a rival paradigm may be an overdue exercise.

There would seem, then, to be a *prima facie* case for examining development in the Kimberley by reference to Frank's dependency theory. It may explain the current underdeveloped state of the region and it may point to ways forward.

Dependency theory has never claimed to be prescriptive with respect to particular development projects. Rather it was intended to point to general socio-political directions which, if taken, would set the scene for development. Merely identifying development projects and processes, even if successful, is insufficient. Sustainability is vital to ensure the continuing well-being of a region and its people. A developed area can slip into a state of underdevelopment in a short time. Cloncurry in western Queensland is an example of what can happen. For the first quarter of last century it and its environs were a thriving industrial/mining region. For the last seventy-five years, in spite of the brief life of the Mary Kathleen uranium mine in the Shire of Cloncurry (1958–1982 although not operational from 1963–1978) it has been, comparatively, a rural backwater (Sharpe, 1987, p 32). Halls Creek in the Kimberley has a similar history.

This brief review of the origin of dependency theory is intended simply to justify its use in an analysis of the Kimberley. In short, there is no reason why dependency theory should not be useful if applied to the Kimberley even though the theory has political origins quite different from those influences which have always ruled over the Kimberley and affected its history.

Dependency Theory Principles

Dependency theory can offer an explanation for the current state of affairs in the Kimberley and also point to a way forward for meaningful development. This is in spite of the fact that it has been primarily employed with respect to South and Latin America. That Frank has moved on from his theory (Frank, 1996, p 32)

makes it no less useful than are, in their field, Newton's Laws of Motion subsequent to Einstein's Relativity Theory. That is, dependency theory is not rendered irrelevant by Frank's later work.

The two major concepts of Frank's dependency theory of underdevelopment are:

- (1) That the now underdeveloped areas were exposed unevenly to western capitalism much earlier and more completely than had previously been recognised by historians and economists.
- (2) That the world may be divided, at least for analytical purposes, into metropole and satellite areas which now roughly correspond to the developed or "First World" and the underdeveloped or "Third World".

Frank dates his analysis of the spread of western capitalism from the time of the beginning of the colonial era and the first great voyages of discovery. This is from about 1500 so far as Europe is concerned. Columbus made his first venture across the Atlantic Ocean in 1492 (Frank, 1978, p 16). From a quotation in Frank's book it is clear that Keynes, in his work *A Treatise on Money* (1930), agreed with this in that the latter dates the origin of the wealth of the United Kingdom from the time of Drake and the first Elizabethan age, 1556–1603. (Frank's standing in the field of development economics is now such that he does not need support from even so major a figure as Keynes, but the need for such corroboration was obviously felt by Frank when he wrote "World Accumulation 1492–1789". It is also the case that Frank is an anathema to many economists because of the Marxist overtones in his work.) Settlement and occupation of the Kimberley region fit within the timescale of dependency theory in that these activities began after earliest date to which Frank has given his consideration.

Dependency theory sees the world as divided into core (metropole) and peripheral (satellite) areas. Peripheral or satellite areas are seen as being

dependent upon core or metropole regions. The system is one of chains. A metropole may itself be a peripheral or satellite area with respect to another place. The boundaries of an area, whether core or peripheral, do not have to coincide with national borders. It is Frank's contention that metropolises develop at the expense of and with respect to their satellites. The Kimberley can be thought of, in Frank's terms, as a satellite region and not a metropole. In Australia, development, as it is commonly understood, has reached its zenith only in the densely populated, urbanised, predominantly coastal, large cities. The general conception of the term "developed" is a product of the political and concomitant economic practices of, particularly since the end of the cold war, the "West" or "First (as distinct from "Third") World" and from these have come the generally accepted ways forward for the development of underdeveloped regions. The often cited differences in economic well-being between the cities and the country regions of Australia may well be a result of inappropriate development policies being imposed upon underdeveloped regions by city-based political power, or in other words, of core-periphery relationships in dependency theory terms. One of the conclusions of a National Centre for Social and Economic Modelling (NATSEM) paper presented to the National Social Policy Conference 2001 in July 2001 confirms the need for policy makers to understand the characteristics of a region in developing an appropriate response to combat poverty (Lloyd, Harding & Greenwell, 2001, p 26). Such understanding is, perhaps, necessary in the development of all policies relevant to a particular region.

The scope of understanding of core-periphery relationships has expanded recently. This is the case with reference to the notions of financial dependency and transfer dependency. The concentration of apparently self-perpetuating development in metropolitan or core areas as distinct from outlying, remote or peripheral regions is easily observed. Such concentration occurs not only with respect to, for example, industrial development. (It is impossible not to notice that major manufacturing enterprises are almost exclusively situated in or near major cities in many countries.) Service industries are also concentrated in the

same places and the latter include financial service providers. The effect of the concentration of financial services has not been examined until comparatively recently in terms of the dependency theory framework. Dow incorporates dependency theory in her works on regional development in Canada (Dow, 1990, p 7) and (Dow, 1990, pp 64–65) and on money (Dow, 1993, p 145). The core-periphery effect of financial services is more subtle than is the case with industrial enterprises. The physical presence in remote areas of “shop-front”, apparent providers of such services (although even this is diminishing) does not lessen core concentration nor diminish peripheral dependency because primary decision makers with respect to the provision of credit and other services are often only available at the metropolises.

An important facet and enhancing aspect of this core concentration is the “information gap” which exists when provider presence does not exist at the periphery. Often credit providers in the metropolises have no knowledge of the circumstances of potential borrowers and are thus unaware of their needs and creditworthiness. Lenders thus tend to include an “information gap” risk premium into any financing which is undertaken. This situation is further exacerbated when the borrower is also remote from the region where funds are to be employed. This produces a cost factor which mitigates against development in isolated areas. Dow has made reference to this problem but only the Grameen Bank of Bangladesh has made a concerted effort to mitigate the problem. This bank, which deals predominantly in small loans to peasants in rural Bangladesh, creates a presence in such places by establishing local committees of borrowers and by ensuring that such areas are visited frequently, usually at least weekly, by a bank employee who is capable of decision making with regard to credit provision. This shows a keen understanding of core-periphery relationships and of the need to apply local criteria rather than metropole risk-return parameters to opportunities in peripheral areas.

Summary

A qualitative assessment of the development state of the Kimberley region has been made above. This has been done by reference to the previous two chapters and by comparison with the features of other areas accepted as being underdeveloped.

The origins of underdevelopment in the Kimberley were discussed. It was concluded that the present state began with European settlement. Some older concepts for remedying the development problem were mentioned merely to discard their relevance.

Following a review of the meaning and definition of the term "development" the state of the region was again assessed. As a corollary to the term "developed" the meaning of the term "underdeveloped" was also refined. It was clear that this term might also be applied to the whole of Australia as it was by Frank to Canada in 1960 (Cowen & Shenton, 1996, p 213) and by his son, Miguel, to the United Kingdom in 1979 (Chew & Denmark, 1996, p 36) equally as well as it applies to the Kimberley.

Reasons for the failure of the region to move out of the state of underdevelopment were then examined. These proved to be many, entrenched and varied. Included were possibly unreliable and inappropriate statistical information, the lack of linkages to main centres and some adverse effects of Native Title processes.

The origin and essence of dependency theory was then investigated. The political reasons for the lack of application of dependency theory to areas of the World that have been exposed only to western capitalism and the philosophical difficulties of "looking outside of the square" were pursued. The two main tenets of dependency theory, the early exposure of colonies to western capitalism and the core/periphery concept were then set out as was the nature of the Theory's problem solving properties. Simultaneously the possible efficacy of the application of the theory to the Kimberley region was considered.

Conclusion

It may be fairly concluded from the above that the Kimberley region of Western Australia is underdeveloped. This conclusion is reached from both empirical evidence and theoretical considerations. It is also concluded that the state of underdevelopment is extant and has persisted for over a hundred years. The further point, that Frank's dependency theory might explain the reasons for this underdevelopment and also suggest solutions to correct it, is also made.

Just as the second chapter was an overview of the history of the Kimberley region so this chapter has considered development and underdevelopment, practically and theoretically, in the region in general terms. The object of the practical consideration remains, as ever, the Kimberley region of Western Australia. The particular theory with which the region's development and underdevelopment is to be assessed is dependency theory.

It is now necessary in the next chapter to examine dependency theory in detail. Also in the following chapter the theory is applied to the region.

CHAPTER 5

DEPENDENCY THEORY DETAILS AND APPLICATION TO THE KIMBERLEY

Objectives

In this chapter the first objective is to examine the detail of the dependency theory of development and underdevelopment. Also the application of this theory to the history and present situation of the Kimberley region will be considered. This will be by reference to the terms that are in common usage in dependency theory writing by many authors. Where necessary, definition and clarification of such terms will be provided.

In this chapter the first research question, as stated in the introductory chapter, will be directly addressed. For ease of reference that question is:

Can development/underdevelopment in the Kimberley region be understood by reference to dependency theory and does this theory then point to ways to achieve further/improved development in the region? It is proposed that the central theme of dependency theory, the core-periphery structure, has been and is a major factor in determining the type of development that has occurred and continues to occur in the Kimberley. Details of the history and present state of the Kimberley region in development terms have been presented in chapters 2, 3 and 4. The latter chapter in particular drew together the threads of the previous two with respect to the history and present state of the region. Also suggested there was the possibility that dependency theory might explain both the past and the present. The detail of the theory must be considered first.

Dependency Theory

The previous chapter established only a prima facie case for the state of the Kimberley region being capable of explanation and solution by reference to dependency theory. Only a very superficial, initial look at the principles of dependency theory was taken in the preceding chapter. A much deeper

understanding of the theory is necessary before it can be established that its application to the region will be useful.

Study of the theory is similar in some respects to the study of the subject of economics as a whole. Economics is a circular subject. It does not matter where the study of the subject is begun for a full understanding of it to be achieved. On finishing the course one will likely be back at the starting point. It is equally logical to begin by examining national income first or monetary economics (banking) or demand theory or international trade or any other of the major headings of economics. Also *a priori* knowledge is not required (Joad, 1957, p 113). The experience of everyday living is sufficient to begin to study the subject.

The general point being made here with respect to the subject of economics is equally applicable to dependency theory. There is no obvious or essential starting point to an understanding of dependency theory and the depth of understanding can vary appropriately with the purpose or the need. It is equally logical to begin studying dependency theory by considering core and periphery matters or dependence and dependency or development and dependency or any of the other terms which arise within these major topics.

A great deal of the subject of economics can be understood with a knowledge of the everyday meaning of the words and a common sense understanding of the terms used. The technical preciseness of words and terms can be added as the study of the subject becomes deeper.

The same is true with respect to dependency theory. Some terms commonly employed by writers on dependency theory have been used previously without their exact meaning being established. Other terms have been examined in detail as the situation demanded (eg "development" in chapter 4). Some further detail is now appropriate for the necessary understanding of dependency theory.

Core and Periphery

These terms have been used previously together with the synonymous terms metropole and satellite respectively. The term “centre” is also used to identify developed areas or countries but there is no counterbalancing third term to “centre” for underdeveloped places. The idea of “chains” of metropolises and satellites has already been mentioned in chapter 4. This comes from the fact that Frank saw the world as divided into core and satellite regions and within that structure a peripheral area may also be a metropole with respect to another area (Ghosh, 2001, p 43). Frank’s theory proposes that metropolises become developed at the expense of satellite regions which consequently become underdeveloped or which develop underdevelopment (Ghosh, 2001, pp 50 & 51). Frank used the terms metropole, core, satellite and periphery with no greater meaning than is ordinarily attributed to them. The following descriptive definitions are offered to indicate the current nature of countries or areas to which these labels might be attached:

Core/Metropole: A country or area which has the ability to decide autonomously what it will import, manufacture and export and to decide from where it will import and to where it will export and to (to a great extent) decide the price it will pay for imports and at what price it will sell exports.

Periphery/Satellite: A country or area that exports to and imports from world markets often at the behest of other (core) countries or areas or other external interests, that is a price taker not a price maker with respect to both activities and which cannot make independent decisions on where or with whom to trade.

Dependence and Dependency

The term “dependency” itself can be the cause of some confusion. It is important that there is a firm understanding of this term. If its meaning is not understood or varies from time to time or place to place or analysis to analysis then there can be no basis for a sound assessment of the theory or any valid

application of it. Without a good definition of this term any use of dependency theory would be similar to trying to measure a length with a ruler upon which the length of the standard, be it a centimetre or an inch, itself changes over time or from location to location or application to application.

This is a problem that is not unknown in economics. Currency inflation and deflation makes the use of any unit of money as a measure of value or as the basis for comparison, of the price of an object over time, invalid without acknowledgment of and adjustment for such variations. Correction for a numerical object such as a unit of money by indexation is not difficult even though it may be unwieldy over longer periods. Where the object is a concept which cannot be numerically evaluated, it is vital that a definite understanding of the term is established.

A very common confusion is between the meanings of "dependence" and "dependency". The analysis by Caporaso and Zare is summarised below and it is subsequently related to the Kimberley region (Caporaso & Zare, 1982, pp 45–51).

Dependence refers to the simple external reliance of one country or area upon another in terms of specific commodities, services or other inputs. Studies of dependence are concerned with international influences which result from such reliance. The extent of one country's reliance upon another may be assessed by the summing of sectors in which reliance occurs. It is assumed that sectoral dependencies are additive and that there is linkage among the sectors. The emphasis of application of dependence is upon the country or nation-state as a unit. The depth or breadth of dependence over any number of sectors of a country's economy provides the potential for the development of foreign policy. The study of dependence is, thus, not unimportant. It is generally not what is being examined here other than as it bears upon the satellite status of the region.

In contrast dependency is a structural condition and analysis of it seeks to explain the process of integration of peripheral areas into the international capitalist system and the developmental consequences of such integration. The concept of dependency is thus applicable to areas and regions and is not limited to nations only. Caporaso & Zare rely on descriptions by Cardoso and by Havelock Brewster. The former stressed the external reliance component of dependency whereas the latter emphasised the internal aspect of dependency. The descriptions are:

Capitalist accumulation in dependent economies does not complete its cycle. Lacking autonomous technology, as vulgar parlance has it, and compelled therefore to utilise imported technology, dependent capitalism is crippled....It is crippled because it lacks a fully developed capital goods sector. The accumulation, expansion, and self-realisation of local capital requires and depends on a dynamic complement outside itself. It must insert itself into the circuit of international capitalism. (Cardoso, 1973, p 163).

and:

Economic dependency we may define as a lack of capacity to manipulate the operative elements of an economic system. Such a situation is characterised by an absence of interdependence between the economic functions of a system. This lack of interdependence implies that the system has no internal dynamic which would enable it to function as an independent autonomous entity (Brewster, 1973, p 91).

Caporaso and Zare maintain that these descriptions offered by the other writers mentioned are only partial descriptions. They also state that more than their sense of aesthetic completeness is lost unless all aspects of dependency are taken together (Caporaso & Zare, 1982, p 46). These descriptions pinpoint the three components of the concept of dependency, namely external reliance, internal fragmentation and the concentration of opportunities. The relevance of these concepts with respect to the Kimberley is considered below. All three are important in understanding dependency and the presence of one or two, by themselves, does not demonstrate even partial dependency (Caporaso & Zare,

1982, p 47). This differs from the Dos Santos structuralist model which suggests a looser integration of the external and internal factors and is very different from the general structural models which emphasise only internal factors as responsible for underdevelopment (Ghosh, 2001, p 80).

In offering their own description of dependency Caporaso and Zare state nothing new but they do incorporate the three elements mentioned above into that description:

Dependency refers to a structural condition in which a weakly integrated system cannot complete its economic cycle except by an exclusive (or limited) reliance on an external complement (Caporaso & Zare, 1982 p 48).

Any assessment of dependency with respect to a particular area or nation thus rests upon three elements: external reliance, concentration and internal fragmentation.

Dependency and Development

It is the central belief of dependency theorists that peripheral regions having been thrust willingly or not into the global capitalist economic system, underdevelop as core regions develop. That is, that development and underdevelopment occur simultaneously in metropole and satellite areas respectively and are part of the same process.

There have been many theories which attempt to explain and to solve the problem of underdevelopment in the Third World and to give reasons for the development of the First World. The more important of these theories are sketched briefly below.

Neoclassical theory concentrates upon growth as the measure of development and the means to produce it. Growth is measured, for the purposes of this theory, by the increase in gross national product. Seers has commented on the deficiencies of such a practice (Seers, 1979, pp 14 & 15). No account is taken

of the externalities introduced by growth (Caporaso & Zare, 1982, p 53). This theory also sees greater market activity as an answer to uneven development caused by any restricted flow of resources. As an example neoclassical theory would see increased wages as a simple solution to labour shortages.

Marxian theory considered the Asiatic mode of production as a peculiarly structural feature of many less developed countries which contributed to the maintenance of underdevelopment (Ghosh, 2001, pp 18 & 19). Marx also considered surplus extraction by the colonial powers as a major reason for continued underdevelopment (Ghosh, 2001, p 19). The contradiction here is that although Marx felt that the necessary destruction of the Asiatic mode of production would be effected by colonialism, the latter did not produce anything other than development of underdevelopment in the colonies. (Ghosh, 2001, pp 19 & 20).

Modernisation theory focuses on national societies and internal matters (Valenzuela & Valenzuela, 1982, p 32). There is a belief in the efficacy of innovation by individuals and a process similar to the "trickle down" effect that has been greatly discredited (Todaro, 1982, p 131).

Of the "stage" theories of growth that of Rostow is the best known (Todaro, 1982, p 58). Such models have not proved to be either useful or accurate. Rostow's model was influential but it was one of the first development theories and little work had then been done in the field of development economics. The basic assumption of stage theories, that the underdeveloped countries must pass through the same stages of growth that the now developed countries must once have experienced, has been justifiably well criticised (Frank, 1992, p 108).

Dependency theory takes into consideration a very wide range of parameters. It thus permits a broad concept of the term "development". For some it incorporates too wide a range of aspects of social and economic matters for it

to be considered a theory. It can be said, rather, to be an approach to the study of underdevelopment (Valenzuela & Valenzuela, 1982, p 33).

The aspect of "time" is important in dependency theory because the history of a region's incorporation into the capitalist world is important. Frank's view is that peripheral areas of the world were exposed to and involved in the world capitalist system from very early times (Frank, 1978, p 40). According to Frank it is capitalism that is responsible for the "*structural inequality and temporal unevenness of capital accumulation*" (Frank, 1978, p 239). That is, the development of underdevelopment is "*inherent to capitalism*" (Frank, 1978, p 239). This is probably too harsh a criticism of capitalism. The great strength of the system has been its ability to adapt to changing situations. There is no reason to suppose that development problems exposed by dependency theory cannot or will not be resolved by the capitalist system which, in adapting to solve problems, will likely be itself moderated or changed. The evils of child labour in the factories and mines of the industrial revolution in Britain were solved without that country turning its back on the capitalist system.

The notion of growth is less important. Some writers on dependency theory accept the possibility of growth under conditions of dependency, others argue that growth and dependency are positively related. Frank is of the opinion that dependency definitely retards growth (Caporaso & Zare, 1982, p 52). The empirical evidence, where it exists, seems to be against Frank in respect of unequal trade, capital transfer, terms of trade and capital outflows causing growth retardation (Caporaso & Zare, 1982, p 52). However, it may be more correct to suspend any such judgement and to assess matters on a country by country or region by region basis. Whether or not the dependency condition retards growth should not be made on a "majority rules" basis. Dependency theory admits the possibility of growth retardation and it may be true in particular cases. The possibility that growth may or may not occur in dependency situations is not a crippling blow to the theory.

The strength and advantage of dependency theory is that development is assessed according to dependency conditions which can range over a wide variety of qualitative aspects of the society and economy being studied (Caporaso & Zare, 1992, p 53). These aspects are considered in relation to the conditions which determine the fact of dependency. It is not necessary that all aspects have to advance or improve for development to be judged as having occurred, nor does the deterioration of one or more aspects mean that underdevelopment is occurring. Such assessment of an area or region on this basis does make the application of dependency theory more of an art than a science. This is to be expected when the aspects involved include such non-quantifiable things as access to democratic processes, political participation, class development and the marginalisation of some social groups.

It is now possible to examine the Kimberley region by reference to these parameters. This will be done below in the “Kimberley Application” section *et seq.* Having defined some terms and clarified some meanings in previous sections above and in chapter 4 it is now necessary to apply the theoretical concepts to the situation in the Kimberley region. The facts given in chapters 2 and 3 will be aligned with the theoretical concepts mentioned above.

Kimberley Application

The number of ventures in the Kimberley in any particular field is often very small. This has been shown above with respect to the mining and pearling industries. Also it has been shown that the number of customers of some of the businesses in the region is also few. This may be because the Kimberley product is disposed of “in house” by a company or because it is suitable or prepared for a particular market only. These situations apply to the mining, pearling and pastoral industries of the Kimberley.

The narrower the customer base the more guarded is a company in revealing its financial and trading details. The ABS respects commercial confidentiality where the publication of statistics would allow internal company details, which would normally be kept private, to be deduced from published information. The

reporting rules of such organisations as the Australian Stock Exchange and the requirements of company law help to reveal some interesting information with respect to public companies. Overall the collection of data relevant to external reliance is difficult. However, it is possible to ascertain sufficient information in order to make some relevant comments on this aspect of dependency. With respect to concentration, commercial confidentiality again makes absolute information difficult to obtain. Internal fragmentation is, here, easier to assess owing to the very different nature of the major industries in the Kimberley region. The satellite or periphery status of the Kimberley can also be clearly established.

External Reliance

Quite clearly there is simple external reliance so far as the three important Kimberley industries, the mining, pearling and pastoral industries, are concerned because they all produce almost exclusively for the export market. Also, almost none of the production equipment is locally produced, although there may be some limited local servicing of machinery even if this is restricted only to work on vehicles in Kimberley garages. There is no capital goods industry in the Kimberley.

This situation of external reliance has not changed over the period in question here. There have been changes in emphasis so far as the pearling and pastoral industries are concerned. For the former the production of pearl shell was once the primary product with gem pearl production being secondary. This changed over the period spanning five years either side of the Second World War as the techniques for plastic button production improved and cultured pearl growing was perfected. The pastoral industry has moved from the supply of ground beef for the American hamburger industry from locally (Kimberley) slaughtered cattle to the production of live cattle for closer Middle East and South East Asian markets.

External reliance has remained a feature of the Kimberley economy over the past one hundred years. This has not changed as the influences over the

export trade moved from being, predominantly, of a colonial nature to, now, responding mostly to the requirements of multinational companies, foreign debt holders and other non-Kimberley authorities. In effect there has been little practical response in the Kimberley to the phase characteristics of international capitalism (Caporaso & Zare, 1982, p 49). Also absent in the region are changes of the kind noted in other parts of the World, such as Latin America, as a result of a new international division of labour (Valenzuela & Valenzuela, 1982, p 31).

Capital goods have not been acquired by the Kimberley for the purpose of either import substitution or export led industrialisation. Other than for the efficient extraction of raw materials for export neither technology nor raw materials have been acquired from metropole sources. Certainly no manufactured items produced by multinational subsidiaries are made in or exported from the Kimberley. To the contrary profits are exported as a result of non-Kimberley ownership of local operations in the pearling and pastoral industries and because of ownership of the major mining ventures being international or multinational.

The classical international division of labour between advanced exporters of manufactures on the one hand and the underdeveloped exporters of raw materials on the other, which Muñoz suggests has ceased to exist, seems still to be the situation in the Kimberley (Muñoz, 1982, p 68). Control over and exploitation of the resources in the Kimberley is still exerted from outside the region. Only the nature of those exercising control and enjoying the benefits of these resources has changed from those having the support of a colonial power to corporate power bases some of which are multinational in character. From the social aspect the situation of external reliance has deteriorated in the Kimberley with the practice of fly in–fly out workforces by the mining companies. External reliance is clearly a problem in the Kimberley.

Concentration

Concentration of reliance reflects the vulnerability and extent of choice that a nation or region has and it thus determines the degree of dependency.

Caporaso and Zare consider this with respect to the supply of goods but in the Kimberley it is important with respect to external markets and finance (Caporaso & Zare, 1982 pp 49–50).

The Kimberley pastoral industry is simple to assess in terms of the concentration of markets. Almost 80% of the live cattle exported from the region in 2001 went to just three destinations. Egypt took 30%, Indonesia 29% and Malaysia 18% of the total regional turnover for that year. Five other countries took 22% with just 1% going to other destinations (Nickels, 2002, p 5). This is similar to the national situation where 81% of live cattle exports went to four countries (Nickels, 2002, p 2). So far as the Kimberley is concerned the two largest customers, Egypt and Indonesia, took 59% of the total exports and nationally those two countries took 60% of the cattle exported. Thus there is a high degree of concentration both with respect to the Kimberley and nationally so far as the pastoral industry is concerned. The loss of any one of the two or three major importers of live cattle would be very serious for this industry nationally and in the Kimberley and it would be difficult to find alternative destinations. The northern ports of Wyndham and Broome would also suffer from any such downturn in trade.

The pearl is the national gem of Japan (Andersen, 1996, p 8). It should not be surprising therefore that Japan has been the major customer for Australian pearls (Fisheries W.A., 2000, p 3). Japan used to take all of the output of Broome Pearls Pty Ltd (part of the Kailis Group, second largest member of the Pearl Producers Association (PPA) (Andersen, 1996, p 4) but by 1996 only 60% went to that Country (Andersen, 1996, p 8). Since all members of the PPA have formed the South Sea Pearl Consortium with the two largest Japanese companies that deal in pearls plus one from Hong Kong and one from the U.S.A. and that a major objective of the consortium is to promote the sale of pearls worldwide (Andersen, 1996, p 8), it may be safely assumed that Japanese dominance as a customer for Australian pearls will continue to diminish. However, if the Broome Pearls Pty Ltd experience is extrapolated

over all PPA members, then Japan is still a significant and major customer. Export concentration is still, therefore, high.

With a widening of the market comes the need to cater for the specific needs of particular customers. The American market prefers a silver white pearl as do Japanese and Australian customers, but the Americans also like a pink gem. Europeans prefer a creamy rosy coloured pearl (Andersen, 1996, p 8). These preferences could create a concentration in certain markets for particular kinds of pearls.

Alleviating export concentration is the increase in the local (national) retail trade in pearl jewelry. Paspaley Pearls Pty Ltd has retail outlets in Broome and Sydney, Broome Pearls Pty Ltd has shops in Broome and Fremantle and Linneys Pty Ltd are in Broome and Subiaco (Perth) (Andersen, 1996, p 8). In the mid-eighties only one jeweller worked part time in Broome with very limited stock (Andersen, 1996, p 8).

Although decreasing there is still a high degree of export market concentration in the pearl industry. The loss of Japan as a customer for the Australian South Sea pearl would be a serious blow for the industry and, obviously, for the Kimberley.

Diamonds have universal appeal and are used extensively in jewelry and industrial applications. Of the diamonds produced by Argyle Diamonds Australia some 5% are of gem quality and 70% of near gem quality. The balance of production is suitable for industrial use only. Less than 1% of production is the "signature" stone of Argyle Diamonds Australia, the rare and unique (to Argyle Diamonds Australia) pink diamond (Argyle Diamonds(a), 2001, p 2).

All of Argyle Diamonds Australia's near gem output is absorbed into the Indian market for conversion into jewelry or single polished stones. This represents an injection into the Indian market, which is valued at \$US4.6 billion, of about

\$US400 million (Argyle Diamonds(b), 2001, p 15). Although there has been a concerted effort to penetrate the initially reluctant American market for Indian jewelry production via the Indo Argyle Diamond Council the concentration so far as Argyle Diamonds Australia is concerned is clear (Argyle Diamonds(b), 2001, p 16). The Indian industry would barely notice the loss of the Argyle Diamonds Australia output even though it is the largest single producer in the World (Shigley, Chapman & Ellison, 2001, p 26). Argyle Diamonds Australia would have to make major marketing re-adjustments should the Indian outlet be lost.

According to the Sales Department of Western Metals Limited in Perth the Company had American, European, South East Asian, Middle Eastern, South African, Chinese and Indian customers. The major market for zinc concentrate was a Korean owned refinery operating in Townsville, Queensland. For lead, China and Korea were major customers. This Company also had a copper mining operation in North West Queensland for which Korean and other South East Asian markets were important (Western Metals Limited (a), 2002).

There would seem to have been little problem so far as market concentration was concerned for Western Metals Limited. The low prices for zinc and lead over the past few years have caused difficulties. The low share price, 3.5 cents as at 19th April 2003 was indicative of the problem and the twelve month high price of 5.3 cents and low of 0.9 cents showed its continuing nature. As is the case with most producers of raw materials or primary products, Western Metals Limited was a price taker, not a price maker. The Company had on issue as at 30th June 2001 current and non-current debentures (senior notes) valued at \$382,053,000 (Western Metals Limited (b), 2001, p 31). The debenture holders were mostly American and it was only by virtue of their agreement to defer financial rights that the Company continued to operate (Prior, 2002). There was thus a high degree of financial concentration for Western Metals Limited. The company was sold to Canadian interests in 2003 and the Kimberley operations closed down.

This is a problem that varies in nature with the particular industry concerned. Thus in various guises concentration is clearly a problem in the Kimberley.

Internal Fragmentation

This is the third component of dependency suggested by Caporoso and Zare that must be considered together with the other two in order to assess whether or not a country or region is dependent. It is clear from even a cursory examination of the major industries in the Kimberley that there are almost no connections between them. The common factor between them all is that only so much of the earnings from the export of the various commodities as is needed to perpetuate or continue current activities is returned to the Kimberley. This finding is not assessed from any deep investigation of the financial records of any particular industry or firm. This would be almost impossible to conduct. It is made from the easily observable fact that none of the industries have attempted any deepening or widening of their activities in the region into the establishment of support industries. Effectively capital has not been returned to the Kimberley. Consequently there is no capital goods production. The kind of major engineering works that might supply production machinery for the industrial operations in the region or which might manufacture consumer goods instead of having them brought along road, sea or air routes of up to three thousand kilometres do not exist in the Kimberley.

Internal fragmentation may suggest that the dual economy theory may be applicable here. However, there is no backward or primitive agricultural economy operating here alongside the advanced agricultural activity of the pastoral industry, the industrial activity of mining, and pearling which has aspects of both types of activity. The only primitive activity which was once carried on here was "hunting and gathering" and, as has been stated earlier, this lifestyle is no longer available. The fragmentation in the region is between the modern activities.

There is a small link between mining and pearling in the use of both diamonds and pearls in the local or retail jewelry outlets. These items are mainly for sale to tourists. The polished stones and, where needed, pierced pearls are not

converted locally from the raw material found here. The gold and silver which most often forms the settings for the stones and pearls is found and refined outside of the area. Most jewelry manufacturing occurs outside of the Kimberley.

There is a strong link between the pastoral industry and the lead and zinc mining and the port and shipping operations in the Kimberley. There is no link between these primary activities as a consequence of the common link with the secondary activity. The ports of Broome and Wyndham would suffer should there be any major impediment to the shipment of live cattle as would the specialised shipping services required by this trade. Since the Western Australian trade in live cattle exports represented in 2001 41.2% of the total Australian trade and also since the Kimberley turn-off represented approximately 40% of the State exports of live cattle it must be assumed that there would be a significant impact on required specialised shipping services if any downturn occurred in the Kimberley pastoral industry (Nickels, 2002, pp 1 & 4).

Derby port lost its sole raison d'être without the Western Metals Limited exports of lead and zinc concentrate through the Derby Export Facility on the closure of this mining operation. The barge operation was the only commercial work of any regular or high volume nature done at the port of Derby. (This barge operation had continued until after the end of the twentieth century. The cessation of the operation was therefore after the end of the hundred year period which is the focus of this study. Attempts are being made to attract work for the port from small mining operations on off-shore islands and from the pearling industry.) Although there will be an impact on the barges employed in this operation there is likely to be only a minimal effect on the worldwide freight trade available for the large bulk carriers that were fed by the barges in King Sound. There was clearly no connection between the operations of the pastoral industry and Western Metals Limited so far as port usage and shipping services were concerned.

The pearling industry works predominantly out of Broome, but, again, its operations do not impinge positively or negatively upon the other major port users of the Kimberley. The shipping needs of the pearling industry in the servicing of remote coastal farms and in actual pearling is usually an "in-house" operation by the pearling companies themselves. The largest such firm, Paspaley Pearls, uses foreign custom built vessels in its work (Anderson, 1996, p 3).

All industries make some use of the road transport links into the Kimberley but none to the extent that such services would be greatly affected by any cessation of such usage. The only exception would be the specialised transport used to move cattle to the dockside holding pens from the cattle stations. Air charter operations would suffer the greatest loss of business should the mining operations diminish because of the fly-in-fly-out staffing of both Argyle Diamonds Australia and Western Metals Limited.

It can be seen from the above that there is a high degree of internal fragmentation between the major Kimberley industries. Also it is clear that there are no strong backward or forward linkages with other industries in the region of the kind envisaged by Hirschman (Gillis, Perkins, Roemer & Snodgrass, 1983, pp 63 & 64). That is, there are no linkages with other businesses or industries that might themselves produce either export goods or inputs for the three Kimberley industries. There is also little horizontal or vertical integration (see below) so far as the firms involved in the major industries are concerned.

Satellite Status

The Kimberley clearly fits the definition given above of a peripheral or satellite area. In some respects Australia as a whole has satellite status with respect to, for examples, the live cattle trade and many other agricultural endeavours. It is usually in these industries a price taker rather than a price maker and must deal in whatever markets are available.

The three major industries in the Kimberley deal in raw materials or near raw materials and none produces sufficient quantities to significantly affect world prices. There are some small and specific exceptions to this general market situation.

Argyle Diamonds Australia produce from the Kimberley operation a rare pink diamond. It represents less than 1% of their production (Argyle Diamonds (a), 2001, p 2). This stone, which is unique to the Kimberley mine, can command its own price on world markets.

Cattle sell for a range of prices in a number of different markets. The highest average price was paid by Egypt, \$744 per head in 2001, whereas Israel paid only an average of \$450 per head in that year. The difference is dependent upon the live weight demanded by each customer. As mentioned above, Egypt prefers prime steers in the 350–550 kilogram range (average 420 kilograms). Israel requires young bulls at about 260 kilograms. Indonesia paid a price per head of \$606 in 2001. This was because of the mixture of steers, heifers, cows and bulls that are accepted by that market (Nickels, 2002, p 5). Any attempt by Kimberley pastoralists to increase sales to Egypt at the expense of other customers would not be economically sound because it would represent a further concentration of the market towards an area of the world that is politically unstable. Neither would it result in a major increase in the price per kilogram.

The Australian pearl industry specialises in production of the silver white south sea pearl. This is the pearl preferred by the Japanese who have been the major market for this gem. It is the promotion world wide of this pearl that is the object of the South Sea Pearl Consortium. Pearls are produced all over the south Pacific region from many different kinds of oysters. Colours and sizes vary from the yellow, brown and blue pearls of about 9 millimetres in diameter from the Japanese akoya oyster (*pinctada fucata*) to the large, up to 20 millimetres diameter, silver white Australian product from the *pinctada maximus* oyster. The black pearl is produced in Tahiti and the Cook Islands from the *pinctada*

margaritifera oyster (Fisheries W.A., 2000, p 2). The small Japanese coloured pearls are bleached and sometimes also tinted pink before being marketed (Andersen, 1996, p 8). Australia certainly does not have a monopoly status in the overall world market. The search for new markets may increase production costs as the requirements of new markets may be for a different product from that which the Japanese found ideal. Just what will appeal to the relatively untapped South American market, where there is no indigenous pearl production, cannot be forecast (Andersen, 1996, p 8).

The lead and zinc concentrates from the Lennard Shelf operations of Western Metals Limited have been sold into world markets where, for both the refined metals and the concentrates, prices have been declining or steady and quantities available have been increasing (Western Metals Limited(b), 2001, pp 6 & 7). Although China changed from being a net exporter of zinc concentrate to an importer in 2001 the market is expected to remain in surplus. It was only the opening of new smelters in China after the closure of some North American operations that maintained a steady situation in the lead concentrate market (Western Metals Limited(b), 2001, pp 6 & 7).

Both Argyle Diamonds Australia is and Western Metals Limited was controlled by overseas interests. The former is 100% controlled by Rio Tinto except for a 0.15% interest held by the public through the Western Australian Diamond Trust (Argyle Diamonds(b), 2001, p 20). The latter was controlled by its overseas, predominantly American, debenture (Senior Notes) holders (Western Metals Limited(b), 2001, p 46). The Western Metals Limited operation was sold to Canadian interests in 2003 and the mining operation was immediately closed. Other than the Aboriginal owned cattle stations the Kimberley cattle properties and the pearl producers are controlled mostly by companies and interests outside of the region.

As stated, the Kimberley is clearly a satellite area. Further, it is at the end of the chain. In a world context the State of Western Australia and then Australia itself

can be seen as successive metropole areas so far as the Kimberley is concerned. There is no other area, place or region for which the Kimberley is a metropole.

Aspects of Development and Dependency

As has been stated above, dependency theory takes into consideration many aspect of life which are not easily or directly quantifiable. Matters such as income, income distribution, education, health, unemployment and political (shire) boundaries were mentioned in chapter 4. There can be no doubt that there have been improvements in some of these areas over time. But the changes in the Kimberley have never managed to bridge the gap between the region and most of the rest of the State. Indeed the Kimberley seems to have slipped back in most respects compared with the rest of the State and Country. This is indicative of the dynamic nature of problem of underdevelopment in the Kimberley. This was discussed in chapter 4. In short there has been the development of underdevelopment in the Kimberley.

Political representation is an example of absolute progress but it may yet become an area of developing underdevelopment. At the Federal level, the Kimberley is represented in the Australian House of Representatives in Canberra by the member of Parliament who represents also some two thirds by area of the State of Western Australia. The Federal seat of Kalgoorlie includes cool, temperate and tropical areas of the State. It covers areas where broadacre agriculture is the major activity and within its boundaries are the State's major gold mines. In other parts of the electorate tourism is important and it also encompasses the sparsely populated desert regions of the State. It is almost impossible for one person to represent the disparate interests of all electors. The Kimberley thus has almost no representation in the House of Representatives. So far as the Federal upper house is concerned it must be remembered that senators are elected on a proportional representation basis per state. The bulk of the Western Australian votes are concentrated in the lower south west of the State. It is to this region that senators must give their

attention to ensure that they gain a quota in order to be elected. Again the Kimberley has little influence at a Senate level in Canberra.

So far as the State parliament is concerned there is one member for the Kimberley. However, part of the area that is defined as the Kimberley, the Shire of Halls Creek, is a portion of the seat of the State Member of the Legislative Assembly for the Pilbara. State representation of the Kimberley is thus split. So far as the upper house of the State parliament is concerned, the Legislative Council, the State is divided into three metropolitan and three rural multi-member constituencies which elect the same number of members. Owing to the higher metropolitan population compared with that in the rural seats a rural vote is worth "more" than a metropolitan vote. As at October 2002 it is the intention of the current State Government to introduce a "one vote-one value" basis to all electorates. This will cut the number of rural seats and thus diminish non-metropolitan representation (Graham, 2001, pp 2 & 3). This action has been temporarily thwarted via action in the High Court at the moment (2004).

Graham's paper for the W.A. Local Government Association conference also details how administration and decision-making for the North West of the State, including the Kimberley, has been removed from the region to Perth and is in the hands of, predominantly, metropolitan based members of the State Government and the State bureaucracy (Graham, 2001, pp 7 & 8). Graham further lists eight problems (see appendix C) faced by departments and organisations operating in rural areas which are not faced in the capital city (Graham, 2001, p 19).

Democratic representation in the State and Federal parliaments has improved from the days when the Roads Board had almost dictatorial powers over the West Kimberley, although only limited local practical and enforceable authority. The Kimberley's voice at national and State levels is still rather muted compared with metropolitan areas and may yet be reduced still further. Development in the periphery has occurred but it has not kept pace with that in

its metropolises. This kind of relative underdevelopment or development of underdevelopment can be seen in many of the qualitative aspects that dependency theory encompasses.

There is little doubt that the Australian population is better educated now than at the beginning of the twentieth century. In the Kimberley this is almost certainly also the case. It is also the situation that many children in this region do not have access to tertiary entrance examination subjects during the normal course of their education. Derby District High School does not offer these subjects, although it does provide facilities for children following such subjects by distance education. Again there has been absolute progress over time but in this respect those who attend schools with limited or restricted courses in the Kimberley are slipping behind.

The same kind of underdevelopment is developing in the Kimberley with respect to health, income distribution and employment as has been mentioned in chapter 4. Graham lists eighteen problems (see appendix D) that confront people living in remote regions, including the Kimberley (Graham, 2001, pp 18 & 19). In spite of this, industries in the remote north west of the State are worth \$13.1 billion annually and they contributed over \$1 billion dollars to State revenue in 2001 (Graham, 2001, p 20). This suggests that the regions have been underdeveloping with respect to the State metropole.

The practice of some aboriginal groups living in communities remote from the major Kimberley towns, sometimes on aboriginal owned cattle stations, may lead to the social marginalisation of these groups. It has been mentioned in chapter 4 that this may be one of the negative effects of Native Title legislation.

It would be more difficult, although not impossible, for the above problems to occur if the Kimberley were not a peripheral or satellite area because close alternatives or solutions might be available. All of the above suggests that not only is the Kimberley a dependent region but that it is also underdeveloping and

that its immediate metropolises are developing at its expense. Overseas metropolises are obtaining goods without bearing anything other than immediate extraction, recovery or harvesting costs plus a transport element. Receipts for exports are gathered in the financial institutions of this and other states and countries remote from the Kimberley without re-investment in the Kimberley region. It is the Kimberley's status as a satellite region, as discussed above, from which these phenomena result.

Clarification of Similar Concepts

Integration

The meaning of backward and forward linkages at the "firm" level is clear from the examples given above. These terms are usually applied at the aggregate or industry level but this is not possible given the current state of development in the Kimberley. For clarification and elimination purposes a brief definition of vertical and horizontal integration and backward and forward integration is now given. These terms, particularly backward and forward integration, are potentially confusing in this context.

Horizontal integration occurs when firms at the same level of production combine. The object is to secure greater market share for the combined organisation than any of the previous individual firms had. It is also intended to achieve economies of scale (Pass, Lowes & Davies, 1988, p 227).

Vertical integration happens when firms at different levels of production combine. The object in this situation is to assure the security of either or both markets for the finished product or the supply of raw materials (Pass, Lowes & Davies, 1988, p 542).

The case of firms producing raw materials or intermediate goods combining with firms producing further or completely finished goods or for the purpose of adding value to a raw material is known as forward integration (Pass, Lowes & Davies, 1988, p 201).

Where firms producing finished or intermediate goods merge with raw material providers to assure the supply of raw materials it is known as backward integration (Pass, Lowes & Davies, 1988, p 30). Clearly these last four variations of integration are not the same as the linkage situations referred to with respect to internal fragmentation.

There is very little opportunity for integration by the firms involved in the three major Kimberley industries. There is the possibility of horizontal integration by firms which are members of Pearl Producers Association. The activities of the South Sea Pearl Consortium (Andersen, 1996, p 8) could be seen as a form of cooperative forward integration for the Pearl Producers Association as could the work of the Indo Argyle Diamond Council (Argyle Diamonds (b), 2001, p 16) so far as Argyle Diamonds Australia and Argyle Diamonds India are concerned. Western Metals Limited exported and the pastoral industry exports products as raw material with minimal added value. Neither pursued nor pursue any form of integration.

Export Enclaves

The Kimberley cannot be considered to be an enclave export economy. Enclave economies exist in less developed countries and may be defined as foreign controlled, economically developed small regions established in the midst of large otherwise underdeveloped areas (Todaro, 1982, p 527). The concept of the "enclave" has an inevitable association with dualism theory. As has been stated previously, evidence of the dual society concept being present in the Kimberley region has not been specifically sought because the "*dual society*" thesis was dismissed by Frank (Frank, 1992, p 108). Frank was likely to have been denying any "trickle down" effect from the extraction of a surplus from a peripheral region by a metropole region. That is, he could not accept that any benefit might accrue to an underdeveloped area from the enrichment of a developed area where the relationship between the areas might otherwise be suggestive of a dual society. The "trickle down" phenomenon with respect to the Kimberley was examined in chapter 4 and found to be non-existent.

The question of financial market dualism is not addressed directly here, nor was it previously by Frank. St. Hill (forthcoming) deals with this matter in detail. Some local statistics can be produced to compare with the details of financial market dualism given by St Hill. The population per bank branch is given as *prima facie* evidence of financial market dualism by St. Hill (forthcoming). The lowest average population per branch found by St. Hill in a financial centre was 6000 in Portugal and Greece. In low and middle income countries the average population per branch was 161,000 and 48,000 respectively. Table 5.1 shows the banking situation with respect to the four shires of the Kimberley region. Only branches offering a full banking service have been considered in compiling this table. It can be seen that this would suggest that there is no *prima facie* evidence of financial market dualism in the Kimberley. Indeed the Kimberley would appear to be well served by banks compared with the rest of the World although informal evidence would suggest otherwise for non-metropolitan Australia. Statistics with respect to Australian capital cities have not been examined because they are not relevant to the possibility of financial dualism in the Kimberley. The "Combined" row in table 5.1 is given because there are no bank branches in Halls Creek and the population of that shire is most likely to use services in Kununurra. There are also in the Kimberley many bank, building society and credit union agencies in all major towns. Such agencies offer, generally, only deposit and withdrawal services. The Post Office also remains a Commonwealth Bank agency in all towns.

Table 5.1
Population per Bank Branch

Place	Population	Bank Branches	Population per Branch
Broome	18507	4	4626
Derby West-Kimberley	9138	1	9138

Halls Creek*	4118	0	-----
Wyndham East-Kimberley*	10206	3	3402
Kimberley	41969	8	5246
*Combined	14394	3	4798

Bank branches with full capabilities to negotiate large scale business loans and financial packages are not needed in the Kimberley because of the lack of business “Head Offices’ in the region. Major financial arrangements would normally be negotiated in capital cities. Although this may be a barrier to development it is not a function of financial market dualism. The “information gap” risk premium which lenders remote from the point of application of funds often build into loan costs was discussed in chapter 4. It is the satellite status of the Kimberley which ensures that this is a feature of the region and is an indication of financial market dependency. However, a dependence on external services is not necessarily suggestive of financial market dualism.

Other conditions for financial market dualism seem also not present in the Kimberley. In general there is no lack of familiarity with formal financial institutions by the majority of the population. This has been ensured by the practice of government agencies to pay recipients of benefits by cheque or direct credit to a bank account and the general disappearance of cash wages in favour of these two methods of payment. The provision of banking services via the telephone and the internet and the proliferation of ATMs (automatic teller machines) have diminished the need for the physical presence of bank branches for many common transactions.

In the Kimberley there are many ethnic groups but none have, as a group, language or cultural problems that would force them to turn to informal financial institutions. Interpreter services in Australia are good and usually easily available; the Kimberley is no exception.

Finally there are no subsistence farmers or cottage industries in the Kimberley that would have to seek credit in kind or in such small amounts that the only recourse would be to informal financial institutions.

There are undoubtedly some illegal money lenders who provide credit often for illegal purposes. Some retailers also provide credit on a regular basis. The service of "convenient" cashing for a fee of benefit, other government or wage cheques was also provided by some traders as was the holding of "cash" or eftpos (electronic funds transfer at point of sale) cards until funds become available. These activities are not legal and are periodically intercepted by law enforcement authorities.

It may be fairly concluded that financial market dualism is not a feature of Kimberley economic and social life. In general the dual society theory is not accepted by advocates of dependency theory and Frank, in particular, dismisses it totally (Frank, 1992, p 108).

The copper belt in Zambia might be described as an enclave economy. Copper mining was established by foreign companies whose sole purpose was the export of the product to developed centres. The major copper mining towns in that region (Ndola, Mufulira, Luanshya, Kitwe, Chingola and Chililabombwe) have fully developed societies with industrial, economic and social activities not exclusively devoted to their copper mining or copper refining activities. The vast majority of Zambia is a typical third world country with a large, predominantly unemployed or subsistence farming population which experiences varying degrees of poverty. Other than the copper mining activities major industry is not present either for import substitution or export purposes. It may be that there is more of a case for the existence of dualism in Zambia rather than in the Kimberley.

The three major industries in the Kimberley are not carried on in "developed" regions. Neither of the major mining operations have become or became the

nucleus of full townships with all of the social connotations involved in such a development. The fly-in–fly-out policy adopted by these ventures ensures that the infrastructure necessary for full township status is not needed at or near the mine sites. The pearling and pastoral industries are too widespread geographically throughout the region to be considered “enclaves” in any sense or meaning of that word. The pearl farms along the Kimberley coast are visited regularly for necessary work and servicing of the oysters and the equipment used. Some employees stay at the farms for extended periods but the sites at which they live are little more than camps. The pastoral industry occupies over half the land area of the Kimberley but no individual cattle station could be regarded as a township.

More subtle forms of dualism can be suggested as existing, possibly even in the Kimberley. It can be argued that there is an ethno-cultural form of dualism between the Aboriginal population and others. Some specifically Aboriginal organisations, such as ATSIC, the Aboriginal Legal Service and various Aboriginal medical services, may reinforce this view. A few of these organisations, although originally promoted as specifically for the Aboriginal population, do accept non-Aboriginal clients. The various Aboriginal medical services in the Kimberley are examples of this. Given Frank’s emphatic dismissal of dualism and Duncan’s view that Aboriginal-specific organisations should diminish in importance with respect to the overall integration of Aborigines into the general population via the individualisation of land ownership/possession, thus reducing tendencies towards dualism, the subject will not be further pursued here.

Summary

By way of a digest of the views of several writers a detailed exposition of dependency theory has been given. Definitions, where appropriate, and explanations of terms used by writers on dependency theory have been provided in order to ensure a clear understanding of the theory. The relationship between dependency theory and development has also been established.

Following the theoretical consideration of dependency theory the situation in the Kimberley has been analysed by reference to the elements of that theory. The three major industries that have existed in the region for the past one hundred years have been the central features of this analysis. In addition, the broad range of externalities capable of inclusion in an assessment using dependency theory have been included.

For purposes of clarification and elimination there has also been an explanation of terms similar to those used in dependency theory. The situation in the Kimberley with respect to other concepts such as “export enclaves” and “dualism” has also been examined.

Conclusion

A case has been made that the Kimberley is a dependent satellite region. It has been argued that all of the elements indicating dependency are present and have been so for the past one hundred years. There have been changes in emphasis and detail so far as the three major industries are concerned but the nature of the dependent satellite status of the Kimberley has persisted. It would also seem to be unlikely that this will change in the short term. The results of this investigation so far can best be presented in tabular form. (See table 5.2.)

It is also clear from the above that the Kimberley's core areas, particularly metropolitan Western Australia, are deriving the benefits of development from the extraction of surpluses from the underdeveloping Kimberley. The Kimberley cannot resist this trend because the rest of the world does not require the output of the region for its own survival. Since all of the attributes or aspects that have been considered within the terms of dependency theory exist currently and have done so over the long term in the Kimberley then it is reasonable to conclude that the historical and present state of development in the region can be and has been explained by reference to that theory.

Consideration of what the theory may offer with respect to the future development of the region will be deferred until after an investigation has been made into Frank ' s five hypotheses and their relevance, if any, to the Kimberley. This is the second research question posed in chapter 1.

Table 5.2

Assessment of the Kimberley in Dependency Theory terms

ATTRIBUTES/ASPECTS OF DEPENDENCY THEORY	STATUS OF THE KIMBERLEY	
Metropole or Satellite	Satellite	
<i>Components of Dependency</i>		
External Reliance	Long term & Existing Condition	
Concentration	Long Term & Existing Condition	
Internal Fragmentation	Long Term & Existing Condition	
Other Assessable Aspects	Considered	Consistent with Underdevelopment
Income	Yes	Marginally
*Income Distribution	Yes	Yes
Education	Yes	Yes
*Health	Yes	Yes
Unemployment	Yes	Yes
*Political Representation	Yes	Yes

*Possibly deteriorating – suggesting the development of underdevelopment

Frank (1992, pp 112–116) suggested that these hypotheses may point to a path for fruitful research in geographical areas other than that in which Frank developed his work, namely South, Central and Latin America. As was stated in chapter 1 it would not be fatal to the above conclusion with respect to the explanations offered by dependency theory of the developmental state of the Kimberley if Frank's hypotheses are not applicable to nor generated from study of this region.

CHAPTER 6

FRANK'S HYPOTHESES AND THE KIMBERLEY SITUATION

Objectives

The objective in this chapter is to relate Frank's hypotheses to the situation as it has been and as it is now in the Kimberley. This addresses the secondary research question: Do Frank's five hypotheses apply to or are they generated by the situation in the Kimberley now or over the past, approximately one hundred years? The meaning of "application" and "generation" in this context was clarified in chapter 1. So far as the second hypothesis and its corollary are concerned this will be done, in part, quantitatively. This is in contrast to the assessment in chapter 5 of the relevance of dependency theory to understanding development in the Kimberley. As is usual with respect to the application of dependency theory many qualitative matters have to be weighed. Whereas matters such as changes in income over time can be followed by reference purely to statistics, if correctly weighted and indexed, this is more difficult with respect to, say, political representation. Such subjective features are ignored in assessments of development by some theories in favour of a growth measurement by reference to monetary units or an index based on such units.

Frank's hypotheses are, generally, difficult to assess other than qualitatively. All of the hypotheses will be considered below. With respect to the second hypothesis and the corollary to it an attempt will be made to test its applicability to the Kimberley quantitatively in the following chapter.

The second objective is to select a proxy for use in identifying periods of temporary political and economic isolation. The identification of such periods is demanded by the second hypothesis and its corollary (see below). This proxy will be used in conjunction with the database described in chapter 2 and

presented in appendix A in assessing the second hypothesis and its corollary in the next chapter.

The Hypotheses

As noted in chapter 5, Frank's hypotheses were developed as a result of his studies of South and Latin America. It must be emphasised that the hypotheses are extensions to Frank's core dependency theory. Frank makes this clear in his paper *The Development of Underdevelopment* when he refers separately to "evidence which supports this thesis" (dependency theory) and "*lines along which further study and research could fruitfully proceed*" (Frank, 1992, p 109). Since Frank himself deals with both the core theory and the extensions (the hypotheses) in the same paper it is necessary, for a comprehensive evaluation of the development state of a region using dependency theory as a framework, to consider both and to apply each to the subject. The point is not to test the validity of either dependency theory or the hypotheses but to see how the understanding of the development experience of the Kimberley can be advanced by reference to both the core theory and the extensions to it.

In his own attempts to confirm his observations Frank, to a limited extent, referred to other parts of the world. This was by way of a comparison of countries in his major area of interest with Japan and India. With respect to the second hypothesis and its corollary two other comparisons might be thought to be relevant when the matter of isolation is considered. It is possible that the cases of Rhodesia (Zimbabwe) during the years of its "illegal" independence and Taiwan could be useful comparisons. There are significant differences in the positions of these two areas that may render any such comparisons invalid. In the case of Rhodesia the isolation was artificially imposed and so far as Taiwan is concerned it is less than totally worldwide. It is convenient to eliminate these two countries immediately from any consideration under the term "isolation" in the second hypothesis.

As was the case with the terms used in the theoretical exposition of dependency theory in chapter 5 understanding will be enhanced by a statement of the hypotheses and a summary of Frank's findings. The hypotheses and Frank's comments are taken, albeit the latter not verbatim, from his essay "The Development of Underdevelopment" (Frank, 1992, pp 112–117) Application to the Kimberley can then be made.

First Hypothesis

...that in contrast to the development of the world metropolis which is no one's satellite, the development of the national and other subordinate metropolises is limited by their satellite status.

Frank contends that, though difficult to test this hypothesis because part of its confirmation depends on tests of other hypotheses, the growth of metropolitan Buenos Aires and Sao Paulo is indicative of its veracity. These cities, which began to grow in the nineteenth century, had little colonial heritage and were satellite developments dependent initially upon Great Britain and more recently upon the United States of America.

Second Hypothesis

...that the satellites experience their greatest economic development and especially their most classically capitalist industrial development if and when their ties to their metropolis are weakest.

Two kinds of isolation are considered:

- (1) temporary political and external economic isolation,
- (2) geographic and internal economic isolation.

Frank cites five examples of the first kind of isolation: the European (especially Spanish) Depression of the seventeenth century; the Napoleonic Wars; the First World War; the Depression of the 1930s; and the Second World War.

According to Frank history confirms that Argentina, Brazil, Mexico and Chile experienced marked autonomous industrialisation and growth during the periods of the two World Wars and the intervening Depression. He also states that the same happened in Latin America during Europe's seventeenth century depression. Manufacturing grew and some of the countries became exporters of manufactured goods. Political development also occurred and is evidenced by the rise of independence movements in the area during the Napoleonic Wars.

So far as the second kind of isolation, particularly geographic, is concerned Frank mentions as examples development in Tucumán, Asuncion, Mendoza and Rosario spanning the eighteenth and nineteenth centuries. He also refers to seventeenth and eighteenth century São Paulo before coffee was grown there and Antioquia in Colombia and Puebla and Querétaro in Mexico and, in addition, Chile. All of these places became manufacturing centres and exporters before becoming satellite regions.

Internationally, Japan after the Meiji Restoration, is given as an example of isolation engendering industrial development. He compares this with the lack of such development in resource rich countries in Latin America and in Russia.

As a corollary to this hypothesis Frank proposes that:

...when the metropolis recovers from its crisis and re-establishes the trade and investment ties which fully reincorporate the satellites into the system, or when the metropolis expands to incorporate previously isolated regions into the worldwide system, the previous development and industrialisation of these regions is choked off or channelled into directions which are not self-perpetuating and promising.

Frank provides evidence supporting this corollary with respect to Brazil and Argentina, particularly after the Second World War and the Korean War. He contends that this phenomenon is dramatically demonstrated so far as

previously unsatellized regions are concerned. The interior of Argentina and Paraguay are given as such instances and Frank also suggests that research will confirm that the Caribbean Islands have also experienced the development of underdevelopment owing to satellization.

India is proposed as an international example of the stifling effect of the re-incorporation of this satellite into the World system. A range of problems typical of underdeveloped areas are attributed to this cause in the sub-continent.

Third Hypothesis

...that the regions which are the most underdeveloped and feudal-seeming today are the ones which had the closest ties to the metropolis in the past.

Frank finds this hypothesis well confirmed by a number of examples. The current underdevelopment in the sugar exporting West Indies and northeastern Brazil together with the former mining areas of Minas Gerais, in Brazil, highland Peru and Bolivia and as central Mexican examples the states of Guanajuato and Zacetas are said to be proof of the hypothesis. These areas and Bengal in India once contributed greatly to development in the mercantile and industrial capitalist world--in the metropolis. When the markets for their products disappeared they were abandoned by the metropolis and left to degenerate into underdevelopment.

Fourth Hypothesis

...that the latifundium¹⁴, irrespective of whether it appears as a plantation or a hacienda today, was typically born as a commercial enterprise which created for itself the institutions which permitted it to respond to increased demand in the world or national market by expanding the amount of its land, capital and labour and to increase the supply of its product.

This and the next hypothesis are probably the most contentious and the least open to easy confirmation. In Frank's opinion the growth of the latifundium in nineteenth century Argentina and Cuba cannot be attributed to the transfer of feudal institutions in colonial times. He sees this as also the case in the north of post-revolutionary Mexico, coastal Peru and the (then) new coffee regions of Brazil. The conversion of previously yeoman-farming Caribbean islands such as Barbados into sugar exporting economies at times between the seventeenth and twentieth centuries and the rise of the latifundia there also seem to confirm the fourth hypothesis. In Chile the rise of the latifundium there and the apparently feudal like institutions which occurred in the eighteenth century were clearly a result of the wheat market which opened in Lima. In seventeenth century Mexico the growth of the latifundium occurred when the urban population was growing and the demand for food became acute and thus agricultural profitability outstripped that of other activities. In Frank's view it is not correct to attribute this to the coincidental decline in profitability of mining and foreign trade. Thus the growth and consolidation of the latifundium and its apparent feudal conditions of servitude was a commercial response to increased demand and not the transfer or survival of alien institutions that have remained beyond capitalist development.

¹⁴ Latifundium, noun, singular (Plural latifundia): large landed estate. Also known as hacienda or ranch. Agricultural, stock-rearing, manufacturing or mining establishments in the interior or country areas.

Fifth Hypothesis

...that the latifundia which appear isolated, subsistence based, and semi-feudal today saw the demand for their products or their productive capacity decline and that they are to be found principally in the agricultural and mining export regions whose economic activity declined in general.

This hypothesis is even less clearly capable of firm establishment than the previous one. It is suggested that the emergence of predominantly isolated latifundia might be attributable to the decline of previously profitable agricultural enterprises whose capital was, and whose currently produced economic surplus still is, transferred elsewhere by owners and merchants who frequently are the same persons or families. However, Frank admitted that this hypothesis needed more detailed analysis.

The examination of Frank's hypotheses will not be taken in the order in which Frank set them out in his essay "The Development of Underdevelopment" in the book *The Political Economy of Development and Underdevelopment* edited by Charles K. Wilber and Kenneth P. Jameson (Frank, 1992, pp 112–117). This is simply because the applicability to the Kimberley of one or two of the hypotheses can be more easily assessed than that of the others.

Kimberley Application

There is no suggestion by Frank or anyone else that the above hypotheses must be generated by an examination of any country or area for dependency theory to be validly applicable to the place being studied. If an area is underdeveloped or is underdeveloping then explanations for this state can then be sought in many quarters one of which is dependency theory. This has been done in previous chapters with respect to the Kimberley region. The hypotheses are now examined with respect to the Kimberley albeit not in numerical order.

The essence of Frank's argument with respect to the fourth and fifth hypotheses is that it is not the case that the feudal-like institutions of the Latin American latifundia and other agrarian institutions were transfers from capitalist Europe or survivors owing to isolation of alien institutions. In the Kimberley the only possible establishments to have any similarity to the latifundia of Latin America are the cattle stations. The "mode of production" in the Kimberley prior to colonisation and European settlement was that of the hunter-gatherer. By the 1980s this mode of production accounted for the food consumption of less than 5% of aborigines and for only 2% of aboriginal income (Fisk, 1985, pp 21 & 80). The life style of the hunter-gatherer had disappeared prior to, approximately, the mid-twentieth century and probably earlier. In practical terms no pre-capitalist institutions have survived in the Kimberley even though the cattle stations are isolated and remote from any main centres or metropolises.

There are many nuances in the various descriptions of the feudal mode of production. This tends to make it difficult to fit life on the Kimberley cattle stations into any preconceived pattern. This problem is compounded given Brewer's view that modes of production in their pure form exist only in the minds of the analyst (Brewer, 1980, p 12). Roxborough confirms also that feudalism was rarely found in its pure form (Roxborough, 1981, p 6).

Weber saw feudalism in terms of self-equipped armies and property management vested in privileged groups exercising local power at the service of the national ruler (Gerth & Mills, 1977, p 47). Dobb refers to Marc Bloch's characterisation of feudalism as "... a system where feudal lords 'lived on the labour of other men.' ... " in his consideration of exploitation (Dobb, 1979, p 145). For Marx the important thing was the class relationship between the subsistence-farming serfs and the land-owning overlords and the mode of production and property owning pattern that this relationship defined (Bottomore & Rubel, 1979, p 129). Feudalism was not analysed in detail by Marx, whose interest was in capitalism, because it had already become the dominant mode of production in Europe at the time of his work (Brewer, 1980, p 12). Brewer

expresses what is probably a commonly accepted or popular definition of feudalism, although to some extent it suffers from the fallacy of begging the question (Engel, 1976, p 74) by the use of the term "feudal landlords":

...the *feudal* mode, in its classic form, involves production for local use by a class of unfree peasants or serfs who control their own subsistence plots, but are compelled, by extra-economic coercion, to support a class of feudal landlords. (Brewer, 1980, p 13).

It is, even so, what may be described as a "popular conception" of the meaning of the term "feudalism".

Biskup suggests that the relationship between the pastoralist and the aborigines in the Kimberley was not unlike feudalism. Where the owner lived on the property (as distinct from having it run by a manager) the relationship was one of reciprocal obligations based on the recognition of common interests. This contains elements of feudalism. The pastoralist, for whom aborigines worked mostly as horse-riding stockmen, was legally bound to allow them to roam the unimproved parts of his lease and dare not antagonise them or they would walk off the station and perhaps kill the stock (Biskup, 1993, p 41). This is certainly not feudal-like because it indicates that there was no tie to the property and a capacity beyond that of the serf.

Later Biskup describes the three bases of successive policies towards the aborigines as being genocide, allowing natural extinction and assimilation. None of these alternatives coincides with the need in a feudal system for the continued existence of a tied labour force which was capable of reproducing itself and also generating surplus for appropriation by the overclass. Also mentioned by Biskup is a description of the aborigine by Henrietta Drake-Brockman from "Walkabout" of June 1945, pp 13–14:

No sign of the slave about him up in the far North ... whatever may be said in the press from time to time. He'll work for you ... but somehow you understand quite well that if he didn't wish to, he'd walk off "bush" in a second. Servility is unknown. He looks you in the eye, human to human, if he doesn't call you Missi or Boss, the chances are he'll call you by your Christian name. (Biskup, 1993, p 41).

The debate about relations between aborigines and the non-indigenous population has been resurrected recently. Much has been written on what is popularly known as the "stolen generation" and "native title". It is neither possible nor relevant to pursue these matters in great detail here. The "stolen generation" question refers primarily to relations with aborigines relevant to aboriginal welfare under policies embraced by state and federal governments up to the mid 1960s. The policies may well have set a standard which affected attitudes towards aborigines by, predominantly, Australians of European descent. The regulation of or implied relations with aborigines was not such as to enforce a feudal regime by pastoralists and graziers upon their employees.

Native title regulations refer to the need for claimants to show a continuing association with the land over which title is sought. This association is not that of an enforced nature with land which is the property of a particular pastoralist or grazier. It is not, therefore, an association of a feudal nature.

On balance the aboriginal/pastoralist relationship in the Kimberley seems to have had more differences from a feudal one than similarities. Equally the relationship was also quite different from the connection between the free, wage labour employees and employers in the capitalist First World. Very often the aborigine was paid in kind and the pastoralist also took into account the support necessary for a worker's family which was often resident with him on the pastoral station. Thus, however feudal-like the system of life on Kimberley cattle stations might have appeared to be it was not a system imported from Europe where nothing similar existed.

This might suggest that the fourth and fifth hypotheses may well be applicable to the Kimberley region. However, the land tenure system peculiar to pastoral leases renders any apparent applicability of these hypotheses to the region impossible. Pastoralists are permitted to conduct only grazing activities on their leases. Currently some conduct tourist operations but the legality of this is doubtful. The state government has recently given notice of a two year discussion period during which pastoralists must give reason why the areas of leases on which their non-pastoral pursuits are conducted should not be excised from their leases. It is also the case that pastoralists may not prevent access to their properties by those prospecting for minerals. A pastoral lease does not entitle the leaseholder to any prior rights over minerals below the surface although there may be a subsequent entitlement to compensation for any loss of facilities so far as the pastoral activity is concerned as a result of a mining development. No significant mining operations have occurred on Kimberley pastoral properties until very recently and no other agricultural activities of any note or of a continuing and sustainable nature have been undertaken on them. The cattle stations are, therefore, not comparable to the large multi-product landed estates of South America which supported large and multi-skilled communities.

The third hypothesis is also not applicable to the Kimberley. The region is not feudal in nature. The cattle stations now owned by aborigines may appear more feudal than previously. This is because of the traditional life style of which the new owners are more tolerant than were managers or their absentee corporate leaseholders. Larger numbers now live on such stations and peripheral activities are occurring as communities develop. This requires the excision from pastoral leases of areas needed for community groups and their activities.

The other major difference between the current situation and feudalism is the income capacity of the aborigine in remote areas. Social security is important and has increased in penetration to the remote areas since between the 1976 and 1980 censuses (Fisk, 1985 pp 35–36). Some communities obtained special

arrangements to have social security payments pooled and made payable to the community rather than to individuals (Fisk, 1985, p 33). The Community Development Employment Projects scheme was a response to the request by communities for an alternative to unemployment benefits (Fisk, 1985, p 69). Under this scheme communities pay for work done by members in the community. The access to income via social security payments or the CDEP scheme places communities far from any similarity to a feudal state.

The first hypothesis can be assessed only by the inspection of any region and its metropole(s). The satellite status of the Kimberley was established in chapter 5 where it was confirmed that it satisfied the definition of a satellite area: A country or area that exports to and imports from world markets often at the behest of other (core) countries or areas or other external interests, that is a price taker not a price maker with respect to both activities and which cannot make independent decisions on where or with whom to trade.

Its state of underdevelopment has also been established by reference to any definition of development and also by reference to the definition of underdevelopment as proposed by dependency theory which was given in chapter 4: Dependency theory defines underdevelopment as the incorporation of a country or area into the World capitalist system in a subordinate position (Brewer, 1980, p 18). The probability that the region has been developing underdevelopment was also established in chapter 5. In addition it is clear also that any of the metropole areas relative to the Kimberley, that is, for examples, variously, the State, Australia and the United Kingdom, have developed during the period that the Kimberley has been underdeveloping.

The second hypothesis is the most important of the five that Frank proposed because it is concerned with the central theme of Frank's theory, the core/periphery or metropole/satellite concept. Frank identifies two kinds of isolation and gives a number of examples of each. He then attempts to deduce the veracity of his hypothesis by reference to the observed experience of a

number of countries and regions. Also included in his observations is reference to Japan as a confirming international example geographically distant from the South and Latin American area which is his major area of study. Similar logic is employed in his consideration of the corollary to the second hypothesis.

The Kimberley is clearly isolated geographically from any of its metropolises. Improved road, air and sea transport and telecommunication have lessened this isolation over time as have advances in applied technology in many areas. However, no previously achieved development industries or operations have been thwarted by the mitigation of this isolation.

It is the case that improved roads led to the cessation of the air-beef scheme. The beef industry itself was not adversely affected by the building of better roads. The closure of cattle slaughtering facilities in the region was as a result of changing conditions in overseas markets rather than to any closer ties of the region to its metropolises. The live cattle export market is greatly facilitated by the improved road network and the maintenance of port operations in the region.

Economic isolation in terms of distance from markets and supply centres has always existed for the Kimberley and this is still the situation today. The isolation of the business owners and investors from the region in which they have an interest has also been persistent. Ownership by multinational corporations of Kimberley operations, non-Kimberley resident shareholders and absentee leaseholders of pastoral stations are forms of economic isolation that have been experienced in the region. No early developments in the Kimberley have fared badly owing to the lessening of economic isolation because such isolation has changed little over the past one hundred years.

The metropolises have not successively loosened and re-imposed their influence over the region with respect to internal economic or geographic isolation. It is thus not possible to assess the applicability of the second hypothesis or its

corollary in the Kimberley so far as internal economic and geographic isolation is concerned.

Examination of the situation so far as temporary political and external economic isolation is concerned is quite different. A few of the causes of such isolation that are mentioned by Frank (Frank, 1992, p 112) are not appropriate to the time frame within which the Kimberley is being examined here. The depression of the seventeenth century and the Napoleonic Wars are not relevant to a study of the Kimberley over the past one hundred years. The other causes referred to by Frank are relevant and there are also other events which have caused temporary isolation. It would be possible to define or identify each such possible event and then conduct a new investigation into how development in the Kimberley had been affected for each instance. This would be time consuming and repetitive.

What is needed is a proxy for all such events that indicate temporary isolation. The happenings in the Kimberley over each relevant period that any such event is having influence in the metropolises can then be investigated. Given such a proxy and details of development in the Kimberley over the past 100 years it should be possible to test the veracity or applicability of the second hypothesis and its corollary on a quantitative basis. The details of development have been collected into the database described in chapter 2 the tables of which are presented in appendix E. This database can be queried and manipulated by use of the queries in the computer language known as "Structured Query Language". These queries are listed in appendix F and a brief explanation of each query is included. The selection of an appropriate proxy must now be made.

The Proxy

The first part of the information required for verification of the applicability of Frank's second hypothesis and its corollary to the Kimberley is the database described in chapter 2. The "other side" of the information required is an indicator of the performance of other (metropole) economies. Development

activity in the Kimberley can then be compared with information from this proxy for these other economies.

The proxy required is a time series extending over the relevant period which is, approximately, the twentieth century. The series may be shown as an annotated graph. It should be capable of interpretation such that periods during which it may be reasonably inferred that there has been political and economic isolation of the satellite (the Kimberley) from its metropolises are identifiable. Thus a suitable proxy for the Kimberley's multiple metropolises needs to be representative of the broad non-Kimberley economies.

Possible Choices for the Proxy

Two time series which immediately demand attention in this respect are: gross domestic product (GDP) and the consumer price index (CPI). Samples of these series were immediately available in *Economics: Australian Edition* by Jackson and McConnell (1980), inside the front and back covers, for the period 1948/9–1978/9. The consumer price index series is given based on the year 1996/67 being 100. There is also a series for the real gross domestic product based upon 1996/7 dollars. This point is mentioned in order to show that there is a consistency in time between the two series. It is not important so far as the comments on these two series given below. Graphical representations of these series for a similar period. 1949–1974, were available in *Economics: Second Australian Edition* by Samuelson, Hancock and Wallace (1975) also inside the front and back covers.

It is immediately clear that these series in themselves are not suitable for use as the required proxy. The CPI has never fallen over the thirty year period mentioned above. The GDP has fallen only once over the same period in 1951/2–1953/4. Particular and peculiar periods cannot easily be identified from what are generally steadily increasing trends. The change from year to year in each of these series has varied in value. The possibility is that these changes may allow the identification of distinct periods and the causes of the variations

may have resulted in temporary political and economic isolation of the metropole from the satellite.

With respect to the CPI series there are some problems involved in using it as the required proxy. The Australian Bureau of Statistics produces the index every three months and it is based upon the price of a "basket" of goods and services that are assessed as making up a high proportion of the expenditure of the households of metropolitan wage and salary earners. It is, therefore, a very Australian and, indeed, capital city based statistic. It is therefore representative only one metropole, Australia. An important requirement of a proxy for present purposes is sensitivity to overseas factors. The only way that the CPI reflects such matters is in the possible overseas content of the basket of goods and services upon the price of which it is assessed.

Further problems are that no account is taken of the quality of the goods which make up the basket and also the content of the basket is varied from time to time according to changes in consumer habits. Thus the CPI can vary not for economic or political reasons but simply owing to changes in fashion or perception on the part of consumers.

The CPI can also be affected by a very localised, one-off item. An example of this is the increase that occurred owing to the introduction of the goods and services tax in Australia recently. The effect was reflected in the value of the CPI for only short time. This means that any similar variation in the CPI would have to be investigated in great detail to establish the cause of the variation. The use of the CPI as a proxy would therefore become time consuming. Similar variations in the value of a proxy should, ideally, reflect, if not political and economic isolation directly, at least the same cause of variation. The introduction of the goods and services tax did not indicate such a period but it would be necessary to investigate every similar kind of change in the value of the CPI to exclude similar events.

It would also be useful if the chosen proxy reacted immediately to events that caused political and economic isolation. There are leads and lags in the reaction of the CPI to some events. The effect of a failure of supply in some goods can cause either a lead or a lag in response by the CPI. It is possible that the supply of fresh vegetable to major wholesale markets may fail owing to such events as, over a long term, a drought or in the short term, a series of devastating weather events such as storms, unseasonal frost or other natural disasters such as bush fires or earthquakes in producing areas. Such problems may cause an immediate effect on the CPI. If there are sufficient stocks of the lost or destroyed items the effect on the CPI may occur long after the causal happening. The result on the CPI will lag behind the event. At other times a price rise may be anticipated in some markets and dealers in that market may factor in the effect of the change prior to the actual event. This can happen in the case of a widely anticipated rise in taxation. In such a case the effect on the CPI will lead the actual causal event. Leads and lags complicate the interpretation of changes in the CPI. This inhibits the use of the CPI as a the required proxy. In general leads and lags are caused by the all of the dealers in the particular market not being either fully or uniformly informed about existing conditions and changes that affect the market.

There is no need to investigate here the effect of direct and indirect taxes and the changes in them on the CPI. It is sufficient to note that changes in both taxes and the "tax mix" of direct and indirect taxes do affect the CPI but only those taxes changes made in Australia. Changes in the tax rates and regimes in other countries are not, generally, reflected in the CPI. This is because few countries raise taxes on exported goods and, as mentioned above, imported goods and services are not specifically identified in the representative basket of goods and services upon which prices the CPI is calculated.

For all of the above reasons the CPI series is not a good one to choose as the required proxy. It would not allow the consistent and reliable identification of

periods of political and economic isolation of the Kimberley from its multiple metropolises.

The GDP is also an unsuitable series. As its name implies it is a domestic series. That it is necessary for the required proxy to be sensitive to overseas effects is clear from the fact that all of the produce of the Kimberley is predominantly for markets abroad. The effect of overseas markets does influence the GDP to the extent that the GDP includes the value of exported goods.

By far the greatest component of GDP is personal consumption expenditure. This includes expenditure on imported goods and services and is another example of the effect of overseas production on the GDP. The value of imports is specifically excluded from this series. Almost all of the points that made the CPI unsuitable as a proxy series apply to the domestic consumption expenditure element of the GDP. It changes as a result of fashion or consumer preference, the quality of products and tax imposts and it is subject to leads and lags.

The GDP is more generally Australian than the "city centric" CPI but it is still predominantly a domestic series. It is, therefore, unsuitable for present purposes as a proxy series. The GDP series may be useful if the performance of the Kimberley in development terms is to be evaluated with respect to just Australia. The difficulties of identifying appropriate periods by reference to the GDP series still remain as problems in its use.

The performance of the Australian Stock Exchange (ASX) is affected by a great many factors. These include both political and economic events whether they be local or international occurrences. The effect on share market price movements by such events is also very immediate. There is little evidence of a lead or lag effect. A feature of stock market activity is the factoring in of likely future events. This prevents a lag effect while at the same time causing a lead effect of only a very short duration usually. The differing opinions of the many

participants in the market also tend to smooth such effects so far as “surprise” events are concerned.

The kinds of periods of temporary political and economic isolation that Frank identified were not unexpected. There was always some reasonable period of warning before the causal event actually occurred. The events were not sudden or surprising natural disasters. It is fair to say that the two world wars of the twentieth century did not occur without notice. Stock markets were able to anticipate the likely effects of such events with the smoothing process mentioned above also applying. Thus the effects on satellite regions in periods when developed metropolises turn in upon themselves and ignore peripheral regions do not cause major lags in stockmarket reactions. Also the actual winding down of investment and development in peripheral regions by the metropolises is likely to have commenced before the causal event actually happens. Investors and developers are often major players in stock markets and they learn from market phenomena. Leads in the stock market price movement index as an indicator are unlikely to be a major problem in using this series because of the very quick reaction time of the market. If an anticipated event does not eventuate any factoring in is quickly reversed.

The ASX, in common with other stock exchanges, is noted as a close approximation to a perfect market or to exhibiting the components of perfect competition (Calvo & Waugh, 1980, p 136). It deals in a homogenous product, resources (money and items valued in money terms) are mobile and knowledge within the market is, in general and usually, uniformly and totally available to all buyers and sellers without time lags. There have been important exceptions to this recently (e.g. The H.I.H. collapse) which have caused market failure with respect to some firms quoted on the ASE. They do appear to be the exception rather than the rule.

The Proxy Choice

The ASX has produced an annotated graph of Australian share price movements for the period 1900–2000. It shows clearly the effect on share

prices of such events as the First World War, the depression of the 1930s and the Second World War. These three events are mentioned by Frank as being major crises which caused temporary political and external economic isolation so far as South and Latin America were concerned. All had the same effect on Australian share prices and all were events having worldwide significance. Consequently it is reasonable to assume that they had the same effect on Australia and the Kimberley that Frank describes with respect to his major areas of study. Similar variations in the movement of share prices is likely to indicate similar causes. Thus periods of political and economic isolation can be identified by reference to such variations in stock market prices over time.

As a proxy for metropole political and economic events the ASX price movements, or "All Ordinaries Index", over the period 1900–2000 has the following attributes:

- (1) it is responsive to both overseas and local events;
- (2) it does not suffer from lead and lag effects and certainly not to the extent that both the CPI and GDP are so affected;
- (3) during the period 1900–2000 the index was representative of all companies quoted on the ASX unlike the ASX200 Index which follows the movements of only the leading 200 companies;
- (4) from its graphical representation variations are easily identified;
- (5) it is not subject to changes in content in the way that the basket of goods used by the CPI is changed periodically;
- (6) no single item dominates it as personal consumption expenditure influences the GDP;
- (7) the index is not "reset" periodically as is the CPI index (although this point does not apply to the CPI in very recent times);
- (8) It is representative of a market which most closely approximates to a perfect market;
- (9) the capability of selecting appropriate periods by reference to the ASX price movements index is demonstrated by the fact that three

periods selected by Frank are easily identified from its graphical representation.

The annotated graphical representation of the ASX price movements index is shown in the next chapter as figure 7.1.

It should be possible to test the applicability to the Kimberley of the second hypothesis and its corollary by relating events of economic significance to periods selected by reference to the performance of the Australian share market as shown by the graph mentioned above. This may be done by using a database of events of economic significance in the Kimberley, querying that database appropriately and comparing overall development with that occurring during periods identified by reference to the above proxy. Thus a quantitative assessment of the second hypothesis and its corollary can be made with respect to the Kimberley. This kind of assessment is quite different from the qualitative gauges of applicability used with respect to the other hypotheses which ultimately rest upon a balance of probabilities or even, simply, upon an analyst's opinion.

Summary

The hypotheses which occurred to Frank during his early studies of South and Central America have been set out here together with his approach towards their application. These hypotheses were then examined in the context of the Kimberley. With the exception of the second hypothesis and its corollary and none were found to be applicable to the Kimberley. These hypotheses, as research paths, do not, therefore, add to an understanding of the development experience in the Kimberley.

The second hypothesis and its corollary are the most important of all because they are enunciated by Frank in the most precise terms. The temporary political and economic isolation of the region from its metropolises has occurred periodically. The facts of development in the region and the periods of isolation are now capable of specific identification by reference to the database and the

proxy. Therefore a quantitative assessment of the second hypothesis and its corollary is possible.

Chapter 2 has described the origin and design of a database. The purpose of the database is to hold information on the Kimberley economy over approximately the last one hundred years. Holding information in this form allows the manipulation and display of the events during periods identified by reference to another source showing the performance of the national and World economies. The "other source" or "proxy" selected is the performance of the ASX over the past one hundred years, or the "all ordinaries index".

The tables of "raw" information collected and the queries by which they are manipulated are given in appendices E and F respectively. Results of the querying of the database to derive information on development activity in the Kimberley during periods identified by reference to the proxy are described in the next chapter.

Conclusion

Frank's hypotheses have been shown not to be useful in explaining development in the Kimberley with the exception of the second hypothesis and its corollary, the applicability of which has not been fully assessed above. Investigation of the applicability to the region of this last hypothesis has been delayed for the reasons set out above.

Use of the database will be demonstrated in the next chapter. The point of the database is that it will "perform" as more than simply a list. The information in the database will, by appropriate querying of it, be manipulated to show development activity in the Kimberley during periods identified by the proxy described above as being times of temporary political or economic isolation of the region. This proxy for variations in the fortunes of the Kimberley's

metropolises is the movements in Australian share prices as shown in the graph produced by the ASX.

Tables and results derived from querying the database, the annotated graph of the proxy series and the relevant periods identified by reference to it are shown in the following chapter. Also in that chapter are the interpretations of the results and the relation of them to Frank's second hypothesis and its corollary so far as the Kimberley is concerned.

CHAPTER 7

ANALYSIS OF DATABASE MANIPULATION

Objectives

The intention here is to manipulate the information stored in the database described in chapter 2. The tables which comprise the database are shown in appendix E. Use will be made of the queries listed in appendix F. The output of the application of the queries with respect to overall Kimberley development will be compared with that during periods identified by using the proxy for metropole economic performance. Thus Frank's second hypothesis and its corollary can be assessed with respect to the Kimberley region (Frank, 1992, pp 112–114). For convenience the hypothesis and its corollary are re-stated here:

The hypothesis is:

...that the satellites experience their greatest economic development and especially their most classically capitalist industrial development if and when their ties to their metropolis are weakest.

and its corollary is:

...when the metropolis recovers from its crisis and re-establishes the trade and investment ties which fully reincorporate the satellites into the system, or when the metropolis expands to incorporate previously isolated regions into the worldwide system, the previous development and industrialisation of these regions is choked off or channelled into directions which are not self-perpetuating and promising.

Metropole Economic Performance

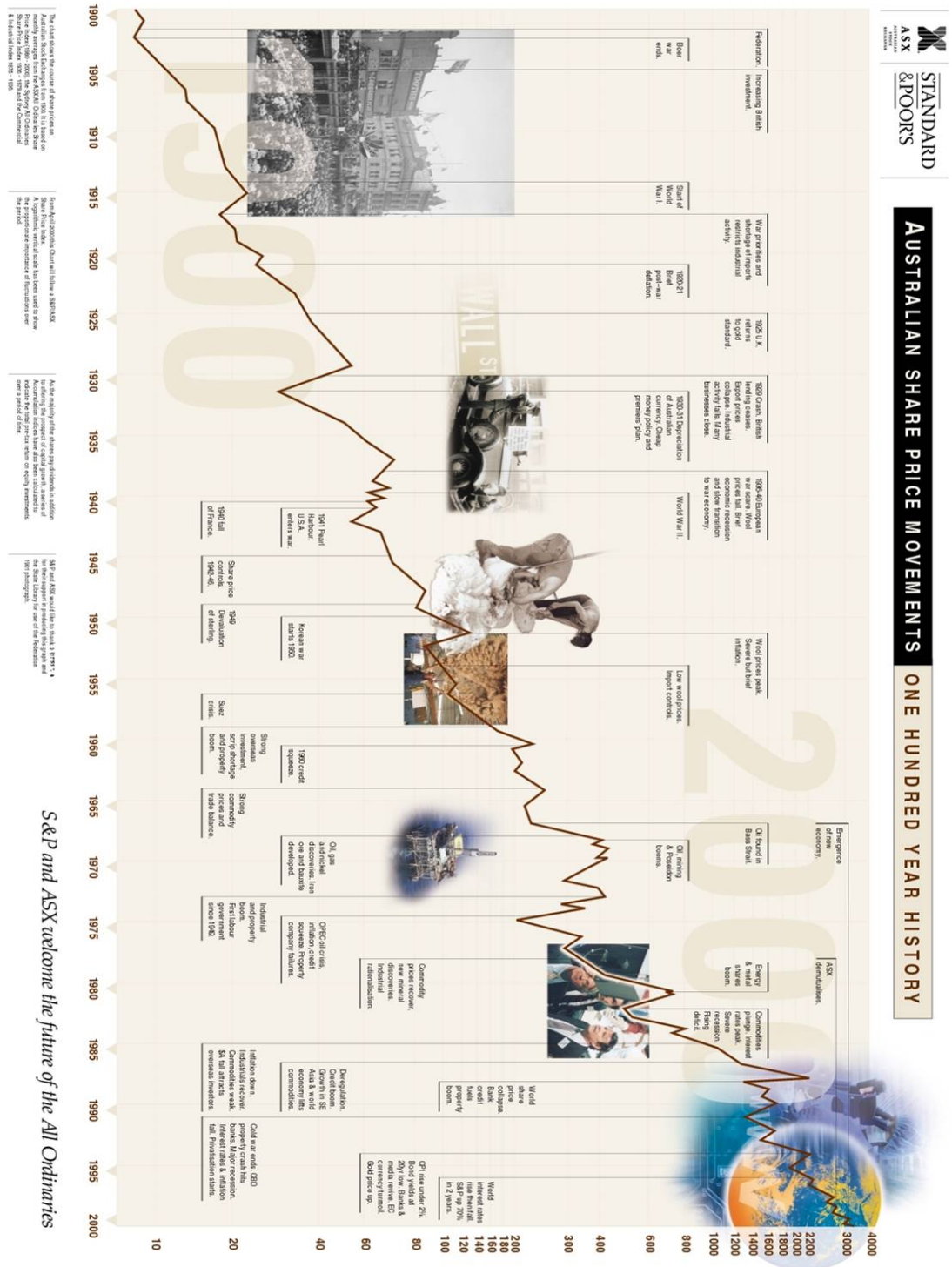
The proxy for the economic performance of the metropole regions with respect to the Kimberley is the performance of ASX share prices over the past one hundred years. This performance is graphed in figure 7.1 on the next page. That this is a good proxy is demonstrated by the fact that it shows three of the

incidents to which Frank refers (Frank, 1992, p 112). The graph shows how the share price movement dips during the period of the First World War, during the depression of the 1930s and during the period of the Second World War. These were periods which Frank identifies as those (inter alia) which have caused the temporary isolation of satellite areas. It is during these periods that Frank suggests that the satellite regions experience their most “classically capitalist (industrial) development” according to his second hypothesis (Frank, 1992, p 112).

Other periods can be selected from the graph shown in figure 7.1 which show a similar movement of share prices. Frank may not have selected some of the other periods because there was no effect upon nor relevance to his particular geographical area of study, South and Central America. Also some of the later periods would have been subsequent to his active work on dependency theory as such in 1972 (Frank, 1996, p 32). It is suggested here that these other periods may be considered also as times during which other satellite regions, such as the Kimberley, may have experienced isolation from national and world metropolises.

Seven additional periods can be discerned from the graph where the share price movements were similar, owing to identifiable national or world events, to the three identified by Frank during the period of the graph, 1900–2000. The time span chosen as being influenced by the principle event or events causing each share price downturn is that between the initial decline in share prices to the time when the prices regained their original level. This may differ greatly from the period that could be said to have been influenced by an event from a political, social or historical aspect. The following list details each of the ten periods identified.

Figure 7.1
Stock Exchange Movements



Copyright Australian Stock Exchange Limited ABN 98 008 624 691 (ASX) All rights reserved. This material is reproduced with the permission of the ASX.

Periods of Temporary Political and Economic Isolation

- (1) 1901–1903 The Boer War caused a price decline from 1901 to 1903. This was not an event causing worldwide repercussions. It was an important event so far as the British Empire was concerned and therefore Australia was affected.
- (2) 1915–1919 The First World War was one of the three events identified by Frank. The period of influence over share market prices was from 1915–1919. War priorities and a shortage of imports restricted industrial activity. This was clearly an event that had an effect on the whole world.
- (3) 1929–1934 The depression of the 1930s was also a major worldwide event and it was also a period identified by Frank. Its effects began with the stock market crash of 1929. At this time also British lending ceased, export prices collapsed, industrial activity declined and many businesses failed. There was a major depreciation of the Australian currency from 1930 to 1931. It was not until 1934 that share market prices recovered to their pre-1929 levels.
- (4) 1939–1944 The Second World War was the third period noted by Frank as having a major influence on metropole/satellite relations. It began in 1939 and although not ending until 1945 share prices had recovered to pre-war levels by 1944. The fall in prices in Australia was greatly exacerbated by the attack on Pearl Harbour by the Japanese in 1941.
- (5) 1948–1950 The devaluation of sterling in 1949 was an event that had a major influence over the sterling currency area of which Australia was a part. Pressures building up to the devaluation began to have an effect on the Australian stock market in 1948 and prices did not recover until 1950.
- (6) 1951–1957 Wool prices peaked in 1951 and the Korean War, which began in 1950, did not seem to adversely affect the local

stock market. By 1952/3 the wool price had declined sharply and import controls were imposed. The recovery in prices was hindered by the Suez crisis of 1956 but it was not until 1957 that prices were back to 1951 levels. This combination of events affected the British Commonwealth and Australia rather than the whole world.

- (7) 1960–1963 The 1960 local credit squeeze had influence over Australia until 1963. By this time strong commodity prices and good trade balances restored market prices to levels which had resulted from high overseas investment just prior to the credit squeeze.
- (8) 1973–1977 The decline from high market prices owing to an industrial and property market boom began in 1973 just after the election of the first Australian Labour Party Government since 1949. Recovery was in progress when the OPEC oil crisis occurred which resulted in inflation, a credit squeeze and company failures. The recovery was just failing again when commodity prices recovered, new mineral discoveries were made and much industrial rationalisation restored the market to 1973 levels in 1977. The OPEC oil shock was an event of worldwide economic significance.
- (9) 1981–1984 Energy and metal shares saw market prices at a high in 1980/81. A commodity price plunge, high interest rates, a rising deficit and a severe local recession saw the market move into a decline from which it did not recover until 1983/84. Other than commodity prices this was more of a local phenomenon rather than a worldwide event.
- (10) 1987–1994 A market price peak was brought about by financial deregulation, a credit boom and a growth in both the Southeast Asian and world economies resulting in improved commodity prices. In 1987 there was a world stock market crash of which the local market was a part. A

couple of false recoveries were followed by a bad downturn in market prices even though the Cold War came to an end. A central business district property crash affected banks in particular and a major recession brought about falling interest rates and inflation. The push towards greater privatisation also had an effect at this time. By 1994 inflation was under control, banks and the media recovered and the gold price rose to some extent because of financial problems in the European Community. After eight years the market had recovered to previous levels. This period saw a mixture of world and local events affecting market prices.

There were other peaks and troughs in Australian share price movements during the one hundred years from 1900–2000 but the above ten low points were the most significant. These periods can thus be used to assess the applicability to the Kimberley region of Frank's second hypothesis.

The periods between those listed above were intervals of generally rising share prices even if the rises were of a "saw-tooth" nature sometimes rather than smooth, direct or "straight line" increases. Indeed the nature of the one hundred year curve of share price movements is, overall, of a "saw-tooth" shape. This is quite normal for such data. Even the shape of the curve of price changes with respect to an individual share price is often like that. The recovery of share prices can be seen as a return to "normality" for metropole regions from the aberrations of the falls detailed above. The periods between share price falls can, thus, be used to assess the applicability to the Kimberley of the corollary to Frank's second hypothesis.

Kimberley Development Activity

The database described in the previous chapter will now allow an assessment to be made of development activity in the Kimberley during each of the ten periods mentioned above. Initially a few more detailed comments about the contents of the database will be in order.

Events and Sources

As was stated in chapter 2 the interpretation of just what was an event of economic significance was very broad. This interpretation also changed over time but the events selected have always been those which indicate economic development. There is no attempt here to suggest that the list of 802 events in appendix E is in any way exhaustive. It is suggested that it is, at least, a good representative sample of events overall and on an annual basis that may fairly be considered to be of economic significance in the Kimberley region. No similar list has been drawn up and presented for analysis in this way previously.

Therefore it is also the case that statistical inferences drawn from the database would be substantially similar to those which might be drawn from an exhaustive or complete list of such events if one could ever be completed. It would be possible to add to the database at any time to include events that are subsequently considered to be appropriate for inclusion.

It is also relevant to refer here to items in the database that have no specific source. These items have been found in the records of organisations which can reasonably be expected to be responsible and reliable in recording information. Most of the items to which this comment refers have been collected from the public libraries at Broome and Derby and from the Library and Information Services of Western Australia. It is worth noting that the public library at Derby is particularly well resourced with respect to the local history of both Derby and the Kimberley in general.

The first two events in the "events" table, "EV1" and "EV2" took place almost two hundred years before any other event in the database. Although relevant to

the Kimberley these two events have no relevance to the period of study being considered here. While there is no precise one hundred year limit necessary for this work, these two events will be ignored in the following analysis except where it is otherwise mentioned.

The classification of events into "event types" was done at the time of entry of items into the database. The choice of names of the event types was of a very idiosyncratic nature. Overall, the intention was to achieve a separation of events of different kinds and simultaneously to group events of a related nature. This could have been done differently but probably with no material difference to the ultimate outcome. This is because the total number of events would remain the same as would the number of events under the classifications "Mining", "Pearling" and "Pastoral". These classification headings represent the three major and continuing industries of the region over the past one hundred years. They are "natural" classification headings for this region. The following results are based on the total number of events and the number of events under these three classifications.

The event type "pastoral" includes not only obviously pastoral industry events but also events connected with the air beef scheme which operated out of Glenroy Station. These events could equally well have been classified in the group "Air Transport". The same may be true of other events but the grouping in one rather than another classification is to some extent immaterial.

The classification "Wages" was an early one as is indicated by its event number, "EV69". At the time there was an anticipation that other information would come to light on this subject. This did not prove to be the case and this event remains a "curiosity" indicating high wage levels of particular trades at a particular time. The same may be said of events "EV102" (Climate), "EV188" (General Event) and "EV233" (Mining/Tourism). It is possible that other events that would fit into these classifications will be discovered at a later time. Leaving these as "one off" entries in the database does not affect overall results.

It would be possible to enter much detail relevant to the Kimberley from ABS records. Certainly the ABS produces great volumes of statistics particularly from the information collected at a census. Much is not relevant to a database of the kind that has been created for this study of the Kimberley. To some extent the matter of inclusion or exclusion of data is one of judgement but there is an overall criterion to help. If any particular piece of information or series of data are likely in some way to contribute to or be used to in any way to cause development then inclusion in the database as an event is valid.

The inclusion of the "Labour Force" classification also requires some explanation. Indeed it could be argued that the issue of such information is not an economic event at all. In an interview with Mr Norman Longden in July 2002 it was confirmed that firms looking to begin enterprises in the Kimberley do, in fact, take notice of the issue of such statistics (Longden, pers. comm., 2002). Mr Longden was a long term resident, businessman and Shire councillor of Derby who has recently retired to Perth. Together with his wife, Valerie, they operated the local branch of the Commonwealth Employment Service in 1988. Mr Longden confirmed that he had been visited by representatives of Western Metals Limited. This Company was then about to begin mining operations at Cadjebut near Fitzroy Crossing. The Company indicated that the visit was more of a courtesy call than anything else because their research into the availability of a local labour force using ABS information suggested that there would be no point in placing local advertisements for employees. Mr Longden told the Company that he believed this to be quite incorrect. His experience of the Kimberley was that there were probably many suitable employees who did not register as unemployed but who usually apply for positions when work was available. On receiving this advice the Company placed local advertisements and recruited sufficient local employees to warrant a fly-in-fly-out service from Broome and Derby to the Cadjebut mine site. The Company's original expectation was that this kind of staff movement would be necessary and possible only from Perth. These comments serve to make the point that the

issue of labour force statistics does cause prospective employers to make important economic decisions based upon them. Thus the issue of such information may fairly be regarded as influencing local economic events.

To avoid any objection to the inclusion of such events in the analysis of the database information these events can be screened out if necessary. This is precisely the purpose of database queries numbers 6, 17 and 18 as listed in appendix F. These queries are:

- (6) this query produces a table of events between given dates but excludes a given event type;
- (17) this query provides the number of events that have occurred at a given place excluding from that count one given event type and
- (18) this query provides the number of events that have occurred at a given place excluding from that count two given event types.

Table 7.1
Classification of Events

<u>Number of Events</u>	<u>Type of Event</u>
62	Agricultural
40	Air Transport
15	Aquacultural
1	Climate
54	Commercial
32	Communications
56	Count or Census
6	Declaration
4	Discovery
1	General Event
18	Government
120	Infrastructure
86	Labour Force
63	Mining
1	Mining/Tourism
82	Pastoral
53	Pearling
4	Recession
69	Shipping/Ports
9	Social
15	Tourism
10	Transport
1	Wages
<hr/> 802	<hr/> Total
=====	=====

The full table of events classifications is shown in table 7.1. It is derived from the database using query number 22 in appendix F. This query lists all event types and the number of occurrences of each. The "Total" information in this table has been determined by simple arithmetic. Table 7.1 includes the two early events mentioned above.

As mentioned above the database in its present form is not intended to be a comprehensive census of all events. It is, however, at the least, a representative sample overall and for each year of the period covered.

Database Analysis

From the information given above and excluding the two very early events the number of events per year that have occurred over the past 123 years is 6.50. Next, query number 23 is used. This query provides a count of the number of events occurring between given dates. The number of events occurring annually between the years 1902 and 2002 is 6.96. The number of events occurring on an annual basis for the century 1900–2000 is 6.73. In round figures, then, the number of events of economic significance occurring annually in the Kimberley is 7. The same query can be used to determine the number of events that have occurred over the periods of temporary political and economic isolation of the Kimberley from metropole areas that were identified above. It can also be used to find the number of events that occurred between those periods. These results are the bases for tables 7.2 and 7.4. The figures in the final column of each of these tables have been rounded similarly to the figure for the whole of the Kimberley given above as 7.

In the same way the number of events occurring on an annual basis for any given event type classification can be determined using query number 24 in appendix F. This query provides a count of events of a given event type between given years. The event type classifications “Mining”, “Pastoral” and “Pearling” will be considered below. This is simply because these have been enduring activities in the Kimberley over the whole of the period under consideration.

The Second Hypothesis

If Frank’s second hypothesis is supported then the number of events of economic significance during the selected periods, that is events suggesting the occurrence of development, should exceed the average number of events per year. This is because the second hypothesis proposes that a satellite region experiences its greatest development when ties to the metropolises are weakest.

The database, described in chapter 2 and the information it contains, listed in appendix E, allows examination of the development history of the Kimberley region. Storing the information in a database permits the manipulation of the information so that particular groupings and relationships can be displayed and examined. Such grouping and relationships would not be evident from the simple inspection of the list of information collected whether or not it is in chronological, alphabetical or any other order. The comparison of selected and ordered information from the database, that is from the Kimberley, with metropole economic performance during specified periods is now possible. The periods specified have been selected by use of the proxy chosen in chapter 5 for the performance of metropole economies. These periods have been listed above together with the reasons that they indicate times when the satellite Kimberley region was politically and economically isolated from its metropolises. Table 7.2 gives the results derived from the database. (See also Appendix G.) It can be seen that in only three of the ten periods this was the case. These periods were 1960–1963, 1973–1977 and 1981–1984.

There is the possibility that records were such that more were available for collection in the later years of the century or because of better maintenance and keeping of records in more recent times. It is also the case that the labour force statistics that were recorded were for years between 1973 and 1984. Comment on the inclusion of labour force statistics were made above. The overall result is not affected by excluding such statistics. The rounded figures for the periods 1973–1977 and 1981–1984 become 8 and 15 respectively. This is determined by the use of query 26 in appendix F. This query provides a count of events between given dates excluding a particular event type. The comparable figure for the whole of the Kimberley then becomes 6 rather than 7. There is, therefore, no material difference to the overall result.

Table 7.2
Numbers of Events in Periods

Period	No. of Years	No. of Events	Events/year (Rounded)
1901 – 1903	3	6	2
1915 – 1919	5	11	2
1929 – 1934	6	6	1
1939 – 1944	6	19	4
1948 – 1950	3	7	3
1951 – 1957	7	25	4
1960 – 1963	4	39	10
1973 – 1977	5	77	16
1981 – 1984	4	102	26
1987 – 1994	8	51	7

The situation with respect to the three major industries that have operated in the Kimberley for about a hundred years is shown in table 7.3. Most of the annual results in this table are fractional, or less than one. Although a part of an event makes no practical sense it does have significance in statistical terms. For the mining, pastoral and pearling industries the numbers of events per year that would suggest support for Frank's second hypothesis should exceed 0.63, 0.82 and 0.53 respectively.

Table 7.3

Numbers of Events in Periods for Particular Industries

Period	No. of Years	Mining		Pastoral		Pearling	
		No. of Events	Events per Year	No. of Events	Events per Year	No. of Events	Events per Year
1901/03	3	0	0	2	0.67	0	0
1915/19	5	0	0	2	0	1	0
1929/34	6	0	0	0	0	0	0
1939/44	6	5	0.83	3	0	3	0
1948/50	3	1	0.33	3	1.00	1	0.33
1951/57	7	2	0.29	1	0.14	4	0.57
1960/63	4	0	0	7	1.75	3	0.75
1973/77	5	1	0.20	0	0	1	0.20
1981/84	4	10	2.50	9	2.25	1	0.25
1987/94	8	6	0.75	3	0.375	1	0.125

It can be seen from table 7.3 that only three periods with respect to mining, three with respect to the pastoral industry and two so far as the pearling is concerned would seem to support the second hypothesis. These periods are: mining: 1939–1944, 1981–1984 and 1987–1994; pastoral industry 1948–1950, 1960–1963, 1981–1984; pearling: 1951–1957, 1960–1963. Thus, overall and in detail Frank's second hypothesis would seem not to be applicable to nor supported by the facts of development in the Kimberley region.

The Corollary to the Second Hypothesis

It does not necessarily follow that the corollary to the second hypothesis is also inapplicable. The same methods can be used to examine the situation with respect to this corollary. Again queries 23 and 24 from appendix F are used to produce tables 7.4 and 7.5 respectively for the periods between those used in tables 7.2 and 7.3. These queries are: (23): This query provides a count of the number of events occurring between given dates; and (24) This query provides a count of events of a given event type between given years. The conclusion that can be drawn from tables 7.4 and 7.5 is different from that which was made from the figures in tables 7.2 and 7.3. It would be expected according to the corollary to Frank's second hypothesis that, with the resumption of normal activity in the metropole regions, development activity in the satellite area, the Kimberley, would decrease. Thus the number of events of economic significance would be expected to be below 7, the average for a year over the whole period. It can be seen that this is, in fact, the case for all but two of the periods in table 7.4. Thus the corollary to the second hypothesis would seem to be applicable to the Kimberley.

Table 7.4
Numbers of Events in Periods

Period	No. of Years	No. of Events	Events/Year (Rounded)
1903 – 1914	11	47	5
1920 – 1928	9	13	2
1935 – 1938	4	13	4
1945 – 1947	3	5	2
1950	1	3	3
1958 – 1959	2	11	6
1964 – 1972	9	90	10
1978 – 1980	3	17	6
1985 – 1986	3	19	7
1995 – 2000	6	116	20

With regard to the individual mining, pastoral and pearling industries table 7.5 shows the situation. Here it would be expected that the number of events of economic significance should be below 0.63, 0.82 and 0.53 respectively for the three industries mentioned if the corollary is supported. It can be seen that on this basis the corollary to the second hypothesis is predominantly supported by the figures shown in table 7.5. Thus from both an overall and an individual industry perspective the corollary is supported. The corollary to the second hypothesis is applicable to the Kimberley region. (See also Appendix G.)

The above results demonstrate that the Kimberley region has not benefitted from any internally originating development during periods of political and economic isolation.

Table 7.5

Numbers of Events in Periods for Particular Industries

		Mining		Pastoral		Pearling	
Period	No.of Years	No. of Events	Events per Year	No. of Events	Events per Year	No of Events	Events per Year
1904/14	11	2	0.18	5	0.45	15	1.36
1920/28	9	1	0.11	0	0	1	0.11
1935/38	4	2	0.50	0	0	2	0.50
1945/47	3	0	0.00	1	0.33	1	0.33
1950	1	0	0.00	1	1.00	1	1.00
1958/59	2	0	0.00	2	1.00	0	0.00
1964/72	9	7	0.77	12	1.33	0	0.00
1978/80	3	3	1.00	1	0.33	0	0.00
1985/86	3	1	0.33	7	2.33	0	0.00
95/2000	6	16	2.67	4	0.67	3	0.50

This is inconsistent with Frank's second hypothesis. It also seems to be the case that when such isolation ceased there has been no increase in development. This is consistent with the corollary to Frank's second hypothesis. Thus the Kimberley region would seem to suffer from both the lack of development expected in a satellite region during periods when it is integrated with its metropolises and a lack of development during periods of isolation from metropolises. In short, Frank's second hypothesis is not applicable to the Kimberley whereas the corollary is applicable to the region.

Table Inspections for Specific Periods

Second Hypothesis Results confirmed

It is possible to examine by querying the database just what events occurred during the periods that the second hypothesis appeared to be valid. These periods were 1960–1963, 1973–1977 and 1981–1984. Query No 6 from appendix F can be used to show the events occurred during these periods. (The query is: This query produces a table of events between given dates but excludes certain given event type.)

The two kinds of events excluded by this query are “Labour Force” and “Count or Census” events. The results of the query will thus show the “physical” events that happened during these periods and it is from these that actual development projects or events can be identified. Of all of the events during the three periods covered by tables 7.6–7.8, when it would be expected that the region would experience its greatest economic development, the only continuing development which has not been referred to previously is event EV532. This is the establishment of Kimberley Coloustone by Dorio De Biasi to quarry the coloured sandstone rock found near Derby in 1976 for building purposes. This has not resulted in a major industrial development. It remains a small business operation to this day.

Table 7.6

Events during period 1981–1984

EV136	Infrastructure	First stage of 10 year re-development at hospital. New workshops & stores built 1983
EV590	Communications	Halls Creek line depot closed 1983
EV171	Shipping/Ports	SS Pilbara grounded near Derby Jetty. State Ships suspend service 1983
EV571	Shipping/Ports	State Ships service to Derby suspended after grounding of SS Pilbara 1981
EV573	Shipping/Ports	State Ships will no longer service Derby by sea 1982
EV574	Communications	New tower almost complete with capacity for 960 telephone channels (currently 60) Derby/Port Hedland section of microwave links cost \$6M 1981
EV575	Communications	Derby /Kununurra microwave link costs \$10M. Part of world ' s longest solar powered microwave system 1983
EV75	Communications	STD via a microwave system now available replacing 4 wire system 1982
EV363	Communications	Microwave system extended to Wyndham/Kununurra 1983
EV200	Mining	CRA subsidiaries Ashton Mining Group and WA Mine Trust form joint venture 1982
EV205	Mining	Smaller diamond deposit found at Ellendale – 100 Km east of Derby 1983
EV206	Mining	No 1 well drilled at Blina - 105 Km east of Derby 1981
EV208	Mining	Reserves:- 216000 KI at Blina and 180000 KI at Sundown (80 Km S.E of Derby) and West Kara (33 Km E of Derby) 1983

EV209	Pastoral	Cattle killed 24810 1984
EV210	Pastoral	Cattle killed 38720 1984
EV211	Pastoral	Live cattle exports 12812 1984
EV212	Pastoral	Cattle sold in WA or interstate 66377 1984
EV576	Infrastructure	Remote area television for Broome, Derby, Wyndham, Kununurra, Halls Creek, Koolan Island, Cockatoo Island, Fitzroy Crossing. 50 places included nationally. Co-ax to Carnarvon -> satellite via O.T.C. 1981
EV583	Infrastructure	Aussat satellite brings commercial television to Kimberley 1983
EV572	Shipping/Ports	Derby Council has received no response from Premier O'Connor about development of port at Black Rocks 32 km north of Derby along King Sound Maximum ships at Broome/Derby 20,000DWT but at Black rocks 60,000DWT and 100,000 on single bouy mooring 1982
EV308	Pastoral	Cattle exported live and slaughtered at Broome:- 8000 : 35883 1982
EV309	Pastoral	Cattle exported live and slaughtered at Wyndham:- 1000 : 68000 1982
EV310	Pastoral	Estimate (mean) Cattle Live : slaughtered at Broome for 1988:- 5000 : 42000 1983
EV311	Pastoral	Estimate (mean) Cattle Live : slaughtered at Wyndham for 1988:- 12500 : 75000 1983
EV471	Agricultural	Extensive flooding and damage to farming area at Camballin 1983
EV362	Social	Sports oval, new sports facilities and bitumen surfacing of basket ball courts funded by B.H.P. at Fitzroy Crossing 1982
EV525	Air Transport	Curtin Air Base (costing \$52M) construction commenced. Construction workforce 200 1983

EV400	Pastoral	Paper from Derby seminar on Pastoral Industry by Ernie Bridge for Primary Industry Association of W.A. - Pastoral Challenge. Basic proposal - move away from large amalgamated absentee landlord properties to smaller locally owned properties 1983
EV403	Shipping/Ports	Study of Black Rocks site - 30 kms north of Derby - as a new deep water port goes to Government 1983
EV404	Shipping/Ports	State Ships service ends after grounding of MV Pilbara. 1983
EV207	Mining	Production at Blina started. 4 wells - 130KI per day 1983
EV406	Mining	First flow at Blina of 367 degrees API oil 100 kms south east of Derby. Participants:- Home Oil Aust Ltd (27.5%); Australian Occidental Petroleum (27.5%); Alberta Eastern Gas (20%) and Vamgas Ltd (20%) 1981
EV518	Air Transport	M.M.A. becomes Airlines of Western Australia Ltd 1981
EV486	Mining	BHP ceased mining at Cockatoo Island 1984
EV202	Mining	6.2 carats of diamonds produced at Argyle 1983
EV203	Mining	11.4 carats of diamonds produced at Argyle 1984
EV204	Mining	Estimate of subsequent years at full production - 3M tonnes crushed for 25M carats at Argyle 1984
EV794	Infrastructure	Wyndham Volunteer Fire Brigade inaugurated and affiliated with W.A. Fire Brigade Board. 1981
EV795	Air Transport	Airlines of W.A. withdraws bus service between Wyndham and Kununurra. Limited service provided by local agent 1982
EV796	Infrastructure	Wyndham Fire Station completed and opened 1984

EV797	Infrastructure	Wyndham St Johns Ambulance Sub-centre construction commenced 1984
EV756	Pearling	Pearl Producers Association formed in 1982

Table 7.7

Events during period 1973–1977

EV787	Communications	Local telephone exchange automated at Wyndham 1976
EV669	Infrastructure	Further 2000 ha of land developed on Packsaddle Plain and further 5 farms released 1974
EV674	Agricultural	Cotton ceased to be a crop on the Ord River Scheme owing to insect pests 1974
EV788	Commercial	Wyndham Community Club under auspices of Shire bought the 6 Mile Hotel 1976
EV128	Agricultural	6000 tonnes of sorghum to go to Singapore via Wyndham (\$500000) 1977
EV129	Shipping/Ports	Bulk handling equipment to be ready for use by end of year 1977
EV134	Infrastructure	Children's ward upgraded 1976
EV153	Shipping/Ports	Last commercial ship visits Derby port 1973
EV600	Infrastructure	Charles Court announces new study into tidal power near Derby at cost of \$25,000 1975
EV579	Communications	PMG split into Australia Post & Telecom Australia 1975
EV580	Communications	Further 12 voice & 24 telegraph channels added to same 4 wire system as was installed in 1967 1975
EV225	Mining	CRA joins search for diamonds in W.A. 1976

EV554	Pearling	Broome again producing 60% - 70% of world's large cultured pearls. Mother of pearl shell now the (still valuable) bye-product 1977
EV691	Air Transport	Kingfisher Aviation owned by the Wirrimanu people Balgo begins operations 1974
EV360	Infrastructure	New A.I.M. hospital opened. (Old site subject to flooding in wet) Named Mindi Rardi after the ridge it is built on in Fitzroy Crossing 1976
EV366	Government	New town site for Fitzroy Crossing planned to alleviate flood problems 1974
EV369	Transport	New bridge built at Fitzroy Crossing 1974
EV517	Air Transport	M.M.A. building opened in Derby. Has freight & passenger facilities and is Airline's biggest investment in the region 1973
EV373	Infrastructure	Police station and new court house built at new Fitzroy Crossing town site near hospital 1976
EV375	Transport	Since 1961 36 new bridges built between Broome & Wyndham. Black top covers 2/3 distance 1974
EV397	Transport	Main Roads program ends in the Kimberley 1974
EV532	Commercial	Dorio De Biasi to establish new industry to quarry and process sandstone, marble and granite discovered near Derby. Jowalenga variety of stone from near Fraser River used to build new library 1976
EV446	Commercial	Streeter & Male hardware store built in Broome 1975
EV447	Commercial	Streeter & Male liquor store built in Broome 1976

EV468	Agricultural	ALCO in financial trouble at Camballin 1975
EV493	Agricultural	Ord cotton growing scheme fails & closes owing to insect plagues, low prices & low yields 1974
EV467	Agricultural	Grain & fodder sorghum produced at Camballin 1973
EV717	Commercial	National Bank Closes in Wyndham 20/02/1974 1974
EV783	Infrastructure	Community Health moves from grounds of old Native Hospital to Koojarra Street 1973
EV784	Social	New 9 hole golf course opened at 12 mile 1974
EV785	Infrastructure	Wyndham Prison opened in old hospital buildings to take prisoners from Wyndham, Kununurra, Halls Creek and occasionally Fitzroy Crossing 1975
EV786	Infrastructure	S.E.C leases Power House from Shire at Wyndham 1976

Table 7.8

Events During Period 1960–1963

EV40	Infrastructure	Ord River diversion dam nearing completion applications for 5 farms at 600 acres each received 1961
EV666	Infrastructure	Commonwealth Government agrees to share initial development. Kununurra diversion dam, irrigation and associated works and development of Kununurra township completed 1963. Cost is \$20M (Com. Govt \$12M) 1963
EV106	Pastoral	End of Air-Beef scheme with construction of Gibb River Road. Chiller trucks resulted in 50% cost reduction 1960

EV109	Pastoral	Glenroy ceased operations as non-chiller trucks take increasing live loads to Derby 1963
EV113	Commercial	Three soft drink factories operating in Derby 1960
EV39	Pastoral	Derby meatworks built & opened 1961
EV108	Shipping/Ports	New jetty planned 1962
EV131	Infrastructure	Tenders called for building of Nurses Home in Derby (Alcatraz) 1962
EV133	Infrastructure	General Ward & Out Patients/A & E added to hospital 1960
EV155	Infrastructure	Air conditioned nurses' home under construction 1963
EV156	Infrastructure	18 State Housing Commission houses being built 1963
EV157	Commercial	Large self-service store being built 1963
EV159	Commercial	Two new banks opening 1963
EV160	Transport	Loch Street converted to a dual carriageway 1963
EV161	Infrastructure	Improvements made to Derby Junior High School 1963
EV162	Infrastructure	New convent to be built behind recently built modern church 1963
EV163	Pastoral	10000 cattle sent to Wyndham 1962
EV164	Pastoral	4000 cattle sent to Wyndham 1961

EV178	Shipping/Ports	46247 tons of cargo through Derby port 1960
EV179	Shipping/Ports 1961	41645 tons of cargo through Derby port
EV586	Communications	Wyndham telephone exchange begins providing continuous service 1960
EV589	Infrastructure	New Post Office (under consideration since 1958) completed in 1961
EV553	Pearling	Luggers again sail from Broome but with modern hookah gear replacing deep diving suits 1960
EV552	Pearling	Industry re-bounds on production of cultured pearls from Kuri Bay 1960
EV452	Pearling	Plastic replaces pearl shell for buttons. Only 6 luggers now operating at Broome. 1963
EV520	Air Transport	Dampier Mining Co starts air runs to Koolan and Cockatoo Islands 1960
EV521	Air Transport	235,000 pounds (\$470,000) to be spent on Derby airport by Dept of Civil Aviation 1963
EV391	Pastoral	Construction of good beef roads for chiller trucks ends Air-beef Scheme. Original cost comparison in 1948:- Road \$28 per ton; air \$12 per ton 1962
EV513	Air Transport	Derby airport E - W runway sealed 1963
EV508	Air Transport	Ansett Transport Industries take a shareholding in M.M.A. 1963

EV158	Air Transport	Airstrip being sealed to make it an all weather field 1963
EV491	Agricultural	Cotton industry starts on Ord River Scheme 1963
EV105	Agricultural	Completion of barrage on Fitzroy River at Camballin 1400 acres irrigated for rice & sorghum 1960
EV38	Agricultural	Camballin Irrigation Area opened by Minister 1961
EV714	Commercial	National Bank opens in Derby 31/10/1962 1962
EV716	Commercial	National Bank opens in Wyndham 26/07/1961 1961
EV753	Pastoral	Broome Meatworks re-built on a larger scale 1963
EV774	Agricultural	Diversion Dam at Bandicoot Bar completed 1962
EV775	Commercial	New shops and housing established at 3 mile area of Wyndham 1962

No other projects or events except for those in the mining, pastoral and pearling industries, to which reference has been made extensively previously, have occurred during the periods when the greatest development would be expected according to Frank's second hypothesis. Thus, on this analysis, the second hypothesis would seem to fail in practical terms even though it applies statistically over these three periods. The empirical evidence thus also supports the inapplicability of the second hypothesis so far as the Kimberley region is concerned.

Corollary Results Confirmed

It is also possible to examine the periods when the corollary to the second hypothesis is, apparently, not applicable. During the periods 1995–2000 and 1964–1972 it might be expected that the region's metropolises would not be inhibiting development according to the corollary to Frank's second hypothesis. Development projects would, then, be most likely to happen during these periods.

Table 7.9

Events During Period 1964–1972

EV667	Infrastructure	31 farms irrigated on Ord Scheme 1966
EV668	Infrastructure	Ord River Dam construction finished at cost of \$22M. 12 month growing season and total of 62,000 ha irrigable possible 1972
EV45	Infrastructure	Funds requested for completion of Ord Scheme to build main dam and irrigate 150000 acres 1964
EV47	Mining	Bauxite discovered near Admiralty Gulf 1968
EV50	Social	First Boxing Day Sports held at Spinnifex Hotel 1969
EV51	Mining	Drilling on WAPET leases by Oil Drilling and Exploration (WA) Pty Ltd 30 km east of Derby 1967
EV52	Government	Shire offices built of Mt Jowalenga sandstone 1970
EV53	Infrastructure	New power station to be built at Derby 1965
EV44	Agricultural	19 farms allocated on Ord project 1964
EV41	Pastoral	Broome meatworks re-modelled : capacity equal to whole of West Kimberley turn-off 1964
EV110	Pastoral	DEMCO fully operational 1966
EV111	Government	Shire-Civic offices finished in Derby of Kimberley Coloustone 1964

EV112	Commercial	Rustys General store & supermarket opened in Derby 1964
EV119	Tourism	New caravan Park at Derby 1969
EV125	Pastoral	ALCO Ltd buy Louisa Downs, Bohemia Downs, Kimberley Downs, Napier Downs, Liveringa, Mount Jowalenga, Kilito with Camballin irrigation project. 4270000 acres and \$18 million 1969
EV126	Commercial	Club Hotel re-named Spinnifex Hotel in Derby 1969
EV116	Mining	Lead mined since 1947 but not exported via Derby before 1964 1964
EV117	Mining	Zinc mined since 1947 but not exported via Derby before 1964 1964
EV118	Mining	Silver mined since 1947 but not exported via Derby before 1964 1964
EV115	Mining	50 Million tons of steaming coal reserves at Liveringa (Theiss Bros exploration) 1964
EV122	Pastoral	12075 cattle processed at DEMCO 1969
EV123	Pastoral	1539 bales of wool exported from Derby. Last wool shipment 1969
EV124	Pastoral	42000 Sheep replaced by cattle by ALCO Ltd 1969
EV120	Pastoral	Australian Land & Cattle Co take over Camballin irrigation project to concentrate on feed-lot cattle fattening 1969
EV121	Infrastructure	Numbala Nunga Nursing Home opens in Derby

		1969
EV107	Shipping/Ports	New jetty finished in Derby 1964
EV43	Shipping/Ports	New jetty under construction also in Broome 1964
EV42	Shipping/Ports	New jetty under construction 1964
EV620	Infrastructure	La Rance tidal power project in France expected to be completed in 1966 1964
EV46	Infrastructure	Nursing home to be built at site of old native hospital—Numbala Nunga—assemblies of Presbyterian Church to manage - 32 beds - 3 staff houses in Derby 1968
EV150	Shipping/Ports	New 577 metre steel & concrete jetty constructed in Derby 1964
EV151	Pastoral	9688 cattle exported and 9543 slaughtered at DEMCO 1964
EV152	Shipping/Ports	Old wooden jetty in Derby demolished 1966
EV154	Shipping/Ports	Trucks replace tramway. Latter had 19 H-class & 13 G-class open wagons, 22 flattop wagons and 1 passenger wagon in Derby 1966
EV591	Infrastructure	6 DB, 2000 watt national regional broadcasting station costing \$75,000 relays A.B.C. from Perth to Derby, Koolan Island & Cockatoo Island begins broadcasting 30/11/1967 1967
EV592	Infrastructure	Regional broadcasting station costing \$75,000 relaying A.B.C. from Perth begins broadcasting 31/10/1967 1967
EV601	Infrastructure	French consultants Sogreah find tidal power at Secure Bay and Walcott Inlet not

		economical owing to high civil engineering costs 1964
EV57	Tourism	54 berth caravan park to be built at Derby Permanent structures to be of Jowalenga sandstone 1967
EV168	Shipping/Ports	Old Jetty in Derby burnt down for demolition. Piles blasted and dragged 1966
EV54	Communications	4 wire /24 voice channel carrier system over 600 miles between Derby & Wyndham with 3 channel systems between intervening towns. 2 tech staff & 2 line staff added 1967
EV582	Infrastructure	A.B.C. radio commissioned new service to Derby replacing sho 1967
EV587	Communications	Radio telephone Wyndham/Derby opened 1965
EV695	Commercial	Commonwealth Bank opens in Kununurra 1971
EV49	Transport	High level bridge over Fitzroy River to be built at Fitzroy Crossing 1967
EV372	Infrastructure	New court house at Fitzroy Crossing 1972
EV519	Air Transport	New hangar built at Derby by Dampier Mining Corp for Twin Pioneer aircraft on Koolan and Cockatoo Island runs 1965
EV55	Tourism	Boab Inn to open Derby at year end—6 double & 6 single rooms 1966
EV392	Pastoral	Major problems in beef industry. 20% of herd Of 120000 die in the dry season. Turn off is only 12.3%. Problem is lack of local market for store cattle.

		1968
EV394	Pastoral	New U.S. requirements force expenditure at Wyndham meatworks - \$150,000 1970
EV393	Pastoral	New U.S. requirements force major expenditure at Broome meatworks—\$50,000 1970
EV395	Pastoral	New U.S. requirements force expenditure at Derby meatworks - \$50,000 1970
EV396	Transport	Main Roads spend \$3M (inc \$750,000 from Commonwealth) on Kimberley beef roads 1965
EV531	Government	Shire Clerk - A Ridge -discovers stone suitable for building Derby Civic Centre and Shire offices 56 miles from Derby near Fraser River 1964
EV420	Shipping/Ports	Construction of deep water jetty at Entrance Point started at Broome 1964
EV421	Shipping/Ports	Indonesian confrontation with Malaysia prompts new port facilities at Wyndham & Derby as well as Broome 1964
EV422	Shipping/Ports	New Broome jetty at Entrance Point completed 1966
EV423	Shipping/Ports	Old Broome jetty destroyed by PWD after 77 years service 1967
EV514	Air Transport	Visual approach system installed at both ends of main runway and major areas re-sealed twice in past 12 years 1969
EV100	Mining	Koolan Island deposits mined (iron ore) 1965

EV492	Agricultural	23 farms and 4 share farmers get 777 lbs per acre from 12,500 acres. More farmers (27 in all) to try in 1967. 1966
EV465	Agricultural	Liveringa/Camballin bought by U.S.A. interests—Australian Land & Cattle Company. 1968
EV466	Agricultural	Inkata feedlot and yards built at Camballin 1971
EV707	Infrastructure	Power generation and supply taken over by SEC (later Western Power) in Broome 1972
EV710	Infrastructure	Kununurra power supply taken over by SEC (later Western Power) in 1970 1970
EV709	Infrastructure	Halls Creek power supply taken over by SEC (later Western Power) in 1970 1970
EV781	Infrastructure	New Regional Hospital opened at Wyndham 1970
EV718	Commercial	National Bank Agency opens in Kununurra 26/06/1964 1964
EV755	Infrastructure	Nulungu College for young aborigines opened in Broome 1972
EV719	Commercial	National Bank Agency closes in Kununurra 16/07/1964 1964
EV720	Commercial	National Bank opens in Kununurra 17/7/1964 1964
EV754	Social	First Shinju Matsuri (Festival of the Pearl) held in Broome 1970

EV104	Communications	First land line established in Kimberley 1965
EV762	Government	Referendum - indigenous people allowed to vote 1967
EV776	Commercial	Wyndham Hotel demolished and new building put up 1965
EV777	Transport	Bitumen road between Wyndham & Kununurra completed 1966
EV778	Commercial	New Wyndham Hotel opened 1966
EV779	Commercial	Government sold meatworks to private enterprise after 48 years of operations 1967
EV780	Infrastructure	New Post Office opened at 3 mile as Wyndham Post Office. Old town now known as Wyndham Port 1968
EV782	Shipping/Ports	State Shipping Service withdraws passenger service from Fremantle to Pilbara and Kimberley 1971

Table 7.10

Events During Period 1995–2000

EV684	Commercial	Only distillery in WA & also only distillery licensed to make wine & beer on same premises is making cane spirit at The Hoochery—1000 - 750 ml bottles per week retailing at \$35 per bottle 2000
EV670	Infrastructure	30 MW hydro-electric power station constructed for Wyndham-East Kimberley. 1996
EV672	Agricultural	First full season crush on the Ord scheme undertaken. Can be expanded to service cane from 7500 ha 1996
EV673	Agricultural	Further 2000 ha planted with sugar cane on Ord Scheme 1995
EV676	Agricultural	Shire of Wyndham-East Kimberley disappointed with corporate emphasis of Ord Stage 2 and small number of family size farms to be available 1998
EV677	Agricultural	Wesfarmers and Marubeni to develop Weaber,; Keep River and Knox Creek Plains as a single 27,000 ha cane farm 1998
EV679	Infrastructure	Main Roads to spend \$10M on roads in O.R.I.A. 1997
EV680	Agricultural	Trial shipments of melons in sea container to Fremantle funded by WA Government at \$25,000. Crop worth \$12M & whole cucurbit crop worth \$25M mostly sold in WA and eastern states 1998

EV682	Agricultural	CSR sells all its Ord interests to its main customer Cheil Jedang Corp of South Korea. 2000
EV683	Aquacultural	Ord-Bonaparte Research Program to be funded by Land & Water Resources Research & Development Corp, C.S.I.R.O. and Fisheries Research and Development Corp up to \$7.5M 2000
EV233	Mining/Tourism	Tourist operations and Strikers Resources clash over proposal to build barge landing at Faraway Bay and 40 km of roads. 2000
EV610	InfrastructurePrime	Minister Howard to write to W.A. State Government to suggest a joint study into tidal power in general but not into the Derby proposal specifically 1999
EV612	InfrastructurePrime	Minister Howard suggests only modest financial support for tidal power - nothing like \$120M 1999
EV613	InfrastructureGovernment	steering committee rejects Derby tidal project 1999
EV611	InfrastructureWA	Cabinet decides in favour of Equity Energy Corp/Woodside Energy gas fired power stations for Kimberley—but tidal project would be evaluated again by Minister Barnett before final decision made 1999
EV614	InfrastructureDr Sue	Graham Taylor - President of Conservation Council of W.A. says Derby tidal power project is irresponsible because too little is known about the site area 1999
EV615	InfrastructurePrivate	group may invest \$80M to fill funding gap for Derby tidal power project 2000

EV616	Infrastructure	Commonwealth Government to appoint independent consultants to look at Derby tidal power project 2000
EV617	Infrastructure	Dr Gallop of ALP says Derby tidal power project will go ahead if ALP elected in 2001 State election 2000
EV618	Infrastructure	Derby tidal power not put on short list of projects to supply power to West Kimberley 1999
EV619	Infrastructure	Professor Peter Newman of Murdoch University has attacked EPA rejection of Derby tidal power project and has lodged an appeal against the decision 1999
EV622	Infrastructure	Court Government says it will support a small 10 MW tidal power plant for Derby with gas for Broome & Fitzroy Crossing costing \$95M. Small plant may not be viable 2000
EV130	Agricultural	Serendipity Herb Farm operating in Broome 1997
EV623	Infrastructure	KDC supports tidal power project at Derby 1999
EV127	Agricultural	Ord & Broome plus other areas in WA produce 10% of Australian crop of bananas. Growing time half that of temperate areas (9 months compared with 18 months) 1997
EV625	Tourism	4 finalist for Sir David Brand Award were all from Kimberley:- Slingair Heliwork; El Questro; Kimberley Wilderness Tours; Eco Beach Wilderness Retreat. 2000
EV626	Tourism	23 of 78 finalists in tourism awards were from Kimberley in 1999

EV627	Shipping/Ports	Premier R. Court opens Derby Export Facility. Cost is \$15M. Western Metals will export zinc sulphide & lead sulphate concentrates 1997
EV628	Mining	Western Metals approve go-ahead for Kapok zinc/lead mine at Cadjebut. This is to replace original mine which is still economic 1997
EV630	Mining	Mill shutdown at Cadjebut. 40 jobs lost 2000
EV631	Mining	Milling operations to be taken on at Pillara which will get a \$9.6M upgrade by January 2001 2000
EV629	Mining	Western Metals to develop Pillara (Blendevale) mine 40 km S.E. of Fitzroy Crossing. This is Western Mining's 4th Kimberley mine. 1997
EV632	Mining	Goongewa mine (Western Metals) to close at end of 2000 2000
EV633	Mining	Kutarta mine (Western Metals) not to be developed for several years 2000
EV634	Mining	Western Metals labour force to fall from 420 to 385 on closure of Goongewa mine 2000
EV139	Infrastructure	Still no funds for demolished general ward and allied health building works 2000

EV596	Infrastructure	Broome to receive SBS 2000
EV598	Infrastructure	Cost of tidal power project would be \$335M. Cheaper than gas over 27 years but not over 18 years. 2000
EV599	Infrastructure	Public opinion in Derby & environs for tidal power. Tidal Energy Australia (TEA) and Leighton Contractors have submitted proposals to State Government. Derby Resident Action Group and Derby Ratepayers Association oppose project. Project would have 120 year life 2000
EV602	Infrastructure	Independent Commonwealth Government study into tidal power, believed to be favourable, will not be made public 2000
EV603	Infrastructure	Prof Graham Doborn of Acadia Centre for Estuarine Research, Acadia University, Nova Scotia says more research needed before Derby tidal power project can be supported 1998
EV604	Infrastructure	E. P. A. rejects Derby tidal power proposal 1999
EV166	Tourism	188000 people visit Derby Jul - Dec Derby 3rd most visited town - 38100 visitations 1997
EV605	Infrastructure	Cost of Derby tidal power project estimated at \$175M 1998
EV170	Shipping/Ports	Derby-West Kimberley Shire takes over ownership of port and barge operation for Western Metals Corporation commences. Barge company tows product barges to larger vessels in King Sound 1997

EV180	Social	Up to 24 prisoners housed at Bungarun (old Leprosarium) will work in and round Derby but will not replace paid employees 1999
EV606	Infrastructure	Plans for a tidal stream power plant at Wyndham. Currents between Melville Island and Bathurst Island similar to those in Cambridge Gulf. Cost estimated at \$60,000 for 15 - 40 Kw output 1998
EV607	Infrastructure	Richard Court (Premier) announces that cost of Derby tidal power project has gone up from just over \$100M to \$300M. 1999
EV608	Infrastructure	W. A. Government says that Derby tidal power proposal is environmentally sound in spite of EPA earlier rejection 1999
EV609	Infrastructure	Derby tidal power project cost is now \$360M and has a shortfall of \$120M which it is hoped would be filled by Commonwealth Government Renewable Energy Fund which has assets of \$321M. No assistance can be given without State Government approval. 1999
EV186	Tourism	30 extra bays to be built at Fitzroy River Lodge Caravan Park (currently 127 bays). This is a Shire park and is kept vacant due to risk of flooding except during tourist season 2000
EV187	Commercial	Derby Business Enterprise Centre re-opens 2000
EV188	General Event	Value of general economic activity of region (exports about \$900M) 1998
EV189	Government	Curtin RAAF Base ready for use as a detention centre for asylum seekers 1999

EV217	Mining	Value of minerals and oil production \$560M 1997
EV218	Mining	Value of minerals and oil produced \$631M 1998
EV219	Tourism	Visits to region increasing by average annual rate of 5.6% over past 5 years 1999
EV227	Mining	Strikers Resources spend \$7M on diamond exploration in past 6/7 years. Others involved Rio Tinto, De Beers, Diaro Explorations & Australian Kimberley Diamonds 1998
EV228	Mining	Argyle production started in 1985. It is 130 km south of Kununurra; 500 employees on 2 weeks on 2 weeks off roster of 12 hour shifts Ansett 75 seat jet hired at \$7M per annum 1999
EV229	Mining	Exploration to inject \$10M-\$15M into Kununurra in next 6 months. Strikers Resources has 5000 sq km of tenements in N Kimberley and has spent \$14M in last 8 years and will spend \$6M in next 6 months 2000
EV230	Mining	De Beers launch \$522.1M bid for Ashton Mining 2000
EV232	Mining	De Beers offer of \$2.28 a share for Ashton Mining does not have FIRB nor Belgian Competition Authority approval. Rio Tinto's offer of \$1.85 a share has both. 2000
EV234	Mining	De Beers withdraw offer for Ashton Mining 2000
EV231	Mining	Kimberley Diamond Co apply for licence to explore Ellendale field discovered by Argyle Diamonds in 1976. Claim is that since it

		has not been worked Argyle's rights expired in 1991 1999
EV561	Pearling	\$3.8M allocated to research management by State Government (\$100,000 to pearl oyster sustainability; \$150,000 to pearl shell stocks) 1999
EV562	Aquacultural	\$4.2M allocated to aquacultural research by State Government 1999
EV564	Pearling	Value of exports of pearls \$200M (nationally \$210M). Exports go to Japan, US, Hong Kong & Europe) 2000
EV565	Pearling	16 WA licences allow for total WA quota of 922 units (1000 shells per unit - 572 wild 350 hatchery) of which Paspaley Pearls has 36% & M.G.Kailis has 18% 2000
EV566	Aquacultural	Southern Cross Aquaculture Pty Ltd due to start on 1000 ha site near Wyndham 2000
EV567	Aquacultural	Limited EPA approval for initial stage of Ian Crimp's Kimberley Prawn Company. Has taken 3.5 years to get this far 1998
EV568	Aquacultural	Consultative Environmental Review of K.P.C. by Derby Residents Action Group concludes proposal should not proceed further in present form and should not proceed in any form in Doctors Creek area (V & C Demeniuk Research Group) 1998
EV535	Shipping/Ports	Record shipments of cattle through Broome - 84,097 2000

EV536	Shipping/Ports	Trade through Broome port increased 60% over 1999. Cattle represent 38% of ports turnover 2000
EV537	Pastoral	Total regional cattle exports for 1999:- 90,000 2000
EV347	Agricultural	Fitzroy River Dam issues discussed - one and three dams - Dimond Gorge and that plus Margaret & Leopold dams 1996
EV348	InfrastructureDerby	Hydro-Electric-Tidal Energy Australia Ltd— Environmental assessment (includes transmission line construction report 1996
EV350	Shipping/Ports	Western Metals proposals to ship zinc/lead concentrates via Derby (currently shipped via Wyndham) 1999
EV522	Air Transport	Pearl Aviation closes in Broome 1999
EV524	Air Transport	Pearl Aviation loses Coast Watch contract to National Jet. Former reduces from 5 aircraft & 30 people to 1 & 4 for Western Metals contract only 1996
EV526	Air Transport	Northwest Airlines & Broome Aviation commence regional service. Exmouth, Karratha, Port Hedland, Fitzroy Crossing, Halls Creek & Kununurra. Govt Subsidy of \$75,000 pa 2000
EV527	Air Transport	Regional Airport Development Scheme. \$25,000 for Balgo 2000
EV528	Air Transport	Regional Airport Development Scheme. \$40,000 for Billiluna for runway lighting 2000

EV530	Air Transport	Regional Airport Development Scheme. \$34,590 for Fitzroy Crossing for pilot activated runway lighting 2000
EV506	Air Transport 1995	Flights start from Broome to Bali
EV399	Pastoral	Live cattle exports from Kimberley - 73,764 1998
EV401	Pastoral	Plan for a sustainable Kimberley beef industry 1999
EV529	Air Transport	Regional Airport Development Scheme. \$46,641 for Mulan for runway lighting 2000
EV533	Pastoral	Indigenous Land Corporation paid \$8M to Great Northern Pastoral Co (of Melbourne) for a property bought by the latter a year earlier for \$1.3M after GNP had leased it for 2 years. GNP holds management contract and right to share of profits. Enquiry to be held 2000
EV534	Shipping/Ports	Record shipments of cattle through Broome - 73,275 1999
EV501	Aquacultural	90,000 fingerlings of barramundi raised at Broome aquaculture Park for Lake Argyle Fisheries from larvae imported from N.T. 2000
EV503	Aquacultural	60 tonnes of barramundi produced by Lake Argyle Fisheries -expected to double in 2000 1999
EV402	Agricultural	New approach to cattle and agriculture at Birdwood Downs by Robyn Treadwell 1997
EV504	Aquacultural	Kimberley Prawn Company (Ian Crimp) still waiting to hear from E.P.A., Fisheries W.A.

		D.O.L.A on proposed prawn farm development at Doctors Creek near Derby 2000
EV414	Agricultural	Ostrich farm opened 30 km east of Broome. Paul & Karen Higgins 2000
EV415	Commercial	Flying school opens at Broome. Amity Aviation. Only one in Kimberley 2000
EV416	Tourism	Broome sanctuary Resort to be opened in 2002. 100 tourist apartments & 60 residential suites (@ \$140,000 ea). 200 bed backpacker facility to come later. 2000
EV424	Shipping/Ports	First ever new crane arrives at Broome for jetty 1999
EV443	Tourism	Eco Beach Resort opens north of Broome 1998
EV444	Tourism	Eco Beach Resort north of Broome destroyed by cyclone Rosita 2000
EV449	Commercial	Streeter & Male supermarket closes. Drapery, haberdashery & news agency continue in main store premises. Supermarket had over 200 customers when it closed 1998
EV488	Agricultural	Western Agricultural Industries granted MOU with W.A. Government to investigate feasibility of cotton cropping on 20,000 ha of Nita Downs and Shamrock Stations 1998
EV489	Agricultural	W.A.I. granted extension of original 1998 MOU to investigate feasibility of cotton cropping on Nita Downs and Shamrock Stations 2000

EV490	Agricultural	W.A.I. would not dam Fitzroy River but cotton needs 93% of La Grange ground water. Would look at taking Fitzroy River surface water and at cropping corn, chickpeas, lucerne. sorghum and horticultural crops 1998
EV495	Agricultural	12 farmers have planted 90 million plants on Ords black soil plains 1999
EV496	Agricultural	380 ha produced 2951 bales of cotton & cotton seed valued at \$1.8M. Seed sold to Japan as cattle feed. 1998
EV497	Agricultural	Cotton Gin at Kununurra a joint venture of Colly Farms and Ord River District Cooperative 1999
EV498	Aquacultural	Call for expression of interest in aquaculture on Lake Argyle 2000
EV500	Aquacultural	Cooperative project between Fisheries W.A. and Kimberley College of T.A.F.E. produced 60,000 larvae of barramundi at Broome aquaculture Park 1997
EV705	Infrastructure	30 MW hydro power station constructed as part of Ord Scheme to supply power to Argyle Diamond Mine and to provide additional power to Western Power for Kununurra and Wyndham 1996
EV802	Commercial	Wyndham Crocodile Farm received B Class zoo license 1996
EV765	Government	Native Title Amendment Act passed 1997

By inspection of tables 7.9 and 7.10 it can be seen that no major new projects other than those already described occurred during the periods covered by these tables. This is during periods when, statistically, the corollary to Frank's second hypothesis was not applicable and thus self-perpetuating industrial development might be expected to occur. The corollary to the second hypothesis would, therefore, seem to apply in practical terms even though it is not supported statistically over these two periods. Empirical evidence thus supports the applicability of the corollary to the second hypothesis so far as the Kimberley region is concerned.

Summary

The applicability of Frank's second hypothesis has been examined both statistically and by examination of the events that have occurred during the periods identified as relevant. It is clear that it is not supported so far as the Kimberley is concerned. That is, there has been no major capitalist industrial development in the region during periods when, as a satellite area, it has been temporarily politically and economically isolated from its metropolises.

The development being looked for in the region was in addition to the three "traditional" activities of mining, pearling and the pastoral industry and of a type which might produce sustainable development particularly in the form of secondary industries and services. None of the continuing industries in the region have produced that kind of development in the last one hundred years. This kind of development might have been expected according to Frank's second hypothesis.

The corollary to Frank's second hypothesis suggests that on the resumption of strong metropole/satellite ties any development of a self-supporting and sustainable nature might not be expected to occur. To the extent that no such development has occurred in the region during periods when metropole/satellite ties have been resumed or are at their strongest, the corollary is supported by the history and situation in the Kimberley.

Conclusion

Frank's second hypothesis and its corollary have been examined with respect to the Kimberley region by the use and manipulation of information contained in the Kimberley database. This has produced the result that the second hypothesis is not supported but that the corollary to it is supported. This result suggests and the history of the region confirms that self-supporting, sustainable development has not occurred in the region over the past one hundred years.

The mining, pearling and pastoral industries are not self-supporting and the first of these cannot, in the long term, be sustainable. The mere opening of new mining ventures does not make mining a sustainable development even though operations can be seen to be possible beyond many generations.

This lack of support for Frank's hypotheses as described in chapter 6 and in this chapter does not mean that explanations for the lack of development in the region cannot be sought from dependency theory. The Kimberley's history and its present situation are consistent with and capable of explanation according to the principles and concepts of dependency theory as was shown in chapter 5. There is no inconsistency in these findings. Frank enunciated his hypotheses, as they occurred to him in his studies of South, Central and Latin America, with respect to the influences of capitalism on underdeveloped areas and as possibly productive paths for future research. They were not given as a *sine qua non* for the usefulness or validity of dependency theory. The inapplicability of the hypotheses, other than the corollary to the second hypothesis, with respect to the Kimberley does not mean that they would also be invalid if a different area were the subject of investigation. Thus, except to the limited extent mentioned above with respect to the corollary to the second hypothesis, this hypothesis, like the other four, does not add to the understanding of the development experience of the Kimberley.

CHAPTER 8

CONCLUSION

Objectives

The objectives now are to review, briefly, the previous seven chapters and to look for pointers to the future. It has been stated earlier that dependency theory was never intended to be predictive. However, some writers have indicated that ways forward can be found in the theory. There also follows some contemporary ideas on how the region might progress towards self-supporting sustainable development.

The Review

The first chapter established the parameters for this study and outlined the methodology. The ultimate objectives are re-stated below:

It was hypothesised that the "historical and structural approach" (Frank, 1992, p 112) suggested by Frank, if applied to the Kimberley region of Western Australia, would generate substantially the same hypotheses that Frank's work in South, Central and Latin America had suggested to him and that this would help to explain the history and current state of development in the Kimberley. It was also hypothesised that dependency theory could explain the past and present development situation in the Kimberley independently of the hypotheses.

The Questions

The research questions were:

Can development/underdevelopment in the Kimberley region be understood by reference to dependency theory and does this theory then point to ways to achieve further/improved development in the region? It was proposed that the

central theme of dependency theory, the core-periphery structure, has been and is a major factor in determining the type of development that has occurred and is now happening in the Kimberley. The secondary question was: Do Frank's five hypotheses apply to or are they generated by the situation in the Kimberley now or over the past, approximately, one hundred years?

The Methodology

An integral part of the methodology was to keep the detail of the Kimberley and the theory alternating in the text. This was simply to maintain a balance between the region and its people and the theory. It is in the comparison of the facts with the theory that explanations and answers have been sought.

The Past

The geographical position, physical features, climate and history of the Kimberley region were set out in chapter 2 as was a method of collecting facts about development. This serves as a backdrop to the whole study. It confirmed that the Kimberley is a "live" or "action" phenomenon and not merely a static, apparently now unchanging, archaeological remain or a pathology specimen to be examined and forgotten. Much more has occurred in the Kimberley than the features that have been chosen as salient and typical for comparison with the details of the economic theory being applied. Also much more is now happening in the region. The highlighted features are, however, factual and representative of the region and its history. The database described in chapter 2 is a unique presentation of the history of the Kimberley. It is a tool that has proved useful in this study and, as was mentioned earlier, one that could be adapted to many other kinds of enquiries about the Kimberley and to other regions.

Chapter 3 described the major long-standing elements of the Kimberley. This included the people and its three persisting industries. The long-term demographic profile of the region was established. Also the relationship of the mining, pearling and the pastoral industries with the rest of the world was described. This collection of information relevant to the Kimberley has not previously been gathered together in one place.

Explanations Using Dependency Theory

The existence of underdevelopment was established in chapter 4. Also introduced in chapter 4 were social parameters such as health, education and political aspects of life which can also be considered as components of the holistic approach to an assessment of development and underdevelopment adopted by dependency theory. An examination of development issues from an ethnic or aboriginal background was mentioned in this chapter but not pursued in depth. The Kimberley has always been a cosmopolitan area and in general relations between the many ethnic groups have been harmonious. There have always been and still are political, business and social leaders from all groups. Race is not an issue so far as dependency theory is concerned except in the broad social terms of the holistic approach that it brings to development theory.

It is also the case that the arrangements in land ownership currently resulting from native title claims may yet have to be varied for development potential to be realised (Duncan, 2003, p 316). The particular situation of the indigenous population from this point of view may be considered for the moment as a “work in progress” so far as development in the Kimberley is concerned. This situation may yet fit within the parameters of dependency theory. This matter was not examined extensively because it was relevant to the Kimberley only in the last nine of the one hundred years being investigated. In that short period the practical effects of native title legislation did not become clear. Dependency theory was also introduced in very broad terms in chapter 4.

Dependency theory took initial precedence in chapter 5. The major tenets of dependency theory were then applied to the Kimberley using the region's main and enduring features.

Investigating the Hypotheses

Frank's five hypotheses were examined in chapter 6 albeit with less than a full analysis of the second hypothesis and the corollary to it. Consideration of the latter items was completed in chapter 7. Also selected in chapter 6 was the

proxy used to indicate periods of political and economic isolation of the Kimberley from its metropolises.

The database described in chapter 2 is used in chapter 7 to examine Frank's second hypothesis and the corollary to it. The principal raw data tables of the database are reproduced in appendix E. The queries which have been used to manipulate it are given in appendix F. The proxy series mentioned above is displayed in chapter 7. Tables derived by use of some of the queries that are listed in appendix F are set out in chapter 7.

A succinct summary of the results with respect to the five hypotheses and whether or not they are generated by this study of the Kimberley or are applicable to it is provided in tabular form in table 8.1.

Table 8.1

Frank's Hypotheses and the Kimberley

Frank's Hypotheses	Generated by Studying the Kimberley and Applicable to the Region
Number 1	No
Number 2	No
Corollary to Number 2	Applicable not Generated
Number 3	No
Number 4	No
Number 5	No

Results of the Investigation

The results of this investigation were twofold. Firstly, it was found that dependency theory does explain the past and present situation with respect to development, underdevelopment and the development of underdevelopment in the Kimberley region. Its ability to assist with the future is considered below.

Secondly, the examination of the history of the Kimberley region of Western Australia did not suggest the same hypotheses that occurred to Frank in his studies of South, Central and Latin America. To the extent that the corollary to the second hypothesis would seem to be applicable merely re-enforced the fact that the Kimberley was poorly developed.

The failure to generate such hypotheses is not fatal to the proposal that dependency theory can explain the situation in the Kimberley. In chapter 1 it was mentioned that the hypotheses were developed by Frank in relation to his work on the penetration of underdeveloped areas by the capitalist system rather than on dependency theory per se. The applicability of the hypotheses to, or, their generation from the study of a region was not suggested by Frank as a sine qua non of the efficacy of dependency theory. It was, therefore, possible to consider separately the usefulness of dependency theory and the hypotheses in explaining the development experience of the Kimberley. It was also emphasised in chapter 5 that the hypotheses are extensions to Frank's core dependency theory. Any complete investigation of the development status of a region by reference to dependency theory should, therefore, include a consideration of the five hypotheses. However, dependency theory and the hypotheses are neither necessarily mutually supportive nor exclusive. In the case of the Kimberley consideration of the five hypotheses did not add to the understanding nor further explain the development experiences of the region.

The satellite status of the Kimberley was the major reason for the lack of self-sustaining industrial development. Dependency theory applied to the Kimberley did offer explanations for the lack of development of this kind. It was the satellite status of the region that had discouraged and continues to prevent the establishment of secondary industries to support the important mining, pearling and the pastoral industries.

The Present

The holistic approach of dependency theory also suggests that, in many spheres, the Kimberley is an underdeveloping area. It is not keeping pace with

the rest of the state and the nation in areas such as health, education and political representation. The ability of the local population to make decisions which might affect development has never been great and it is constantly being eroded. Decisions are made in Perth and Canberra rather than in the Kimberley.

It was still the policy of the then current State Government led by Dr Gallop to pursue "one value one vote" changes to the Electoral Act. This has had the effect of further diminishing representation for non-metropolitan areas in the state parliament. Recently implemented developments in the health field are typical of state-based administration being imposed upon the region (Country Health Services Review, June 2001) . The movement of health personnel from Derby to Broome have had a major effect on the economy of Derby without enhancing much either the economy of Broome or the delivery of health services. The cultural impact of this change is extensive but is apparently neither appreciated nor understood by the decision-makers in Perth. Culturally and tribally Derby is the main indigenous centre of the west Kimberley region. Any diminution, actual or perceived, of health services in Derby is very disturbing to the whole of the population of the west Kimberley. This was clearly demonstrated at a public meeting, attended by the then State Minister for Health, Mr Kucera, held in Derby on 8th June 2002.

Recent proposals to excise from grazing leases areas which support activities other than the pastoral purpose for which the lease was granted is further evidence of the development of underdevelopment (State Line, 2003). During poor seasons many graziers have introduced tourist activities to supplement their incomes. Such activities may be as minor as allowing overnight camping in woolsheds or as major as tourist ventures such as that at El Questro in the east Kimberley. The latter provides for accommodation ranging from basic camping to high quality hotel rooms with all of the associated facilities. The proposal would prevent pastoralists from pursuing such activities and may well render some properties economically unviable.

The opportunity for tourists to stay at working stations and the ability of pastoralists to bridge the poor returns of bad seasons and thus keep the stations going would both be lost. Neither tourism nor the pastoral industry can benefit from this State Government proposal.

In short the situation in the Kimberley does not generate hypotheses similar to those which Frank derived from his studies in South, Central and Latin America but dependency theory is useful in explaining both the historical and current state of development in the Kimberley. As has been mentioned above these are not considered to be contradictory findings. It also points to the region currently developing underdevelopment.

The Future

This section considers the future as it has been seen by a number of writers on dependency theory. It may also suggest some directions for future study. Some of the ideas mentioned below could, perhaps, have been introduced at an earlier stage but the predictive capability of dependency theory was not a major factor in determining its usefulness in explaining the development situation in the Kimberley.

Dependency theory is not generally considered to be predictive in the way that many scientific theories need to be to make their point. It cannot be used to make prescriptive suggestions nor to choose development projects or to select between possible development schemes. It does not need to be predictive in order to be explanatory. If it forces a new consideration of the problems of development that is probably sufficient reason for it to be important enough to warrant attention. Not all writers who accept the fact of dependency are supportive of dependency theory as such.

Furtado proposes that dependency has led to a structural dualism. Development will depend upon new combinations of existing factors of production at particular levels of technology. Changes in the social structures of less developed countries will be necessary for economic development (Ghosh, 2001, p 106–107). Kay is more dismissive of dependency theory and believes

that more capitalist penetration of the less developed countries is necessary (Ghosh, 2001, p 111). Cardoso has a very different view of dependency. He feels that the capitalist system, as represented by multinational corporations, offers the best hope for development (Ghosh, 2001 p 113). Warren is also supportive of the beneficial effects of capitalism and very critical of dependency theory (Ghosh, 2001, p 116). Sunkel takes a more generalised position with regard to the changes necessary for development to occur in the less developed countries. He is of the view that global structural changes are necessary and that, in particular, less developed countries should co-operate to replace dependence with interdependence with a view to ultimately achieving economic and social independence (Ghosh, 2001, p 118). Myrdal develops a theory of favourable (spread) effects and unfavourable (backwash) effects to explain the economic and social tendency to move further from a state of equilibrium. It is the imbalances and inequities which combine to inhibit development (Ghosh, 2001, p 127).

The unifying factor in all of these diverse views is that change, even if it means "more of the same" is necessary for the development of underdeveloped regions. Wallerstein has considered this problem in some detail. His discussion of what needs to be changed is, perhaps, less important than his ideas on how change should be achieved. He does not advocate any dramatic or revolutionary approach as did Marx. According to Wallerstein, change derives from an internal process of evolution that is irresistible (Wallerstein, 1996, p 358). He is also confident that capitalism is not an ultimate or enduring world system. Like Kuhn he also understands that it is difficult for those living "within a paradigm" to see either the need for change or that change is in fact occurring or that it is inevitable.

Wallerstein proposes two methods to bring about change. The first is an overloading of the current system. The reduction of the features of the current system to logical absurdities is his first way of overloading the system and better cooperation among those needing change is the second (Wallerstein, 1996, p

360). The second method is utopistics. This is a less concrete concept. It involves the open discussion of the desired results of changes to the system (Wallerstein, 1996, p 361). He is not confident of change occurring nor that whatever results will approximate what is needed or desired.

Overloading and utopistics have happened. This is indicated in the paper *Slaves to the City* by Larry Graham for the Local Government Conference held in Katherine in the Northern Territory in November 2001. He followed this up with a paper, *A Reworked Draft of our Central State Government's Policy Statement for Regional W. A.* presented to the 2003 Local Government Conference held at Kununurra. Graham was a regional State Member of the Legislative Assembly of Western Australia. His constituency included the Halls Creek Shire of the Kimberley region. He ruled out any recourse to radical constitutional change or any violent enforcement of change (Graham, 2001, p 33). His papers highlight the inconsistencies and absurdities of then current arrangements which were supposed to promote development in both the Kimberley and the Pilbara regions. Graham was following Wallerstein's suggestions for effecting change of overloading the present system and utopistics. It was his stated intention to resign his seat in Parliament at the next State election. However, he said that he would resign earlier to force the Government to fight a bye-election for his seat if an adequate financial contribution towards some development projects in his electorate were not forthcoming in 2004. Mr Graham sat as an independent member of Parliament having won the seat after losing ALP endorsement prior to the last election. It is a seat that the ALP would have expected to regain. A bye-election would have forced the ALP to defend its failure to adequately fund regional development projects in Mr Graham's electorate without constituents being distracted by a full State election. With the next full State election then due in early 2005 the ALP would then have had to contest the seat a second time on substantially the same issue. This was probably not a prospect that the State Government would have welcomed. The threat of early resignation by Mr Graham was an example of overloading the system in the hope of achieving an appropriate result.

Mr Graham did not have to resign his seat and retired at the 2005 election. His seat was regained by the ALP. This was an example of the processes of overloading the system and utopistics achieving positive results.

Implications for Government Policy

It has already been stated that dependency theory is neither predictive nor prescriptive. There is no claim that, by its use, the future development of a region can be planned. That is, the past can be analysed and explained by reference to theories of development although none is so comprehensive in its approach as is dependency theory. This is because of the broad range of economic, social and political parameters by which dependency theory assesses development.

Frank's dependency theory does not itself propose future directions for the achievement of development. Even the limited pointers to the future that are said to be implicit in the theory have mostly been suggested by others, e.g. Wallerstein (1996). These directions and suggested actions have been mentioned above. An immediate role for governments is proposed below.

Lack of Data

Although dependency theory provides only a limited guide to the future this study does suggest some implications for government policy. The data on which this work has been based was not readily available. It was collected from many public and private sources. The archives of the State and many local libraries have been searched to acquire the details used in the assembled database used here. Access has also been had to many private sources via published and unpublished material and information was also gathered from personal interviews. This lack of readily available and appropriately classified information represents a formidable obstacle to the formulation of appropriate development policy by the three tiers of government, local, state and federal. Undoubtedly the ABS could collect any such data as may be required. Also governments can ask the ABS to conduct specific surveys to acquire any

desired information in addition to all other activities of the Bureau. The requesting authority does have to pay for such additional work. Much useful information can be derived from the standard work of the ABS, particularly from the national censuses conducted periodically. It is important that all derived details result from accurate raw data. It is in this respect that the work of the ABS is open to question. This is the case not only so far as the Kimberley is concerned. Information about the homeless in Perth is unreliable (StateLine, ABC, 2006). Comment has already been made about the population statistics relevant to the Kimberley in chapter 3.

The only instance of an estimate of the population of the Kimberley by an authority other than the ABS was made by the Australian Construction Services and it was different from the ABS figures by a statistically significant amount. This point was made in chapter 3 where the independent estimate was compared with the then contemporary ABS data.

As has been mentioned, for so long as the national census is conducted in August then the Kimberley results will be open to question. August is in the peak tourist season for the Kimberley and there is a large movement of people through the region. This enhances the likelihood of errors in data collection. One way to address this problem would be to conduct the national census in succeeding months on each subsequent occasion. However, comparative figures derived from censuses occurring in different months would take many years to become available. Alternatively a partial regional census could be conducted at a time of year when the Kimberley population is more stable than it is in August. Some physical logistical difficulties could occur in the wet season but these are not so insurmountable now as they might have been a few decades ago. Any additional work required by the ABS would incur some expense and this would undoubtedly be the subject of dispute between the State and Federal governments. It is undeniable that it would be in the interests of both governments as well as the people of the Kimberley that the best opportunities be taken for the making of good and appropriate policy from the

use of accurate statistics. It should be a policy of all governments to ensure that accurate data on which policy should be based is both immediately at hand and is accurate.

Political Representation

Another obstacle to the formulation of good policy for a region is inadequate political representation of the relevant population. This is a major problem for the Kimberley at both the State and Federal levels.

Since the implementation of the “one vote - one value” policy of the State government a large part of the Kimberley including the town of Halls Creek now forms part of a Pilbara seat. This is both geographically and culturally inappropriate so far as this part of the region is concerned. The member for this seat must represent the different needs of the predominantly European and comparatively wealthy and healthy port and industrial population of Port Hedland and the mostly poor, unemployed aborigines of the Kimberley part of the constituency who have health and educational problems and the social difficulties owing to excessive alcohol consumption and illicit drug use. This is clearly very difficult.

Federally the Kimberley forms part of the geographically largest constituency in the country, namely, the seat of Kalgoorlie. This member of the House of Representatives, like his State counterpart referred to above, must represent the interests of the rich European miners of Kalgoorlie and the goldfields of Western Australia and the aborigines of the region the majority of whom live in comparative poverty with the previously mentioned problems. Again, this is a difficult assignment.

It is easy to implement a “one vote—one value” principle numerically but the effective representation that the majority population of the Kimberley derives from this is less than adequate. With State and Federal parliamentary representatives having offices and homes over a thousand kilometres distant in Port Hedland and Kalgoorlie respectively the Kimberley constituents can hardly

feel that they derive much value for their votes. Such poor political representation has always been the situation so far as the Kimberley is concerned. It has been exacerbated at a state level by the recent enforcement of the "one vote - one value" policy (this has always been the ruling principle at a federal level) and, federally, by the abolishment of ATSIC. The election of local delegates to the latter body gave at least the illusion of some influence at a national level to the aborigines of the Kimberley even though it was, in the opinion of the Federal government a less than effective organisation with some major administrative and operational shortcomings.

These two areas, "Lack of Data" and "Political Representation" are, perhaps, the first matters which government policies should attempt to solve. Only then is the formulation of good development policies likely to occur. Whether or not such policies would result if these obstacles were removed is doubtful. The last major development decision for the north of the State made prior to the last State election concerned a major tourist venture in the Pilbara. It was the Maudes Landing project near Exmouth. The State government ultimately refused permission for its implementation not on the basis of its commercial, environmental or development qualities but for reasons of political expediency connected with the retention of power. A preference agreement with the W.A.Green Party, which opposed the project, maximised the re-election prospects of the incumbent government. The agreement was secured by the quashing of the development of the tourist venture and the ALP won the election although this was only a contributing factor in its success and probably not a major or decisive one.

The implications for government policy derive generally from this study, not particularly from any insight provided by the use of dependency theory in explaining the development experience of the Kimberley region over the past 100 years. It must be emphasised that development theories are most usefully employed in retrospect to analyse and to learn from the past. Such theories do

not and cannot compel any particular course of action by governments, private enterprise or individuals nor, often even suggest one.

Conclusion

Dependency theory, therefore, explains the past and present development situation in the Kimberley, but it offers only pointers to the future. So far as the Kimberley is concerned Frank's theory fulfils all that is usually required of a scientific theory. It explains the observable facts and has also predictive indicators. Unlike a scientific theory it is not, and nor does it lead to, an immutable law.

Frank's five hypotheses were found not to be applicable to nor generated by this study of the Kimberley other than the corollary to the second hypothesis. The situation with respect to the second hypothesis and its corollary was explained clearly and comprehensively in the conclusion to chapter 7. However this does not invalidate the first conclusion as stated in the previous paragraph.

REFERENCES

Agriculture Western Australia 2002, [www.agric.wa.gov.au](http://www.agric.wa.gov.au/agency/offices/derby/index.html), /agency/offices/derby/index.html page

Agriculture W. A. 2000, "Don't Bring Fresh Fruit to the Kimberley", WIN Television Advertisement about the fruit fly risk in the Kimberley.

Andersen C. 1996, Pearling in Western Australia, in *Western Fisheries Magazine*, Perth, W.A.

Anonymous, Undated, *Pearls & Fortunes Good & Bad*, Broome Museum.

Argyle Diamonds Australia(a) 2001, *From Mine to Market*, An in-house pamphlet.

Argyle Diamonds Australia (b)2001, *Industry Review 2001*, Argyle Diamonds Australia, Perth.

Australian Bureau of Statistics 1993, Aboriginal Community Profiles and Community Profiles, Catalogue No. 2722.5, Darwin.

Australian Bureau of Statistics 1996a, www.abs.gov.au, Basic Community Profiles, Catalogue No 2901.0.

Australian Bureau of Statistics 1996b, www.abs.gov.au, Census of Population and Housing, Table B01 Selected Characteristics.

Australian Bureau of Statistics 1996c, www.abs.gov.au, Census of Population and Housing, Table B05 Basic Community Profiles, Catalogue 2901.0.

Australian Bureau of Statistics 2000, www.abs.gov.au, various linked pages.

Australian Bureau of Statistics 2000, *Basic Community Profile - 1996 Census*, Commonwealth Government, Canberra.

Australian Bureau of Statistics 2003, www.abs.gov.au, various linked pages (via USQ web site: www.usq.com.au).

Australian Bureau of Statistics 2003, *Basic Community Profile - 2001 Census*, Commonwealth Government, Canberra

Baran, P. 1977, "On the Political Economy of Backwardness", in *The Political Economy of Development and Underdevelopment (Second Edition)*, Wilber C.K (ed), Random House, New York.

Biskup, P.1993, *Not Slaves Not Citizens: The Aboriginal Problem in Western*

Australia 1898–1954, University of Queensland Press, St. Lucia.

Bottomore, T.B & M. Rubel 1979, *Karl Marx: Selected Writings in Sociology and Social Philosophy*, Penguin Books, Ringwood, Victoria.

Brewer, A. 1980, *Marxist Theories of Imperialism: A Critical Survey*, Routledge & Kegan Paul, London.

Brewster, H 1973, "Economic Dependence: A Quantitative Interpretation" in *Social and Economic Studies*, Vol 22, No 1, pp. 90–95.

Burling, R. 1965, *Hill Farms and Paddy Fields - Life in Mainland Southeast Asia*, Prentice-Hall, Englewood Cliffs, New Jersey.

Calvo, P & G. Waugh 1980, *Microeconomics: An Introductory Text (Revised Edition)* McGraw-Hill Book Company, Sydney.

Cardoso, F.H. 1973, "Associated Dependent Development: Theoretical and Practical Implications", in *Authoritarian Brazil: Origins, Policies and Futures*, Ed. Alfred Stepan, Yale University Press, New Haven Conn., pp 142–176.

Caporaso, J.A. & B. Zare 1982, "An Interpretation and Evaluation of Dependency Theory" in *From Dependency to Development*, Ed. Helarldo Mu_oz, Westview Press, Boulder, Colorado.

de Castro, S. 1998, "Technological Implications of New Growth Theory for the South", in *Cooperation South*, No 2.

Clement C. 1981, *Pastoral Leasing (Vol 1)*, Murdoch University, Perth, W.A.

Clement C. 1991, *Australia's North-West: A Study of Exploration, Land Policy and Land Acquisition, 1644–1884*, Doctoral Thesis, Murdoch University, Perth, W.A.

Clement C. 1996, *A Guide to Printed Sources for the History of the Kimberley Region of Western Australia*, Centre for Western Australian History - University of Western Australia, Nedlands, Perth, Western Australia.

Clement C. 1999, Boab Bulletin.

Coedes, G. 1963, *Angkor, An Introduction*, Oxford University Press, London.

Cowen, M.P & R.W. Shenton 1996, *Doctrines of Development*, Routledge, London.

Crough G. & C. Christophersen 1993, *Aboriginal People in the Economy of the Kimberley Region*, Australian National University North Australia Research Unit, Darwin.

Davidson, B.R. & S. Graham-Taylor 1982, *Lessons from the Ord*, Centre Independent Studies, St. Leonards, N.S.W.

Department of Transport 1989, Report.

Department of Minerals & Energy 1996, *Fact Sheet 14: Diamonds*, Public Affairs Branch, W. A. Government, Perth, W. A.

Department of Minerals and Petroleum Resources 2002, www.dme.wa.gov.au/prodserv/remote/index.html (Mindex Database) page.

Department of Local Government and Regional Development and the Kimberley Development Commission 2001, *Kimberley Economic Perspective*, Perth, W.A.

Dingle, A. 1988, *Aboriginal Economy: Patterns of Experience*, Penguin Books Australia Ltd., Ringwood.

Dobb, M. 1979, *Theories of Value and Distribution since Adam Smith: Ideology and Economic Theory*, Cambridge University Press, London.

Dow, S.C. 1990, *Financial Markets and Regional Economic Development*, Avebury, Aldershot, U.K.

Dow, S.C. 1993, *Money and the Economic Process*, Edward Elgar, Aldershot, U.K.

Duffy, M. Circa 1985, "Pipe Dreams—the Discovery of Argyle", in *CRA Gazette*.

Duncan, R. 2003, "Agricultural and Resource Economics and Economic Development in Aboriginal Communities" in *The Australian Journal of Agricultural and Resource Economics*, 47:3

Engel, S.M. 1976, *With Good Reason: An Introduction to Informal Fallacies*, St Martin's Press Inc, New York.

Environs Kimberley Inc 2001, Bulletin No 17, April 2001.

Fisheries W.A. 2000, May Report.

Fisheries W. A. 2000, *Commercial Fisheries - Pearling*, Perth, W.A.

Fisk, E.K. 1985, *The Aboriginal Economy in Town and Country*, Australian Institute of Aboriginal Studies, Canberra.

Frank, A.G. 1978, *World Accumulation 1492–1789*, The MacMillan Press Ltd, London.

Frank, A.G. 1992, "The Development of Underdevelopment" in *The Political Economy of Development and Underdevelopment (Fifth Edition)*, Wilber C.K & K.P. Jameson (eds), McGraw-Hill Inc, Sydney, 1992.

Frank, A.G. 1996, "The Underdevelopment of Development" in *The Underdevelopment of Development*, Sage Publications, Thousand Oaks, California.

Geological Survey Dept. 2001, *List of Wells, Geophysical Surveys, Titles & Titleholders in Western Australia*, Western Australian Petroleum Information Management System, Perth.

Gerth, H.H. & C Wright Mills (Eds) 1977, *From Max Weber: Essays in Sociology*, Routledge & Kegan Paul, London.

Ghosh, B.N. 2001, *Dependency Theory Revisited*, Ashgate Publishing Limited, Aldershot, England.

Gibb, H.A.R. 1978, *Islam*, Oxford University Press, London.

Gillis, M., D.H. Perkins, M. Roemer, & D.R. Snodgrass 1983, *Economics of Development (4th Edition)*, W.W. Norton & Company, New York.

Graham, L. 2001, *Slaves to the City*, W.A. Local Government Association, Conference on Local Government, Katherine, Northern Territory.

Grill, J.F., H.D. Evans & K. F. McIver 1985, *Kimberley Pastoral Industry Inquiry*, Department of Regional Development and the North West, Perth, W.A.

Henriot, P.J. 1976, "Development Alternatives: Problems, Strategies, Values", in *The Political Economy of Development and Underdevelopment (Second Edition)*, Wilber C.K. (Ed), Random House, New York

Jackson J. & McConnell C.R. 1980, *Economics: Australian Edition: Principles, Problems and Policies*, McGraw-Hill Book Company, Sydney.

Joad, C.E.M. 1957, *Guide to Philosophy*, Dover Publications, New York.

Johnson K.B. 1988, Telecom Letter to students at Derby District High School.

Kimberley Development Commission 1994, Annual Report.

Kimberley Development Commission 2000, April Newsletter.

Kimberley Society 2001, www.users.bigpond.net.au/sellwood/kimsoc, web site of the Kimberley Society, publishers of the Boab Bulletin.

Kimberley Development Commission 2001, www.kdc.wa.gov.au, web site of

the Kimberley Development Commission.

Kimberley Development Commission July 2001, *Kimberley Economic Perspective*, Department of Local Government and Regional Development & The Kimberley Development Commission, Perth, W.A.

Kimberley Development Commission 2002, www.kdc.wa.gov.au, "Population" link.

Kuhn, T. S. 1970, *The Structure of Scientific Revolutions*, University of Chicago Press, Chicago.

Lawton K. 1997, "Turbulent History of the Pearl" in "Shinzu Matsuri Supplement" in Broome Advertiser, 24/08/1997.

Lawton K. 1997, Shinju Matsuri in *Broome Advertiser and West Kimberley Chronicle* 14th–24th August 1997. Albany, W.A.

Lawton K. 2002, Scandal Rocks London in *Broome Advertiser and West Kimberley Chronicle* 16/05/2002, Albany, W.A.

Lehmann, D. (ed) 1979, *Development Theory: Four Critical Studies*. Frank Can, London

Lester, R. C. 1973, *Theravada Buddhism in Southeast Asia*, The University of Michigan Press, Ann Arbor.

Legge, J. D. 1980, *Indonesia*, Prentice-Hall of Australia Pty Ltd, Sydney.

Lewis J.P. & A. Traill 1999, *Statistics Explained*, Addison-Wesley, Sydney.

Linm M. 2002, "Derby Residents pay Higher Prices" in West Australian (online edition (www.thewest.com.au)).

Lloyd, R., A. Harding & O Hellwig 2000, *Regional Divide? A Study of Incomes in Regional Australia*, Discussion paper 51, NATSEM Canberra, September 2000

Lloyd, R., A. Harding & H. Greenwell 2001, *Worlds Apart: Postcodes with the Highest and Lowest Poverty Rates in Today's Australia*, presented for NATSEM at the National Social Policy Conference 2001, Sydney

Longden, N. 2002, Former operator with his wife, Valerie, of the Derby Commonwealth Employment Service.

Mathias, P. 1977, *The First Industrial Nation An economic History of Britain 1700–1914*, Methuen & Co Ltd, London.

Meier, G.M. 1995, *Leading Issues in Economic Development*, Oxford University

Press, New York

Muñoz, H. 1982, "The Strategic Dependency of the Centers and the Economic Importance of the Latin American Periphery" in *From Dependency to Development: Strategies to Overcome Underdevelopment and Inequality*, Muñoz, H (Ed), Westview Press, Boulder, Colorado.

Nickels R. J. 2002, *Live Export Update: April 2002*, Department of Agriculture, Geraldton, W.A.

Palma, G 1978, "Dependency, A Formal Theory of Underdevelopment or a Methodology for the Analysis of Concrete Situations of Underdevelopment" in *World Development*, 6, pp 881 - 924.

Paspaley Pearls 2002, interview with John Woodman of Paspaley Pearls Ltd, Broome, W.A.

PBS 2002, www.pbs.org/edens/kakadu, web site of PBS, Alexandria, Virginia, U.S.A.

Pass, C, B.Lowes, & L. Davies 1988, *Dictionary of Economics*, Collins, London.

PGAccess v 0.98 written by Constantin Teodorescu (teo@flex.ro).

Postgresql v 6.5.2 Copyright (c) 1994-7 Regents of the University of California.

Price P. 2002, *Kimberley Pastoral Industry, 2002*, Department of Agriculture, Derby, W.A.

Prior, N, 2002, *Pearler of Profit Sees Atlas Grow* in *The West Australian*, 09/09/2002

Prior, N. 2002, "ERG Needs to Pay Way" in *West Australian*, 5th August 2002.Perth, W.A.

Registrar General 1884, Year Book. W. A. Government Statistician' s Office.

Registrar General 1889, Year Book W. A. Government Statistician' s Office.

Roxborough, I. 1981, *Theories of Underdevelopment*, MacMillan, London

Saikal A. 2004, *Canberra Press Club Address* ABC Television 4th. February 2004

Samuelson, P.A & K. Wallace., W. Hancock, 1975, *Economics: Second Australian Edition*, McGraw-Hill Book Company, Sydney.

Seers, D.1969, "The Meaning of Development" in *International Development*

Review, Dec. 1969.

Seers, D. 1979, "The Meaning of Development" in *Development Theory: Four Critical Studies*, Lehmann, D. (Ed), Frank Cass, London.

Sharpe L.J. 1987, *The Economic and Social Effects on Mount Isa and Cloncurry of the Closure of the Mary Kathleen Uranium Mining Operation and Township*. Honours Thesis, Deakin University.

Shigley J.E., J. Chapman & R.K. Ellison Spring 2001, Discovery and Mining of the Argyle Diamond Deposit, Australia, in *Gems & Gemology*, Vol 37, No 1, pp 26–41, U.S.A.

Shire of Derby-West Kimberley 1990, Derby Directory.

Shire of Broome 2001, *Directory*, Broome, W.A.

Simon, L.H. & D. F. Ruccio 1986, "A Methodological Analysis of Dependency Theory" in *World Development*, 14, pp 195-209

StateLine 2003, *StateLine, Western Australia*, A.B.C. 7th February 2003, Perth, W.A.

StateLine 2006, *StateLine, Western Australia*, A.B.C. 19th May 2006, Perth, W.A.

Stevens M. Undated, Collected Notes by M. Stevens, Library

St. Hill, R.2004, Forthcoming, *Financial Development and Economic Development: A Post Keynesian Perspective*, Edward Elgar, Cheltenham.

Suba T. 1998, Report to Heritage Council of Western Australia.

The Today Program March 2002, *The Today Program*, Channel Nine/WIN Television, Perth, Western Australia.

Todaro, M.P 1982, *Economic Development in the Third World*, Longman Group Limited, Harlow, Essex.

Todaro, M.P. 1994, *Economic Development*, Longman, New York.

Traveland 2002, Interview with staff at Traveland, Clarendon Street, Derby, 6728.

Wallerstein, 1996, "Underdevelopment and Its Remedies" in *The Underdevelopment of Development*, Sage Publications, Thousand Oaks, California.

Walsh, G. L. 1994, *Bradshaws: Ancient Rock Paintings of North-West Australia*, Edition, Limitée, Carouge-Geneva, Switzerland.

Valenzuela, J.S & A Valenzuela 1982, "Modernization and Dependency: Alternative Perspectives in the Study of Latin American Underdevelopment" in *From Dependency to Development: Strategies to Overcome Underdevelopment and Inequality*, Muñoz, H. (ed), Westview Press, Boulder, Colorado.

W. A. Government 1984, "West Australia ' s North: Progress and Prospects" .

Western Metals Limited (b) 2001, *Annual Report*, Perth, W.A.

Western Metals Limited (a) 2002, Telephone interview with Sales Department personnel.

Xfig v 3.2 (Patch level 2) 1998, Written by Micah Beck and maintained by Brian Smith.

BIBLIOGRAPHY

Barzun, J & H. F. Graff 1992, *The Modern Researcher*, Harcourt Brace Jovanovich College Publishers, Sydney.

Bolker, J. 1998, *Writing Your Dissertation in Fifteen Minutes a Day*, Henry Holt and Company, New York.

Graham, L. 2003, *A Reworked Draft of our Central State Government's Policy Statement for Regional W. A.*

Jones, R.S. & J.O.N. Perkins 1981, *Contemporary Macroeconomics*, Prentice-Hall of Australia Pty Ltd, Sydney.

Lester, J. D. 1984, *Writing Research Papers*, Scott, Foresman and Company, Dallas.

Mitchell, J. 1984, *How to Write Reports*, Fontana Paperbacks, Glasgow.

Sternberg, D. 1981, *How to Complete and Survive a Doctoral Dissertation*, St. Martin's Press, New York.

Veale, J., G. Walker 1983, *Australian Macroeconomics*, Prentice Hall of Australia Pty Ltd, Sydney.

Appendix A

Database Design Specifications

The Tables

As mentioned in chapter 2 the database consists of tables of information. These can be manipulated by appropriate queries to display information in many ways depending upon the purpose for which the information is needed. Events can be displayed, for example, by reference to the town or local government area in which they occurred and simultaneously in chronological order. Display according to the type of event and of events that occurred between specific dates is also possible. The limit on such displays of variations in combination with information concerning sources of information, output of products, livestock in the region, funding of events and population and labour force statistics is controlled only by the acceptable queries that can be devised using the PostgreSQL variation of Structured Query Language (SQL) and, of course, the information in the database. The list of queries used is shown in appendix F. The information extracted from the primary tables by use of the queries can also be displayed as tables. These secondary tables are clearly identified when presented in the following text.

Some information that was expected to be both useful and interesting did not prove so to be or sufficient information was not found. Consequently some details in some tables are sparse or absent. An example of this is the ethnic breakdown of population details in the "people" table. This does not affect the overall quality of the database with respect to the use to which it is put here. Such deficiencies can be screened out by the use of appropriate queries. The completion of the details that are missing together, possibly, with additional information could result in the database being used to investigate other social and economic questions. These could include: the extent of the Japanese involvement in the pearling industry and how this has changed; the variation in the ethnic composition of various towns and whether and how this affected or determined the industries pursued in those towns; the change in the emphasis and nature of the pastoral industry in the region over time; the increasing importance of agriculture and aquaculture to the economy of the region. This database constitutes one side of the information needed to establish the applicability of Frank's second hypothesis and its corollary to the Kimberley. The other side, the proxy for identifying periods of temporary political and economic isolation of the Kimberley from its metropolises, was described in chapter 6.

Table Details

The tables of "raw" data are reproduced in appendix E. Some of the tables are too large to be displayed as tables on "A4" sheets although all can be displayed "on screen" as "normal" tables using the *PGAccess* graphical user interface with the PostgreSQL database program. Scrolling, both vertically and horizontally, is necessary to view all rows and columns respectively. The limitations of the computer program prevent printing on anything other than "A4" sheets in portrait format. Where tables are too large for normal reproduction on "A4" sheets details of the column headings are shown separately from the contents of the tables. Separation between the columns is clear from the table

lines even though each spreads over several lines of typescript. Table Lines are separated by double spacing.

Data Dictionary

The following lists the data names and the data types in which they are expressed in the tables in the database. (Some of the table names and contents have to meet the requirements of what is allowable by the database program rather than what would be "standard" English. Thus the table "townsshires" cannot be written as towns/shires because the slash is not permissible in a table name. The same is the case with respect to some of the event descriptions shown in the tables themselves in later pages. The apostrophe cannot be used and thus the possessive case cannot be written grammatically correctly in tables.) Also given below are details of other names, abbreviations and table specifications used in the database.

Data Names and Types

Event_id	Character varying (5)
Date	Integer
Establishment Date	Integer
Place_id	Character varying (5)
Product_id	Character varying (5)
Funding_id	Character varying (5)
Event_type	Text
Event_description	Text
Funding_sources	Text
Cost	Integer
Name	Text
Value	Integer
Quantity	Integer
Quantity_type	Text
Population	Integer
European	Integer
Aboriginal	Integer
Asian	Integer
Chinese	Integer
Filipino	Integer
Source_id	Character varying (5)

Invented names

Event_id EV(x)
Place_id PL(x)
Funding_id ... FD(x)
Product_id ... PD(x)
Source_id SC(x)
Where (x) is an integer.

Suffixes to Place_id for labour force statistics

A	Agriculture/Fisheries
M	Mining
N	Manufacturing
W	Wholesale/Retail
C	Community service
U	Unemployed
E	Employed
Y	Under 15 years and Not in Labour Force (N.I.L.F.)
19	15 - 19 years
24	20 - 24 years
44	25 - 44 years
45	over 45 years
UT	Unemployed total
(19 - UT above applies to Kimberley (PL1) only)	

Table specifications

Events

Domain Definitions:

Event_id	Character varying (5)
Date	Integer
Place_id	Character varying (5)
Funding_id	Character varying (5)
Product_id	Character varying (5)
Event_type	Text
Event_description	Text
Source_id	Character varying (5)

Relation & Key definitions

Events(event_id, date, place_id, funding_id, product_id, event_type, event_description, source_id)

Key: event_id

Foreign keys: place_id, funding_id, product_id, source_id

Probably DK/NF.

Townsshores

Domain definitions:

Place_id	Character varying (5)
Name	Text
Establishment_date	Integer

Relation & Key Definitions

Townsshores(place_id, name, establishment_date)

Key: place_id

Probably DK/NF.

Output

Domain definitions:

Product_id	Character varying (5)
Date	Integer
Value	Integer
Quantity	Integer
Quantity_type	Text

Relation & Key definitions

Output(product_id, value, quantity, quantity_type)

Key: product_id, date

Probably DK/NF

Funds

Domain definitions:

Funding_id	Character varying (5)
Funding_sources	Text
Cost	Integer

Relation & Key definitions

Funds(funding_id, funding_sources, cost)

Key: funding_id

Probably DK/NF

People

Domain definitions:

Date	Integer
Place_id	Character varying (5)
Population	Integer
European	Integer
Aboriginal	Integer
Asian	Integer
Chinese	Integer
Filipino	Integer

Relation & Key definitions

People(date, place_id, population, European, Aboriginal, Asian, Chinese, Filipino)

Key: date, place_id

(Note that in this relation labour force figures are given a different part key place_id. See data dictionary for suffixes)

Probably DK/NF

Stock

Domain definitions:

Date	Integer
Place_id	Character varying (5)
Cattle	Integer
Sheep	Integer
Horses	Integer

Relation & Key definitions

Stock(date, place_id, cattle, sheep, horses)

Key: date, place_id

Probably DK/NF

Sources

Domain definitions:

Source_id	Character varying (5)
Name	Text
Date	Integer

Relation & Key definitions

Sources(Source_id, name, date)

Key: Source_id

Probably DK/NF

Figures A1-A4 on the following pages show the above details and the relationships expressed in the database as figures. These figures were produced using the Xfig program version 3.2. The figures amplify and explain the information detailed above in the data dictionary. The dictionary and the figures show the full detail of the database design.

FIGURE A1
ENTITY RELATIONSHIPS

ENTITIES

TOWNSSHIRE
EVENTS
FUNDS
OUTPUT
PEOPLE
SOURCES
STOCK

ENTITY-RELATIONSHIP DIAGRAMS

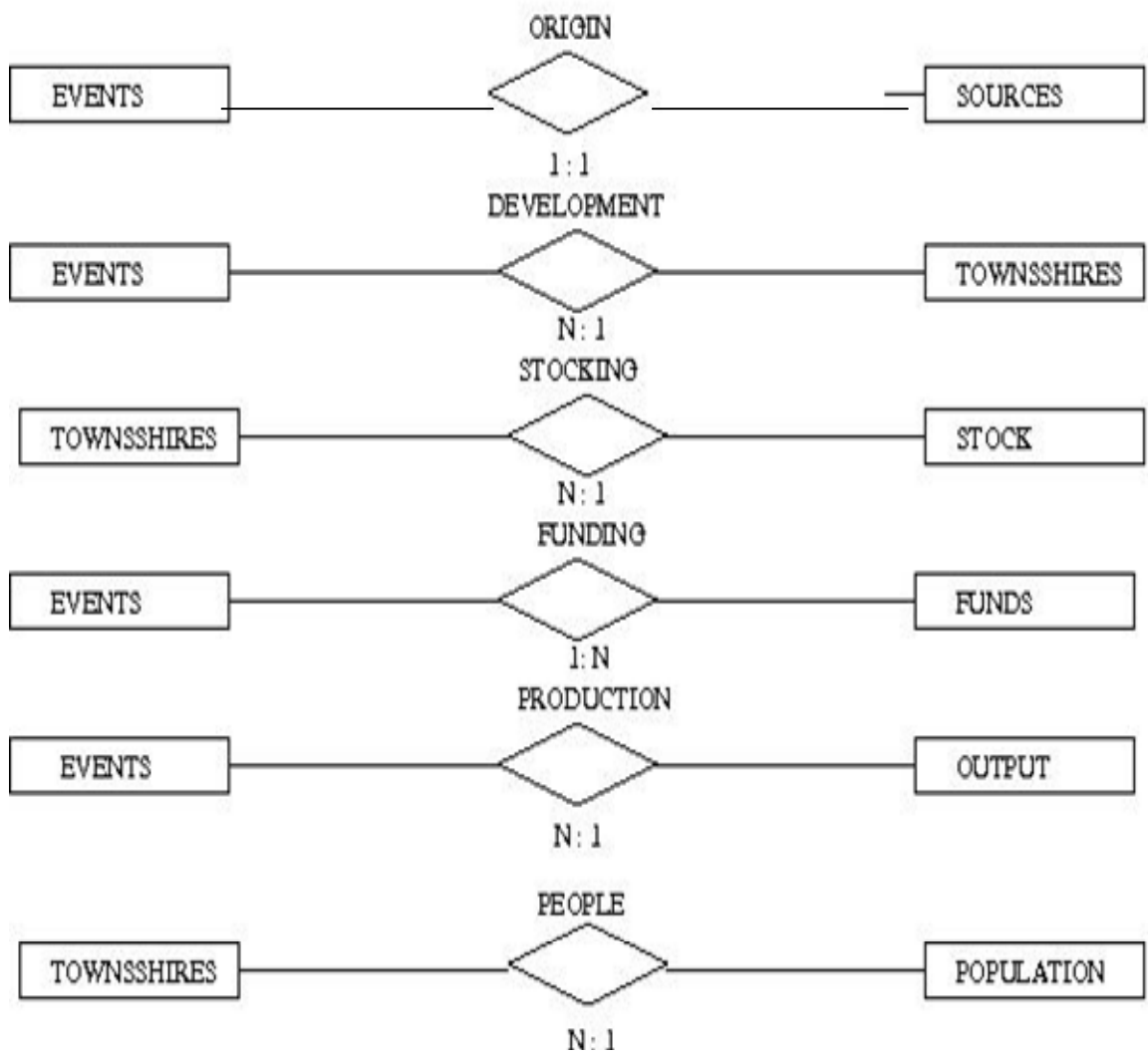


FIGURE A2

TABLE OF CONTENTS

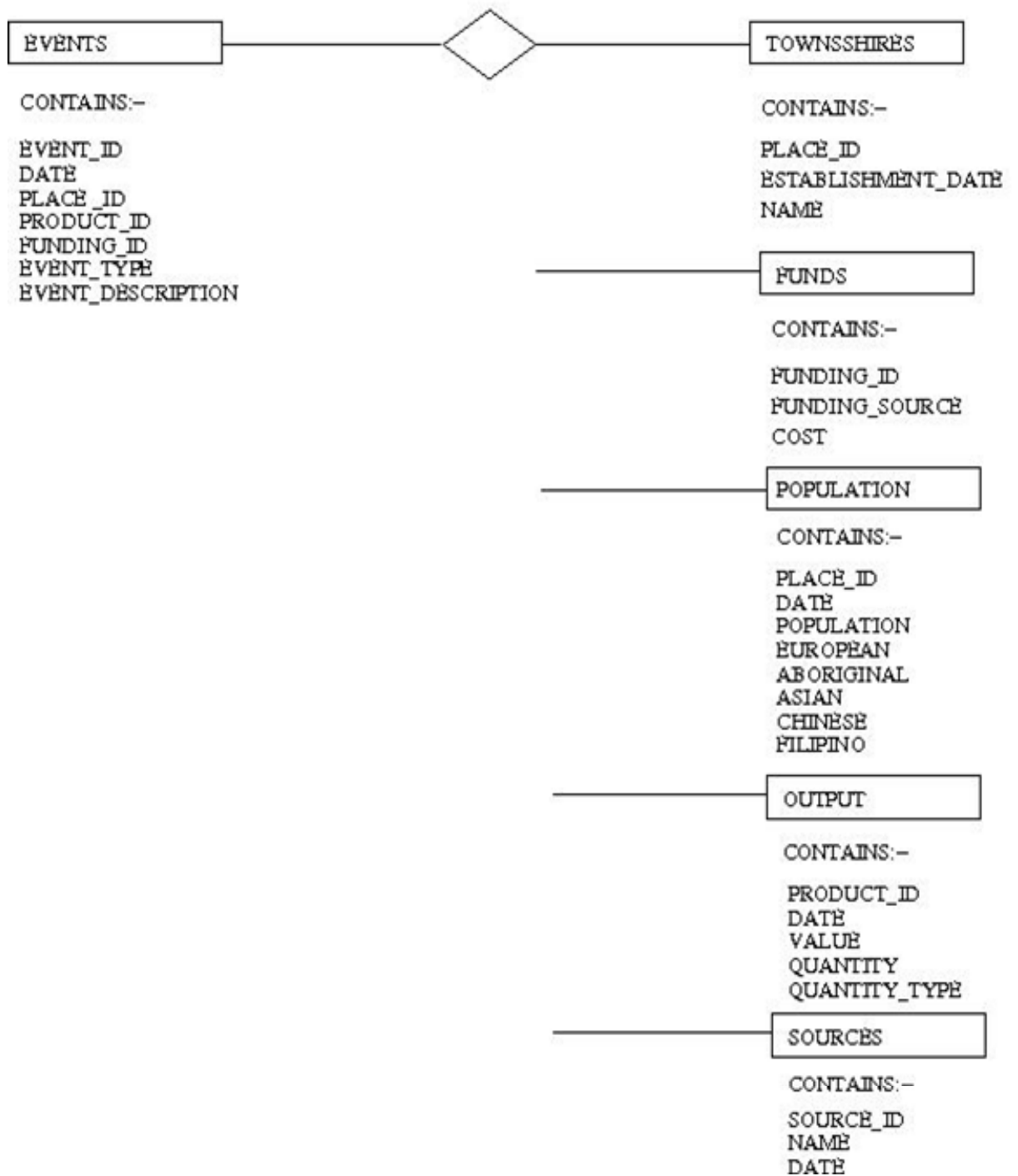


FIGURE A3

OVERALL ENTITY RELATIONSHIP DIAGRAM

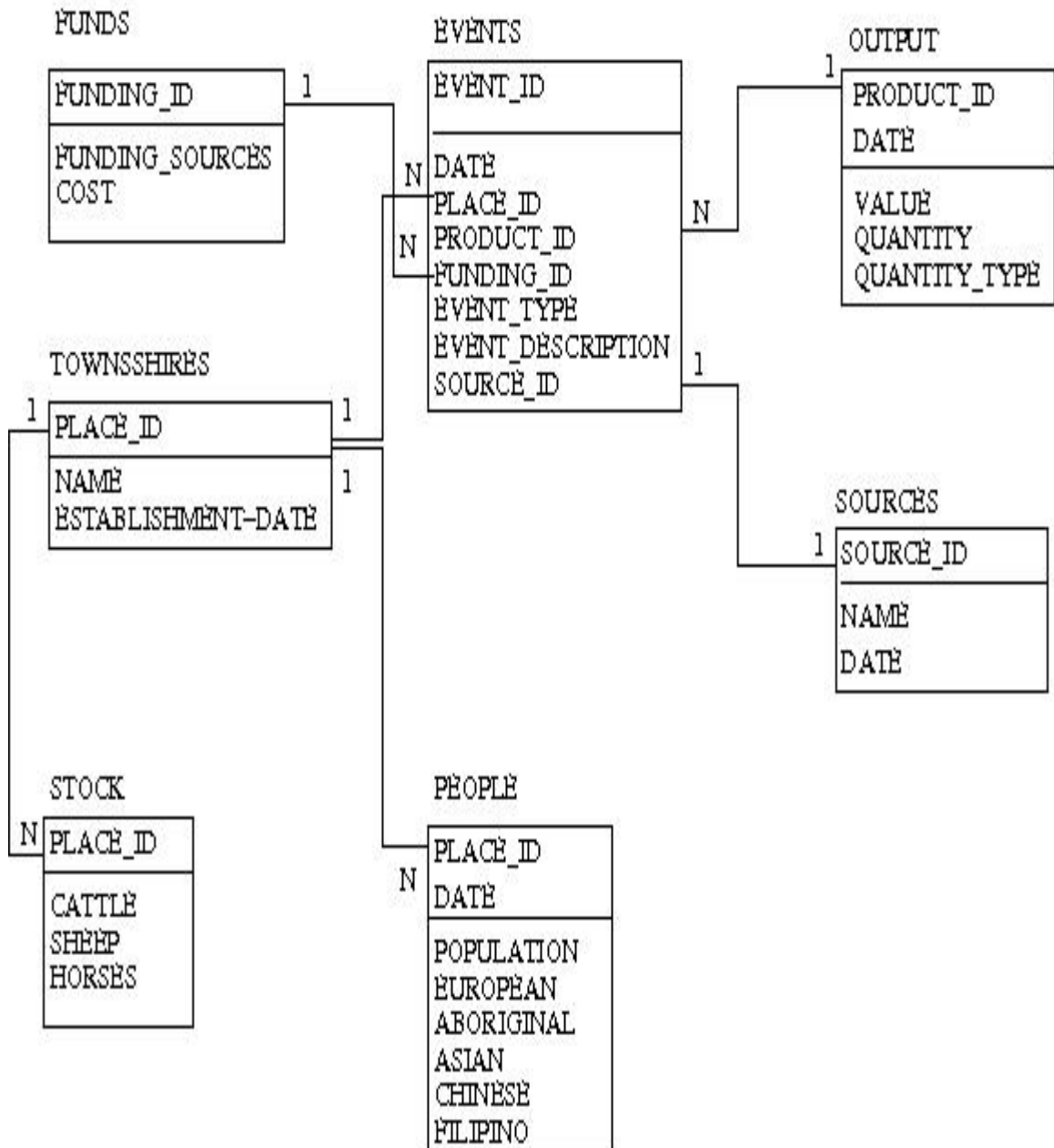
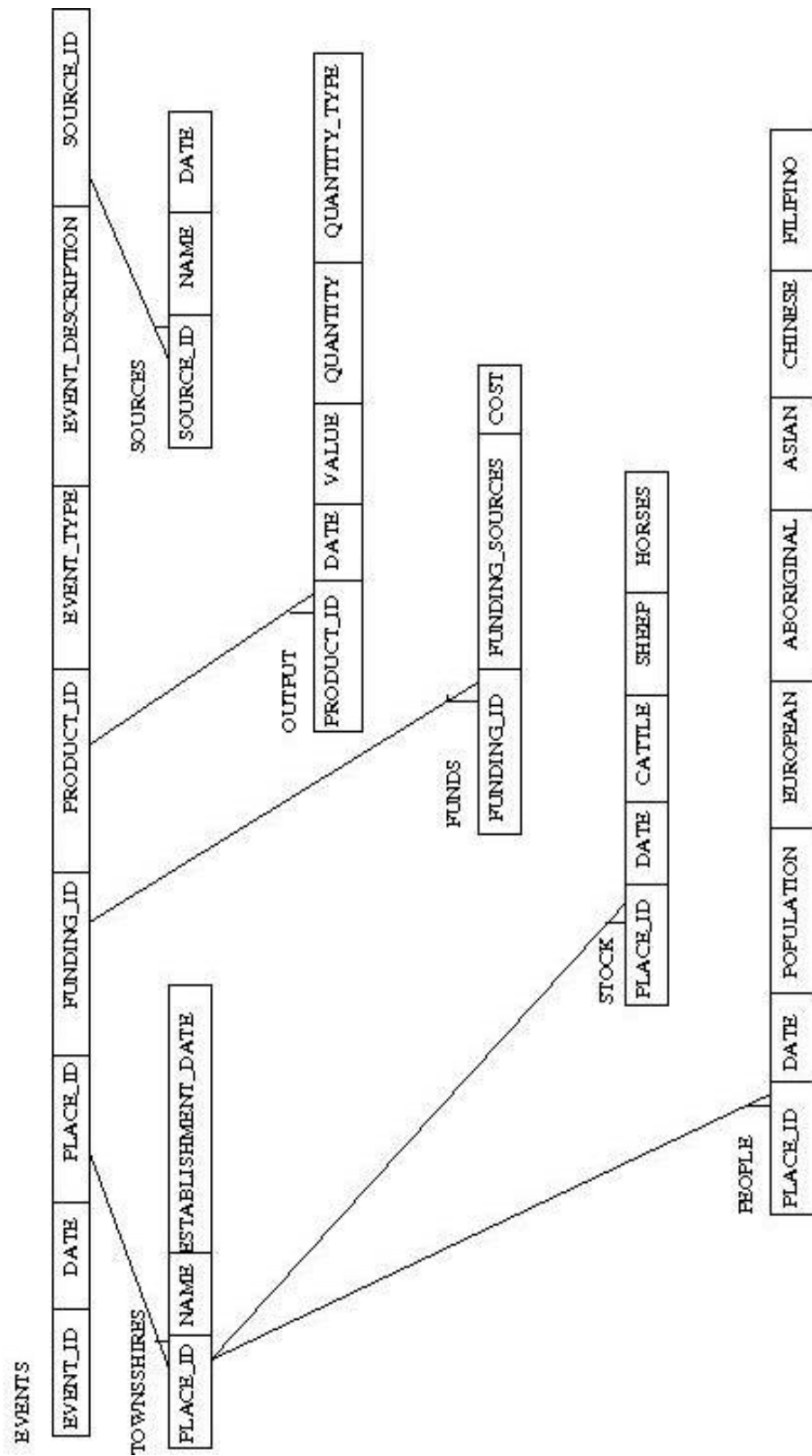


FIGURE A4
DATA DIAGRAM



Appendix B

The Six Seasons of Kakadu

Australia's Kakadu sees seasons of varied extremes—so varied, in fact, that the park's longtime aboriginal inhabitants have divided the year into six distinct seasons.

Gunumeleng (October, November, December)

Gunumeleng is the pre-monsoon season of hot weather, which becomes increasingly humid. Along the creeks of Kakadu, the air is heavy with the scent of blossoming paperbark trees, which in the evenings attract colonies of feeding fruit bats. Thunderstorms build in the afternoons and scattered showers bring a tinge of green to the parched earth. As the streams begin to run, "old water" washes into the permanent billabongs from stagnating pools, causing localized fish kills. Waterbirds disperse as surface water and new growth becomes more widespread. Barramundi move out of the waterholes, and downstream to the estuaries. It is the time people moved camp from the floodplain, to shelter from the violent storms of the wet season.

Gudjewg (January, February)

Gudjewg is the time of violent thunderstorms, heavy rain, and flooding. Heat and humidity generates an explosion of plant and animal life. Magpie geese nest among the sedgeland. It is egg gathering time. Flooding may cause goannas, snakes and possums to seek refuge in the trees, where they are easily caught.

Banggereng (March)

Banggereng is when most plants are fruiting and animals are caring for their young. Expanses of water recede and streams run clear. Violent storms flatten the two meters high spear grass; hence, the nickname "knock'em down storms."

Yegge (April, May)

Yegge brings early morning mists that hang low over the plains and waterholes. The shallow wetlands and billabongs are carpeted with waterlilies. Drying winds signal it is time to commence burning the bush in patches to "clean" the country and to encourage new growth for grazing animals. Early season fires are insurance against destructive fires in the hotter months. The woolly butt *Eucalyptus miniata* begins to flower and when flowering ceases by early August, less fires are lit.

Wurrngeng (June, July)

Wurrngeng is the "cold weather" time with low humidity, days of 30 C (86 F) and nights as low as 17 C (63 F). Creeks cease to flow and floodplains quickly dry out. Magpie geese, fat and heavy after weeks of abundant food, crowd the diminishing billabongs with a myriad of other waterbirds. Burning continues, dampened by the dew at night. By day, the birds of prey patrol the firelines as insects and other small animals escape the flames.

Gurrung (August, September)

Gurrung is windless and hot, and the land seemingly lies dormant. It is still "goose time," but also a time to hunt file snakes and long necked turtles. Sea turtles lay their eggs on the sandy beach of Field Island, where goannas rob the occasional nest. White-breasted woodswallows arrive as thunderheads build again with the return Gunumeleng.

(PBS, 2002)

Appendix C

The problems confronting government departments and organisations operating in regional and remote Western Australia

- (1) A poor understanding by the city-based decision makers of the effects of their decisions.
- (2) Confusing central State Government decision making processes.
- (3) Delays in central State Government decision making processes.
- (4) Dependence on central organisations.
- (5) A lack of autonomous regional management processes in central State Government.
- (6) Shortages of skilled labour.
- (7) Shortages of professionals.
- (8) Uncertainty.

(Graham, 2001)

Appendix D

The problems confronting people living in regional and remote
Western Australia

- (1) Lowered life expectancy.
- (2) Increased infant mortality.
- (3) Poor roads.
- (4) Lower education outcomes than comparable age cohorts in the city.
- (5) Lower school retention rates.
- (6) Higher levels of smoking.
- (7) Higher alcohol intakes.
- (8) Poorer nutrition levels
- (9) Poor medical facilities.
- (10) Poor hospital facilities.
- (11) Chronic shortages of doctors.
- (12) A lack of medicare bulk billing facilities.
- (13) A chronic shortage of nearly every category of professional occupation.
- (14) A dearth of public transport.
- (15) Higher costs of living.
- (16) The diminution of insurance cover for the Northwest.
- (17) Poor communications infrastructure.
- (18) Poor air services.

(Graham 2001)

Appendix E

The Tables

Table: "events"

These are the "raw" events which were entered into the table as they were discovered. For each entry there is always:

- | | | |
|-----|---------------------------|-------------------|
| (1) | an event identification: | event_id |
| (2) | a date: | date |
| (3) | a place identification: | place_id |
| (4) | a funding identification: | fund_id |
| (5) | a product identification: | product_id |
| (6) | an event type: | event_type |
| (7) | an event description: | event_description |
| (8) | a source identification: | source_id |

Columns 4, 5 and 8 may be "\N" - a null entry. This means that an appropriate entry is either not known or not required.

Column headings:

Event_ID|Date|Place_ID|Funding_ID|Product_ID|Event_Type|Event_Description|
Source_ID|

EV1	1688	PL1	\N	\N	Discovery	First Europeans to see Kimberley in vessel Cygnet \N
EV2	1699	PL1	\N	\N	Discovery	Dampier returned in HMS Roebuck \N
EV3	1879	PL1	\N	\N	Discovery	First land expedition by led by Forrest \N
EV67	1880	PL2	\N		Declaration	Derby declared a port to service Yeeda Station 43 Km from Derby \N

EV68	1880	PL5	\N	PD9	Pastoral	Murray Squatting Company established Yeeda Station after driving sheep from landing point at Beagle Bay \N
EV69	1885	PL1	\N	\N	Wages	\$2.00 per hour to sink a well. Fencers \$46.00 per mile \N
EV68	42000	PL9	\N	PD30	Commercial	Only distillery in WA & also only distillery licenced to make wine & beer on same premises is making cane spirit at The Hoochery— 1000-750 ml bottles per week retailing at \$35 per bottle SC171
EV71	1884	PL2	\N	\N	Government	Point Torment considered as a port and to the moving of Derby to that area \N
EV685	2001	PL11	\N	\N	Infrastructure	Of \$30M given for river care in WA by Commonwealth Government Heritage Trust Water & Rivers Commission to get \$82,500 for north west to support land & water management plan in ORIA SC172
EV9	1886	PL3	\N	\N	Count or Census	Number of men on Halls Creek gold field \N

EV73	1949	PL5	\N	\N	Mining	Oil prospects and development at Point Torment still being discussed \N
EV686	2001	PL9	\N	\N	Agricultural	EPA say Wesfarmers/Marubeni sugar cane project for Ord Scheme stage 2 is sound SC173
EV687	2001	PL11	\N	\N	Agricultural	Tropical Forestry Services (TFS) commences Sandalwood operation on 140 ha in ORIA SC174
EV13	1888	PL2	\N	\N	Commercial	5 hotels operating in Derby \N
EV688	2001	PL11	\N	\N	Infrastructure	N.T. based Environmental Centre NT has appealed against EPA approval of ORIA stage 2 development by Wesfarmers/Marubeni SC175
EV689	2001	PL7	\N	PD19	Tourism	Ansett Airlines ceases operations SC176
EV663	1941	PL11	\N	\N	Agricultural	WA Government establishes small experimental farm on the Ord River and possibility of an upstream dam investigated \N
EV36	1954	PL2	\N	\N	Government	McLarty-Watts Government accept recommendation to develop new town at

						Black Rocks north of Derby with deep water port subject to Federal Government funding—latter never forthcoming \N
EV37	1957	PL5	\N	\N	Government	West Kimberley governed by 7 member Roads Board based at Derby. Dwellings 306 \N
EV665	1958	PL11	\N	\N	InfrastructureWA	Government convinced of viability of irrigation scheme on the Ord River \N
EV40	1961	PL9	\N	\N	Infrastructure	Ord river diversion dam nearing completion applications for 5 farms at 600 acres each received \N
EV666	1963	PL11	FD41	\N	InfrastructureCommonwealth	Government agrees to share initial development. Kununurra diversion dam, irrigation and associated works and development of Kununurra township completed 1963. Cost is \$20M (Com. Govt \$12M) \N
EV667	1966	PL11	\N	\N	Infrastructure31	farms irrigated on Ord Scheme \N
EV668	1972	PL11	\N	\N	InfrastructureOrd	River Dam construction finished at cost of \$22M. 12 month growing season and total of 62,000 ha irrigable possible

						\N
EV669	1974	PL11	\N	\N	Infrastructure	Further 2000 ha of land developed on Packsaddle Plain and further 5 farms released.
						\N
EV45	1964	PL9	FD2	\N	Infrastructure	Funds requested for completion of Ord Scheme to build main dam and irrigate 150000 acres
						\N
EV670	1996	PL11	\N	\N	Infrastructure	30 MW hydro-electric power station constructed.
						\N
EV672	1996	PL9	\N	\N	Agricultural	First full season crush undertaken. Can be expanded to service cane from 7500 ha
						\N
EV671	1994	PL9	\N	\N	Agricultural	Sugar mill to crush 2000 tonnes of cane a day constructed at Kununurra 700 ha planted
						\N
EV16	1889	PL2		\N	Government	17 Government Depts/offices in Derby
						\N
EV47	1968	PL1	\N	PD4	Mining	Bauxite discovered near Admiralty Gulf
						\N
EV673	1995	PL9	\N	\N	Agricultural	Further 2000 ha planted with sugar cane
						\N
EV674	1974	PL9	\N	PD3	Agricultural	Cotton ceased to be a crop on the Ord River Scheme owing to insect

						pests \N
EV50	1969	PL2	\N	\N	Social	First Boxing Day Sports held at Spinnifex Hotel \N
EV675	1994	PL9	\N	PD3	Agricultural	Experiments with cotton re-commence on the Ord River Scheme \N
EV636	1913	PL4	FD12	\N	Pastoral	Wyndham Meatworks commenced (slowed by WW1) SC159
EV17	1889	PL2	\N	\N	Commercial	4 hotels and 4 stores operating in Derby \N
EV19	1892	PL5	\N	\N	Agricultural	Experimental rice, sugar and bananas grown (at Liveringa Station) \N
EV20	1895	PL2	\N	\N	Pastoral	Cattle yard at Jetty had a race built \N
EV5	1883	PL1	\N	\N	Pastoral	Numbers of stock given in 1884 Year Book \N
EV21	1895	PL2	\N	\N	Commercial	Two Hotels and two stores remain in Derby \N
EV7	1885	PL3	\N	\N	Mining	Charlie Hall & Jack Slattery find payable gold near Halls Creek \N
EV22	1898	PL5	\N	\N	Mining	Gold found at Redendra—140 miles east of Derby

						\N
EV25	1902	PL1	\N	\N	Pastoral	Cattle exports increasing—wool now second - destinations Fremantle & Singapore \N
EV27	1913	PL1	\N	\N	Pastoral	10,000 head of cattle exported each year \N
EV32	1920	PL1	\N	\N	Recession	Beef prices collapse. Recession lasts 25 years. Peak production 1917 \N
EV34	1943	PL7	\N	\N	Pastoral	Broome meatworks operating \N
EV35	1949	PL5	\N	\N	Pastoral	WW II transport aircraft move beef carcasses from Glenroy Station to Derby abattoir \N
EV676	1998	PL9	\N	\N	Agricultural	Shire of Wyndham-East Kimberley disappointed with corporate emphasis of Ord Stage 2 and small number of family size farms to be available SC165
EV77	1879	PL5	\N	\N	Pastoral	Meda Station Established \N
EV76	1879	PL5	\N	\N	Pastoral	Yeeda Station Established \N
EV677	1998	PL9	\N	\N	Agricultural	Wesfarmers and

						Marubeni to develop Weaber, Keep River and Knox Creek Plains as a single 27,000 ha cane farm SC166
EV678	2001	PL9	\N	\N	Agricultural	Wesfarmers decide not to proceed with joint venture with Marubeni to develop cane farm on Ord \N
EV78	1882	PL5	\N	\N	Pastoral	Six stations established in Fitzroy River area \N
EV679	1997	PL11	FD42	\N	InfrastructureMain	Roads to spend \$10M on roads in ORIA \N
EV680	1998	PL11	\N	PD28	Agricultural	Trial shipments of melons in sea container to Fremantle funded by WA Government at \$25,000. Crop worth \$12M & whole cucurbit crop worth \$25M mostly sold in WA and eastern states SC167
EV79	1885	PL2	\N	\N	Commercial	Adcocks Store opened \N
EV80	1886	PL2	\N	\N	Commercial	3 stores & 2 Hotels operate. There is a horse pulled tramway across town also a boarding house, 2 warehouses, a chemist, barber, blacksmith and carpenter \N
EV681	1996	PL9	\N	\N	Count or Census	Kununurra population 4500

SC168

EV682	2000	PL9	\N	\N	Agricultural	CSR sells all its Ord interests to its main customer Cheil Jedang Corp of South Korea.
-------	------	-----	----	----	--------------	----------------------------------------------------------------------------------------

SC169

EV82	1886	PL5	\N	\N	Pastoral	Noonkanbah Station established \N
------	------	-----	----	----	----------	--------------------------------------

EV83	1886	PL5	\N	\N	Pastoral	66159 sheep in West Kimberley \N
------	------	-----	----	----	----------	-------------------------------------

EV683	2000	PL11	FD43	\N	Aquacultural	Ord-Bonaparte Research Program to be funded by Land & Water Resources Research & Development Corp, C.S.I.R.O. and Fisheries Research and Development Corp up to \$7.5M
-------	------	------	------	----	--------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------

SC170

EV640	1884	PL4	\N	\N	Shipping/Ports	Ships frequently visit Cambridge Gulf near what would become Wyndham
-------	------	-----	----	----	----------------	----------------------------------------------------------------------

SC160

EV643	1885	PL4	\N	\N	Commercial	Black Pat Durack arrives with stores and building materials SC160
-------	------	-----	----	----	------------	----------------------------------------------------------------------

EV85	1905	PL5	\N	\N	Pastoral	No of Cattle increase over 1900 numbers. No increase in sheep \N
------	------	-----	----	----	----------	---------------------------------------------------------------------

EV642	1882	PL4	\N	\N	Commercial	Durack family decide to set up a trading store 17 km from what is now Wyndham—a disastrous location
-------	------	-----	----	----	------------	-----------------------------------------------------------------------------------------------------

SC160

EV645 1887 PL4 \N \N Commercial Wyndhams O'Donnell street takes shape and there are now several stores and 6 hotels. The Wyndham survived until it was demolished in 1965

SC160

EV128 1977 PL11 \N PD18 Agricultural 6000 tonnes of sorghum to go to Singapore via Wyndham (\$500000)

SC2

EV220 1993 PL11 \N PD26 Mining Argyle Diamond Mine employs 1000 people (only 10% turnover). 34M carats worth over \$500M

SC19

EV233 2000 PL11 \N PD26 Mining/Tourism Tourist operations and Strikers Resources clash over proposal to build barge landing at Faraway Bay and 40 km of roads.

SC32

EV235 2001 PL11 \N PD26 Mining Settlement between Kimberley Diamond Co & Rio Tinto sees former emerge with 1000 sq km area and over 35 diamondiferous pipes

SC34

EV646 1890 PL11 \N PD12 Pastoral Most land round Wyndham and the Ord taken up, but little local employment till after 1890 when employment of local aborigines also permitted hunting on ancestral lands

SC161

EV647	1894	PL1	\N	\N	Commercial	Two marketing organisations set up for Kimberley. Alexander Forrest & Isadore Emanuel and Conner & Doherty SC161
EV641	1884	PL11	\N	PD12	Pastoral	By end of 1884 first of cattle drives arrive with 4000 head settled on Ord River Station SC160
EV6	1885	PL1	\N	PD12	Pastoral	Numbers of stock by 1885 includes Durack & McDonald mobs from Qld & NSW to East Kimberley \N
EV635	1909	PL1	\N	PD12	Pastoral	Canning Stock route for cattle to Goldfields opened SC159
EV51	1967	PL5	\N	\N	Mining	Drilling on WAPET leases by Oil Drilling and Exploration (WA) Pty Ltd 30 km east of Derby \N
EV644	1885	PL11	\N	PD12	Pastoral	Duracks arrive with 5000 head of cattle and settle on Argyle Downs, Lissadell, Dunham River and Ivanhoe Stations SC160
EV93	1934	PL2	\N	\N	Infrastructure	Australian Aerial Medical Service established \N
EV52	1970	PL2	\N	\N	Government	Shire offices built of Mt Jowalenga sandstone \N

EV94	1941	PL2	\N	\N	Infrastructure	AAMS becomes Flying Doctor Service \N
EV95	1955	PL2	\N	\N	Infrastructure	FDS becomes RFDS \N
EV53	1965	PL2	FD4	\N	Infrastructure	New power station to be built at Derby \N
EV96	1937	PL5	\N	\N	Mining	Iron ore found in Yampi Sound \N
EV58	1921	PL1	\N	PD6	Mining	Freneys start oil exploration \N
EV98	1944	PL5	\N	\N	Mining	Brasserts & Co and a British company prevented from developing iron ore and cattle trade to Japan by Commonwealth embargo \N
EV59	1955	PL1	\N	PD6	Mining	Freneys and WAPET continue oil exploration \N
EV61	1909	PL1	\N	PD7	Mining	Coal discovered at Liveringa \N
EV63	1907	PL2	\N	\N	Commercial	Port Hotel burnt down and Adcocks Store damaged by fire \N
EV102	1951	PL1	\N	\N	Climate	Three year drought begins \N
EV103	1959	PL2	\N	\N	Pastoral	Derby Export Meat Company (DEMCO) starts \N

EV64	1911	PL5	\N	PD8	Mining	Tin ore found 73 miles NE of Derby—good grades and quantity \N
EV104	1965	PL1	\N	\N	Communications	First land line established \N
EV66	1887	PL2	\N	\N	Commercial	First Derby newspaper—hand-written @ 1/- \N
EV4	1883	PL2	\N	\N	Declaration	Derby townsite declared 220 allotments of 2 roods @ \$40 each. Only one lot sold before January 1885 \N
EV92	1955	PL2	\N	\N	Infrastructure	RFDS Base established \N
EV28	1913	PL2	\N	\N	Count or Census \N	Derby population
EV648	1894	PL4	\N	\N	Shipping/Ports	Wyndham Jetty rebuilt from simple landing to an L shape although still at Anthons Landing. Most cattle still overlanded to Derby and thence by ship to Perth SC161
EV23	1898	PL2	\N	\N	Count or Census	Derby population \N
EV24	1889	PL5	\N	\N	Count or Census	West Kimberley population (inc Derby) \N
EV10	1887	PL3	\N	\N	Count or Census	Number of men on Halls Creek gold field falls owing to discovery of Kalgoorlie & Coolgardie gold fields \N

EV48	1968	PL2	\N	\N	Count or Census	Derby population \N
EV44	1964	PL9	\N		Agricultural	19 farms allocated on Ord project \N
EV41	1964	PL7	FD1	\N	Pastoral	Broome meatworks re-modelled: capacity equal to whole of West Kimberley turn-off \N
EV649	1898	PL4	\N	\N	Count or Census	Wyndham population (European only) 95 SC161
EV29	1913	PL5	\N	\N	Count or Census	West Kimberley population (inc Derby) \N
EV560	1892	PL7	\N	\N	Recession	Beginning of a major world economic depression ends good years in Broome which started in 1889 SC113
EV106	1960	PL5	\N	\N	Pastoral	End of Air-Beef scheme with construction of Gibb River Road. Chiller trucks resulted in 50% cost reduction \N
EV650	1913	PL4	\N	\N	InfrastructureRev	Gribble establishes Forrest River Mission SC162
EV652	1919	PL4	\N	\N	Pastoral	Forrest River Mission has regular supply of cattle for meatworks at Wyndham SC162
EV109	1963	PL2	\N	\N	Pastoral	Glenroy ceased operations as chiller

						trucks take increasing loads to Derby \N
EV110	1966	PL2	\N	\N	Pastoral	DEMCO fully operational \N
EV111	1964	PL2	FD10	\N	Government	Shire-civic offices finished in Derby of Kimberley Colourstone \N
EV112	1964	PL2	\N	\N	Commercial	Rustys General store & supermarket opened \N
EV113	1960	PL2	\N	\N	Commercial	Three soft drink factories operating in Derby \N
EV653	1917	PL4	\N	\N	Agricultural	First cotton planted at Forrest River Mission. Successful and aboriginal women spin it into yarn SC162
EV654	1907	PL4	\N	\N	Infrastructure	First school established at Wyndham. Soon closed—no students SC162
EV655	1917	PL4	\N	\N	Infrastructure	School re-opened at Wyndham (where present Police Station is situated) SC162
EV656	1913	PL4	\N	\N	Infrastructure	New hospital constructed SC162
EV657	1894	PL4	\N	\N	Infrastructure	First bush hospital constructed at Wyndham SC162
EV658	1912	PL4	\N	\N	Shipping/Ports	Government commits to regular shipping service to Wyndham SC162

EV659	1912 PL4	\N	\N	Count or Census	Permanent population at Wyndham 160 SC162
EV660	1924 PL4	\N	\N	Communications	Wireless station established in Wyndham area SC162
EV661	1919 PL4	\N	\N	Shipping/Ports	New wharf built at Wyndham SC163
EV662	1987 PL4	\N	\N	Commercial	Crocodile farm sited at former meatworks site SC164
EV610	1999 PL2	\N	\N	InfrastructurePrime	Minister Howard to write to W.A. State Government to suggest a joint study into tidal power in general but not into the Derby proposal specifically SC140
EV612	1999 PL2	\N	\N	InfrastructurePrime	Minister Howard suggests only modest financial support for tidal power—nothing like \$120M SC141
EV613	1999 PL2	\N	\N	InfrastructureGovernment	steering committee rejects Derby tidal project SC142
EV611	1999 PL1	\N	\N	InfrastructureWA	Cabinet decides in favour of Equity Energy Corp/Woodside Energy gas fired power stations for Kimberley - but tidal project would be evaluated again by Minister Barnett before final decision made

SC141

EV614 1999 PL2 \N \N InfrastructureDr Sue Graham Taylor—
President of
Conservation Council of
W.A. says Derby tidal
power project is
irresponsible because
too little is known about
the site area

SC143

EV615 2000 PL2 \N \N InfrastructurePrivate group may invest \$80M
to fill funding gap for
Derby tidal power
project

SC144

EV577 1893 PL4 \N \N Communications Single wire telegraph
extended to Wyndham

SC125

EV119 1969 PL2 \N \N Tourism New caravan Park at
Derby
\N

EV125 1969 PL5 \N \N Pastoral ALCO Ltd buy Louisa
Downs, Bohemia
Downs, Kimberley
Downs, Napier Downs,
Liveringa, Mount
Jowalenga, Kilito with
Camballin irrigation
project. 4270000 acres
and \$18 million
\N

EV126 1969 PL2 \N \N Commercial Club Hotel re-named
Spinnifex Hotel
\N

EV72 1885 PL2 \N PD16 Pastoral 550 bales of wool @
3.25 cwt represents 4
lbs per sheep
\N

EV116	1964	PL2	\N	PD13	Mining	Lead mined since 1947 but not exported via Derby before 1964 \N
EV117	1964	PL2	\N	PD14	Mining	Zinc mined since 1947 but not exported via Derby before 1964 \N
EV118	1964	PL2	\N	PD15	Mining	Silver mined since 1947 but not exported via Derby before 1964 \N
EV115	1964	PL5	\N	PD7	Mining	50 Million tons of steaming coal reserves at Liveringa (Theiss Bros exploration) \N
EV122	1969	PL5	\N	PD12	Pastoral	12075 cattle processed at DEMCO \N
EV123	1969	PL5	\N	PD16	Pastoral	1539 bales of wool exported from Derby. Last wool shipment \N
EV124	1969	PL5	\N	PD9	Pastoral	42000 Sheep replaced by cattle by ALCO Ltd \N
EV120	1969	PL5	\N	PD12	Pastoral	Australian Land & Cattle Co take over Camballin irrigation project to concentrate on feed-lot cattle fattening \N
EV39	1961	PL2	\N	PD7	Pastoral	Derby meatworks built & opened \N
EV121	1969	PL2	FD3	\N	Infrastructure	Numbala Nunga opens \N
EV107	1964	PL2	FD8	\N	Shipping/Ports	New jetty finished

					\N	
EV616	2000 PL2	\N	\N	Infrastructure	Commonwealth Government to appoint independent consultants to look at Derby tidal power project SC145	
EV617	2000 PL2	\N	\N	Infrastructure	Dr Gallop of ALP says Derby tidal power project will go ahead if ALP elected in 2001 State election SC146	
EV43	1964 PL7	\N	\N	Shipping/Ports	New jetty under construction here also \N	
EV42	1964 PL2	\N	\N	Shipping/Ports	New jetty under construction \N	
EV618	1999 PL2	\N	\N	Infrastructure	Derby tidal power not put on short list of projects to supply power to West Kimberley SC147	
EV619	1999 PL2	\N	\N	Infrastructure	Professor Peter Newman of Murdoch university has attacked EPA rejection of Derby tidal power project and has lodged an appeal against the decision SC148	
EV620	1964 PL25	\N	\N	Infrastructure	La Rance tidal power project in France expected to be completed in 1966 \N	
EV108	1962 PL2	FD9	\N	Shipping/Ports	New jetty planned \N	
EV621	2001 PL2	\N	\N	Infrastructure	Ripper of ALP says he has	

						legal advice that gas power contracts let by previous government were binding. Derby tidal power project in doubt SC150
EV12	1887	PL4	\N	\N	Shipping/Ports	Adelaide Steamship Co makes irregular calls to Cambridge Gulf \N
EV622	2000	PL2	\N	\N	Infrastructure	Court Government says it will support a small 10 MW tidal power plant for Derby with gas for Broome & Fitzroy Crossing costing \$95M. Small plant may not be viable SC151
EV130	1997	PL7	\N	\N	Agricultural	Serendipity Herb Farm operating in Broome SC3
EV129	1977	PL4	FD3	\N	Shipping/Ports	Bulk handling equipment to be ready for use by end of year SC2
EV623	1999	PL2	\N	\N	Infrastructure	KDC supports tidal power project at Derby SC152
EV127	1997	PL1	\N	PD17	Agricultural	Ord & Broome plus other areas in WA produce 10% of Australian crop of bananas. Growing time half that of temperate areas (9 months compared with 18 months) C1
EV624	2001	PL2	\N	\N	Infrastructure	Final contracts for gas fired power stations in West Kimberley signed

SC153

EV131	1962	PL2	FD3	\N	Infrastructure	Tenders called for building of Nurses Home in Derby (Alcatraz) SC4
EV46	1968	PL2	FD3	\N	Infrastructure	Nursing home to be built at site of old native hospital—Numbala Nunga—assemblies of Presbyterian Church to manage—32 beds—3 staff houses \N
EV625	2000	PL1	\N	\N	Tourism	4 finalist for Sir David Brand Award were all from Kimberley:- Slingair Heliwork; El Questro; Kimberley Wilderness Tours; Eco Beach Wilderness Retreat. SC154
EV60	1896	PL2	\N	\N	Infrastructure	Small native hospital built \N
EV626	1999	PL1	\N	\N	Tourism	23 of 78 finalists in tourism awards were from Kimberley in 1999 SC154
EV627	1997	PL2	FD39	\N	Shipping/Ports	Premier R. Court opens Derby Export Facility. Cost is \$15M. Western Metals will export Zinc Sulphide & lead sulphate concentrates SC155
EV132	1924	PL2	FD3	\N	Infrastructure	Public Hospital built on Loch Street \N
EV628	1997	PL17	\N	\N	Mining	Western Metals approve go-ahead for Kapok zinc/lead mine at

						Cadjebut. This is to replace original mine which is still economic SC156
EV630	2000	PL17	\N	\N	Mining	Mill shutdown at Cadjebut. 40 jobs lost SC158
EV631	2000	PL17	FD40	\N	Mining	Milling operations to be taken on at Pilbara which will get a \$9.6M upgrade by January 2001 SC158
EV133	1960	PL2	FD3	\N	Infrastructure	General Ward & Out Patients/A & E added to hospital \N
EV134	1976	PL2	FD3	\N	Infrastructure	Children's ward upgraded \N
EV135	1979	PL2	FD3	\N	Infrastructure	Theatre & CSSD added to hospital \N
EV629	1997	PL17	\N	\N	Mining	Western Metals to develop Pillara (Blendevalle) mine 40 km S.E. of Fitzroy Crossing. This is Western Mining's 4th Kimberley mine. SC157
EV632	2000	PL17	\N	\N	Mining	Goongewa mine (Western Metals) to close at end of 2000 SC158
EV136	1983	PL2	FD3	\N	Infrastructure	First stage of 10 year re-development at hospital. New workshops & stores built \N
EV137	1987	PL2	FD3	\N	Infrastructure	Laundry and Mortuary built at hospital

					\N	
EV633	2000	PL17	\N	\N	Mining	Kutarta mine (Western Metals) not to be developed for several years SC158
EV634	2000	PL17	\N	\N	Mining	Western Metals labour force to fall from 420 to 385 on closure of Goongewa mine SC158
EV138	1991	PL2	FD3	\N	Infrastructure	Stage 3 of hospital redevelopment to see new A & E and Outpatients, Allied Health, State Laboratories, Pharmacy and Administration block finished by 1991 \N
EV139	2000	PL2	FD3	\N	Infrastructure	Still no funds for demolished general ward and Allied Health building works SC5
EV140	1883	PL2	FD3	\N	Shipping/Ports	Port of Derby surveyed by John Forrest SC6
EV8	1885	PL2	FD7	\N	Shipping/Ports	Jetty to be built at Derby (102 Ft). Exports are wool & pearl shells \N
EV142	1893	PL2	\N	PD12	Pastoral	2000 cattle exported SC6
EV143	1893	PL2	\N	PD9	Pastoral	24000 fat sheep & lambs exported SC6
EV141	1893	PL2	FD3	\N	Shipping/Ports	Jetty improved to an "L" shape SC6

EV144	1893 PL2	\N	\N	Shipping/Ports	Adelaide Steamship Co and W.A. Steam Navigation Co use port of Derby SC6
EV145	1904 PL2	FD3	\N	Shipping/Ports	Causeway tramway extended from jetty 2.5 miles down Loch Street to water tower on Ashley street corner SC6
EV18	1892 PL2	\N	\N	Shipping/Ports	Jetty Tramline operating 3 ft 6 in gauge \N
EV84	1902 PL2	\N	\N	Shipping/Ports	Town tramway extended over mud flats to port. 10 trucks and a passenger car. \N
EV146	1910 PL2	\N	\N	Shipping/Ports	SS Colac grounded. 300 cattle and 2000 sheep off-loaded. Vessel abandoned SC6
EV147	1910 PL2	\N	\N	Shipping/Ports	State Shipping service commenced SC6
EV148	1910 PL2	\N	\N	Pastoral	Myalls bore & trough constructed to water cattle before shipment to Fremantle SC6
EV149	1953 PL2	\N	\N	Shipping/Ports	Petrol driven traction replaces horses on tramway SC6
EV150	1964 PL2	FD11	\N	Shipping/Ports	New 577 metre steel & concrete jetty constructed SC6

EV151	1964 PL2	\N	PD12	Pastoral	9688 cattle exported and 9543 slaughtered at DEMCO SC6
EV152	1966 PL2	\N	\N	Shipping/Ports	Old wooden jetty demolished SC6
EV153	1973 PL2	\N	\N	Shipping/Ports	Last commercial ship visits Derby port SC6
EV638	1986 PL4	\N	\N	Pastoral	Wyndham Meatworks burnt down SC159
EV639	1916 PL4	\N	\N	Infrastructure	Pumping station to provide fresh water to town of Wyndham and the meatworks started in 1916 on King River 30 km from town (Previously all relied on Government well at Three Mile SC159
EV590	1983 PL12	\N	\N	Communications	Halls Creek line depot closed \N
EV154	1966 PL2	\N	\N	Shipping/Ports	Trucks replace tramway. Latter had 19 H-class & 13 G-class open wagons, 22 flattop wagons and 1 passenger wagon SC6
EV591	1967 PL2	FD36	\N	Infrastructure	6 DB, 2000 watt national regional broadcasting station costing \$75,000 relays A.B.C. from Perth to Derby, Koolan Island & Cockatoo Island begins broadcasting 30/11/1967

SC126

EV592	1967	PL7	FD36	\N	Infrastructure	Regional broadcasting station costing \$75,000 relaying A.B.C. from Perth begins broadcasting 31/10/1967 SC126
EV155	1963	PL2	FD3	\N	Infrastructure	Air conditioned nurses home under construction SC7
EV593	1990	PL2	\N	\N	Communications	Digital Radio Concentrator System (DRCS) developed by NEC since 1978 to provide STD, ISD, telex, computer data links, fax & e-mail services to 40 cutomers in King Leopold Ranges & Mitchell Plateau from Derby SC127
EV594	1990	PL4	\N	\N	Communications	DRCS to service 20 customers to west of Wyndham SC127
EV595	1990	PL12	\N	\N	Communications	DRCS to service 35 customers to west of Halls Creek SC127
EV156	1963	PL2	FD3	\N	Infrastructure	18 State housing commission houses being built SC7
EV596	2000	PL7	FD37	\N	Infrastructure	Broome to receive SBS SC128
EV597	2001	PL1	\N	\N	Communications	Cheaper station -> station calls. Was 50 cents for 10 minutes - now half that SC129

EV157	1963 PL2	FD12	\N	Commercial	Large self-service store being built SC7
EV598	2000 PL2	\N	\N	InfrastructureCost	of tidal power project would be \$335M. Cheaper than gas over 27 years but not over 18 years. SC130
EV599	2000 PL2	\N	\N	InfrastructurePublic	opinion in Derby & environs for tidal power. Tidal Energy Australia (TEA) and Leighton Contractors have submitted proposals to State Government. Derby Resident Action Group and Derby Ratepayers Association oppose project. Project would have 120 year life SC131
EV600	1975 PL2	FD38	\N	InfrastructureCharles	Court announces new study into tidal power near Derby at cost of \$25,000 SC132
EV159	1963 PL2	FD12		Commercial	Two new banks opening SC7
EV601	1964 PL5	\N	\N	InfrastructureFrench	consultants Sogreah find tidal power at Secure Bay and Walcott Inlet not economical owing to high civil engineering costs SC132
EV602	2000 PL2	\N	\N	InfrastructureIndependent	Commonwealth Government study into

						tidal power, believed to be favourable, will not be made public SC133
EV160	1963	PL2	FD3	\N	Transport	Loch Street converted to a dual carriageway SC7
EV161	1963	PL2	FD3	\N	Infrastructure	Improvements made to Derby Junior High School SC7
EV162	1963	PL2	FD12	\N	Infrastructure	New convent to be built behind recently built modern church SC7
EV163	1962	PL4	\N	PD12	Pastoral	10000 cattle sent to Wyndham SC8
EV164	1961	PL4	\N	PD12	Pastoral	4000 cattle sent to Wyndham SC8
EV165	1987	PL2	FD12	\N	Commercial	Dave Miller & Phill Jenkins begin work on Wharf Restaurant SC9
EV603	1998	PL2	\N	\N	Infrastructure	Prof Graham Doborn of Acadia Centre for Estuarine Research, Acadia University, Nova Scotia says more research needed before Derby tidal power project can be supported \N
EV604	1999	PL2	\N	\N	Infrastructure	E. P. A. rejects Derby tidal power proposal SC134
EV167	1994	PL2	\N	PD19	Tourism	\$124.5 Million spent SC10

EV166	1997 PL2	\N	PD19	Tourism	188000 people visit Derby Jul-Dec Derby 3rd most visited town—38100 visitations SC10
EV605	1998 PL2	\N	\N	InfrastructureCost	of Derby tidal power project estimated at \$175M SC199
EV57	1967 PL2	\N	PD19	Tourism	54 berth caravan park to be built at Derby. Permanent structures to be of Jowalenga sandstone \N
EV168	1966 PL2	\N	\N	Shipping/Ports	Old Jetty burnt down for demolition. Piles blasted and dragged \N
EV169	1994 PL2	\N	\N	Shipping/Ports	Derby Port closed \N
EV170	1997 PL2	\N	\N	Shipping/Ports	Shire takes over ownership of port and barge operation for Western Metals Corporation commences. Barge company tows product barges to larger vessels in King Sound SC10
EV171	1983 PL2	\N	\N	Shipping/Ports	SS Pilbara grounded near Derby Jetty. State Ships suspend service \N
EV172	1954 PL2	\N	PD20	Shipping/Ports	15642 tons of cargo through Derby port SC11
EV173	1955 PL2	\N	PD20	Shipping/Ports	30579 tons of cargo

					through Derby port SC11
EV174	1956 PL2	\N	PD20	Shipping/Ports	25615 tons of cargo through Derby port SC11
EV175	1957 PL2	\N	PD20	Shipping/Ports	31211 tons of cargo through Derby port SC11
EV176	1958 PL2	\N	PD20	Shipping/Ports	26794 tons of cargo through Derby port SC11
EV177	1959 PL2	\N	PD20	Shipping/Ports	37419 tons of cargo through Derby port SC11
EV178	1960 PL2	\N	PD20	Shipping/Ports	46247 tons of cargo through Derby port SC11
EV179	1961 PL2	\N	PD20	Shipping/Ports	41645 tons of cargo through Derby port SC11
EV180	1999 PL2	\N	\N	Social	Up to 24 prisoners housed at Bungarun (old Lep) will work in and round Derby but will not replace paid employees SC12
EV606	1998 PL4	\N	\N	Infrastructure	Plans for a tidal stream power plant at Wyndham. Currents between Melville Island and Bathurst Island similar to those in Cambridge Gulf. Cost estimated at \$60,000 for 15-40 Kw output SC136
EV607	1999 PL2	\N	\N	Infrastructure	Richard Court (Premier) announces that cost of

					Derby tidal power project has gone up from just over \$100M to \$300M. SC137
EV608	1999 PL2	\N	\N	Infrastructure	W. A. Government says that Derby tidal power proposal is environmentally sound in spite of EPA earlier rejection SC138
EV609	1999 PL2	\N	\N	Infrastructure	Derby tidal power project cost is now \$360M and has a shortfall of \$120M which it is hoped would be filled by Commonwealth Government Renewable Energy Fund which has assets of \$321M. No assistance can be given without State Government approval. SC139
EV571	1981 PL2	\N	\N	Shipping/Ports	State Ships service to Derby suspended after grounding of SS Pilbara SC122
EV181	1994 PL2	\N	\N	Count or Census	Derby population 6318 SC13
EV573	1982 PL2	\N	\N	Shipping/Ports	State Ships will no longer service Derby by sea SC123
EV574	1981 PL2	FD33	\N	Communications	New tower almost complete with capacity for 960 telephone channels (currently 60) Derby/Port Hedland section of microwave links cost \$6M SC124

EV575	1983	PL9	FD34	\N	Communications	Derby/Kununurra microwave link costs \$10M. Part of Worlds longest solar powered microwave system SC124
EV182	1999	PL2	\N	\N	Count or Census	Derby population 7783 Derby-West Kimberley 4th fastest growing shire in Australia and fastest in W.A. SC13
EV183	1999	PL7	\N	\N	Count or Census	Broome increase in population 1994-1999 490 (+4.7%) SC13
EV74	1959	PL2	FD6	\N	Communications	Radio telephone link opened. Two technical staff added SC125
EV65	1889	PL2	\N	\N	Communications	Telegraph Office opened in Derby SC125
EV54	1967	PL1	FD5	\N	Communications	4 wire/4 voice channel carrier system over 600 miles between Derby & Wyndham with 3 channel systems between intervening towns. 2 T\Tech staff & 2 line staff added SC125
EV185	1999	PL3	\N	\N	Count or Census	Halls Creek increase in population 1994-1999 220 (+6.5%) SC13
EV75	1982	PL2	\N	\N	Communications	STD via a microwave system now available

						replacing 4 wire system SC125
EV186	2000	PL6	FD12	PD19	Tourism	30 extra bays to be built at Fitzroy River Lodge Caravan Park (currently 127 bays). This is a Shire park and is kept vacant due to risk of flooding except during tourist season SC14
EV184	1999	PL11	\N	\N	Count or Census	Wyndham-East Kimberley increase in population 1994-1999 400 (+5.9%) SC13
EV187	2000	PL2	\N	\N	Commercial	Derby Business Enterprise Centre re-opens SC15
EV363	1983	PL9	\N	\N	Communications	Microwave system extended to Wyndham/Kununurra SC125
EV296	1976	PL11C	\N	\N	Labour Force	Wyndham-East Kimberley labour force in Community Service SC37
EV188	1998	PL1	\N	PD25	General Event	Value of general economic activity of region SC16
EV189	1999	PL2	\N	\N	Government	Curtin RAAF Base ready for use as a detention centre for asylum seekers \N

EV190	1983 PL7	\N	\N	Count or Census	Broome population 3666—6% increase since 1960 SC17
EV191	1983 PL2	\N	\N	Count or Census	Derby population 2933—1% increase since 1960 SC17
EV192	1983 PL9	\N	\N	Count or Census	Kununurra population 2081—5% increase since 1960 SC17
EV193	1983 PL4	\N	\N	Count or Census	Wyndham population 1509—steady since 1960 SC17
EV194	1983 PL12	\N	\N	Count or Census	Halls Creek population 966—4% increase since 1960 SC17
EV195	1983 PL13	\N	\N	Count or Census	Broome Shire area 54648 sq km. 1984 population estimate 5110 SC17
EV196	1983 PL5	\N	\N	Count or Census	Derby-West Kimberley Shire area 102706 sq km. 1984 population estimate 6820 SC17
EV197	1983 PL3	\N	\N	Count or Census	Halls Creek Shire area 142908 sq km. 1984 population estimate 2780 SC17
EV198	1983 PL11	\N	\N	Count or Census	Wyndham-East Kimberley Shire area 121189. 1984 population estimate 5430 SC17

EV199	1983 PL1	\N	\N	Count or Census	Kimberley population estimate for 1984 is 20140 - up from 1961 total of 7168 SC17
EV200	1982 PL11	\N	PD26	Mining	CRA subsidiaries Ashton Mining Group and WA Mine Trust form joint venture SC17
EV201	1979 PL11	\N	PD26	Mining	Evaluation of Kimberlite pipe and associated alluvial deposits of diamonds SC17
EV205	1983 PL5	\N	PD26	Mining	Smaller diamond deposit found at Ellendale—100 Km east of Derby SC17
EV206	1981 PL1	\N	PD6	Mining	No 1 well drilled at Blina—105 Km east of Derby SC17
EV208	1983 PL1	\N	PD6	Mining	Reserves:— 216000 KI at Blina and 180000 KI at Sundown (80 Km S.E of Derby) and West Kara (33 Km E of Derby) SC17
EV209	1984 PL7	\N	PD12	Pastoral	Cattle killed 24810 \N
EV210	1984 PL4	\N	PD12	Pastoral	Cattle killed 38720 \N
EV578	1945 PL2	\N	\N	Communications	Switchboard installed at Derby and telephone connected to some businesses & homes SC125
EV211	1984 PL1	\N	PD12	Pastoral	Live cattle exports 12812

					\N
EV212	1984 PL1	\N	PD12	Pastoral	Cattle sold in WA or interstate 66377 \N
EV213	1985 PL7	\N	PD12	Pastoral	Cattle killed 32168 \N
EV214	1985 PL4	\N	PD12	Pastoral	Cattle killed 32768 \N
EV215	1985 PL1	\N	PD12	Pastoral	Live cattle exports 14000 \N
EV216	1985 PL1	\N	PD12	Pastoral	Cattle sold in WA or interstate 65000 \N
EV579	1975 PL1	\N	\N	Communications	PMG split into Australia Post & Telecom Australia SC125
EV580	1975 PL2	\N	\N	Communications	Further 12 voice & 24 telegraph channels added to same 4 wire system as was installed in 1967 \N
EV581	1987 PL5	\N	\N	Communications	Digital radio system installed to give access to stations & communities along Gibb River Road. Staff now 5 Technical & 3 line SC125
EV217	1997 PL1	\N	PD21	Mining	Value of minerals and oil production \$560M SC16
EV582	1967 PL2	\N	\N	Infrastructure	A.B.C. radio commissioned service to Derby replacing short wave

					from Perth SC125
EV576	1981 PL1	FD35 \N	Infrastructure	Remote area television for Broome, Derby, Wyndham, Kununurra, Halls Creek, Koolan Island, Cockatoo Island, Fitzroy Crossing. 50 places included nationally. Co-ax to Carnarvon -> satellite via O.T.C. SC125	
EV218	1998 PL1	\N	PD21 Mining		Value of minerals and oil produced \$631M SC18
EV219	1999 PL1	\N	PD19 Tourism		Visits to region increasing by average annual rate of 5.6% over past 5 years SC18
EV583	1983 PL1	\N	\N	Infrastructure	Aussat satellite brings commercial television to Kimberley SC125
EV584	1912 PL1	\N	\N	Communications	Alternative telegraph route via Mullewa & Marble Bar with switching at Condon available SC125
EV221	1994 PL5	\N	PD26 Mining		Kimberley Diamond Co investigating prospects at Calwynyardah and Blina SC20
EV222	1993 PL11	\N	PD26 Mining		Possibility of off-shore diamonds in Cambridge Gulf. SC21

EV223	1993	PL11	\N	PD26	Mining	Cambridge Gulf Exploration Co find diamonds in the Gulf of Kimberlite origin. Argyle diamonds are of lamporite rock origin SC22
EV11	1889	PL1	\N	\N	Communications	Telegraph arrives in Kimberley. Single wire from Northampton via Roebourne SC125
EV224	1978	PL1	\N	PD26	Mining	Diamond prospecting and pegging of claims (300 in a day in one week) increase in Kimberley. Sales of stores to mining camps have more than made up for closure of DEMCO. 4WD vehicles unobtainable. SC23
EV225	1976	PL1	\N	PD26	Mining	CRA joins search for diamonds in W.A. SC24
EV226	1979	PL1	\N	PD26	Mining	Ashton Joint Venture report disappointing results to ASX. 4207 stones found. SC25
EV585	1926	PL24	\N	\N	Communications	Telegraph taken to Warroobpah—30 km south of La Grange (Bidyadanga) SC125
EV586	1960	PL4	\N	\N	Communications	Wyndham telephone exchange begins providing continuous service SC125

EV587	1965 PL4	\N	\N	Communications	Radio telephone Wyndham/Derby opened SC125
EV588	1884 PL2	\N	\N	Infrastructure	First Post Office constructed in Derby SC125
EV227	1998 PL1	FD14	PD26	Mining	Strikers Resources spend \$7M on diamond exploration in past 6/7 years. Others involved Rio Tinto, De Beers, Diaro Explorations & Australian Kimberley Diamonds SC26
EV589	1961 PL2	\N	\N	Infrastructure	New Post Office (under consideration since 1958) completed in Derby SC125
EV451	1957 PL7	\N	PD2	Pearling	Pearling in Broome re-starts after World War 2 with 47 luggers. (There were up to 400 luggers until about 1914) SC76
EV551	1955 PL7	\N	PD2	Pearling	New plastic products replace pearl shell and Broome in danger of becoming a ghost town as luggers rot on the beach SC108
EV228	1999 PL11	\N	PD26	Mining	Argyle production started in 1985. It is 130 km south of Kununurra; 500 employees on 2 weeks on 2 weeks off roster of 12 hour shifts Ansett 75 seat jet hired at \$7M per annum SC27

EV453	1955 PL7	\N	PD1	Pearling	Number of luggers increase to 11 owing to demand for "live" shells for cultured pearl industry SC76
EV454	1956 PL23	\N	PD1	Pearling	Cultured pearl industry established at Kuri Bay 400 kms north of Broome SC76
EV229	2000 PL9	FD15	PD26	Mining	Exploration to inject \$10M-\$15M into Kununurra in next 6 months. Strikers Resources has 5000 sq km of tenements in N Kimberley and has spent \$14M in last 8 years and will spend \$6M in next 6 months SC28
EV230	2000 PL11	FD16	PD26	Mining	De Beers launch \$522.1M bid for Ashton Mining SC29
EV553	1960 PL7	\N	PD1	Pearling	Luggers again sail from Broome but with modern hookah gear replacing deep diving suits SC108
EV232	2000 PL11	\N	PD26	Mining	De Beers offer of \$2.28 a share for Ashton Mining does not have FIRB not Belgian Competition Authority approval. Rio Tinto's offer of \$1.85 a share has both. SC31
EV554	1977 PL7	\N	PD1	Pearling	Broome again producing

					60%-70% of worlds large cultured pearls. Mother of pearl shell now the (still valuable) bye-product SC108
EV552	1960 PL23	\N	PD1	Pearling	Industry re-bounds on production of cultured pearls from Kuri Bay SC108
EV555	1911 PL7	\N	PD2	Pearling	Pearling contractors told to - whitewash - the industry by 1913 SC109
EV556	1912 PL7	\N	PD2	Pearling	9 Royal Navy trained divers arrived at Fremantle. Gear and training were unsuitable, local knowledge non-existent and experiment failed within months SC110
EV234	2000 PL11	\N	PD26	Mining	De Beers withdraw offer for Ashton Mining SC33
EV450	1941 PL7	\N	PD2	Pearling	World War II stops pearling in Broome. Most of divers were Japanese SC76
EV231	1999 PL5	\N	PD26	Mining	Kimberley Diamond Co apply for licence to explore Ellendale field discovered by Argyle Diamonds in 1976. Claim is that since it has not been worked Argyles rights expired in 1991 SC30
EV557	1886 PL7	\N	PD2	Pearling	New Pearling Act

					replacing the 1882 Act passed detailing obligations to aboriginal divers & tax payable on on-board goods & exported shell gathered in international waters SC111
EV558	1886 PL7	\N	\N	Commercial	First town sites in Broome sold SC111
EV413	1950 PL7	\N	\N	Recession	Broome experienced a prolonged economic downturn during 1950s and 1960s SC68
EV559	1892 PL7	\N	PD2	Pearling	1886 Pearling Act repealed. Excise duty on pearl shell halved from 8 to 4 pounds sterling per ton SC112
EV561	1999 PL1	FD31	PD1	Pearling	\$3.8M allocated to research management by State Government (\$100,000 to pearl oyster sustainability; \$150,000 to pearl shell stocks) SC114
EV562	1999 PL1	FD32	\N	Aquacultural	\$4.2M allocated to aquacultural research by State Government SC114
EV236	2001 PL5	\N	PD26	Mining	Kimberley Diamond Co pays \$23.25M to own Ellendale field 135 kms east of Derby. To establish offices in Broome; employ 88 people increasing to 130 over 3 years; First

					production in a year; expects 200000 carats; life of field estimated at 10 years SC35
EV563	1908 PL7	\N	PD2	Pearling	Cyclone sinks and/or scatters 40 boats along 80 Mile Beach. 50 crew dead SC115
EV564	2000 PL7	\N	PD1	Pearling	Value of exports of pearls \$200M (nationally \$210M). Exports go to Japan, US, Hong Kong & Europe SC116
EV237	1958 PL5	\N	PD12	Pastoral	Mr Telfare bought Mount Hart Station and seeing culled donkeys left on land set up a processing plant and abbatoir using 1 gallon tins to process meat for Asian market. Health Dept closed plant. SC36
EV565	2000 PL7	\N	PD1	Pearling	16 WA licences allow for total WA quota of 922 units (1000 shells per unit-572 wild 350 hatchery) of which Paspaley Pearls has 36% & M.G.Kailis has 18% SC116
EV239	1971 PL13	\N	\N	Count or Census	Broome Shire population SC37
EV238	1966 PL13	\N	\N	Count or Census	Broome Shire population SC37
EV240	1976 PL13	\N	\N	Count or Census	Broome Shire Population SC37

EV241	1981 PL13	\N	\N	Count or Census	Broome Shire Population SC37
EV566	2000 PL4	\N	\N	Aquacultural	Southern Cross Aquaculture Pty Ltd due to start on 1000 ha site near Wyndham SC117
EV243	1971 PL3	\N	\N	Count or Census	Halls Creek Population SC37
EV244	1976 PL3	\N	\N	Count or Census	Halls Creek Population SC37
EV245	1981 PL3	\N	\N	Count or Census	Halls Creek Population SC37
EV246	1966 PL5	\N	\N	Count or Census	Derby-W. Kim Population SC37
EV247	1971 PL5	\N	\N	Count or Census	Derby-W. Kim Population SC37
EV242	1966 PL3	\N	\N	Count or Census	Halls Creek Population SC37
EV248	1976 PL5	\N	\N	Count or Census	Derby-W. Kim Population SC37
EV249	1981 PL5	\N	\N	Count or Census	Derby-W. Kim Population SC37
EV567	1998 PL2	\N	\N	Aquacultural	Limited EPA approval for initial stage of Ian Crimps Kimberley Prawn Company. Has taken 3.5 years to get this far SC118
EV250	1966 PL11	\N	\N	Count or Census	Wyn-E. Kim Population SC37
EV568	1998 PL2	\N	\N	Aquacultural	Consultative Environmental Review of K.P.C. by Derby Residents Action Group

						concludes proposal should not proceed further in present form and should not proceed in any form in Doctors Creek area (V & C Demeniuk Research Group) SC119
EV252	1976 PL11	\N	\N	Count or Census	Wyn E. Kim Population	SC37
EV253	1981 PL11	\N	\N	Count or Census	Wyn E. Kim Population	SC37
EV254	1966 PL1	\N	\N	Count or Census	Kimberley Population	SC37
EV255	1971 PL1	\N	\N	Count or Census	Kimberley Population	SC37
EV256	1976 PL1	\N	\N	Count or Census	Kimberley Population	SC37
EV257	1981 PL1	\N	\N	Count or Census	Kimberley Population	SC37
EV538	1954 PL5	\N	PD9	Pastoral	Decline of sheep in Derby-West Kimberley Shire:- 1944-306,000; 1954 - 125,000. From original 70% lambing percentages declined to 46% and then 29%	SC107
EV697	1952 PL12	\N	\N	InfrastructureNew	Post Office built at new town site of Halls Creek	SC180
EV698	1940 PL12	\N	\N	Infrastructure	Beginning of move to new town site of Halls Creek	\N
EV699	1898 PL12	\N	\N	Count or Census	Halls Creek population 50.	SC181

EV700	1898	PL12	\N	\N	InfrastructureHalls	Creek now had a residency, post & telegraph office, court house, jail, police station and hospital. SC181
EV701	1897	PL12	\N	\N	InfrastructureWork	started at Halls Creek on new police station and wardens office SC181
EV15	1889	PL2	\N	\N	Shipping/Ports	Year Book mentions that steamer from Fremantle calls twice a month (fare \$26) SC182
EV289	1981	PL11A	\N	\N	Labour Force	Wyndham-East Kimberley labour force in Agriculture/Fisheries SC37
EV290	1976	PL11M	\N	\N	Labour Force	Wyndham-East Kimberley labour force in Mining SC37
EV291	1981	PL11M	\N	\N	Labour Force	Wyndham-East Kimberley labour force in Mining SC37
EV292	1976	PL11N	\N	\N	Labour Force	Wyndham-East Kimberley labour force in Manufacturing SC37
EV293	1981	PL11N	\N	\N	Labour Force	Wyndham-East Kimberley labour force in Manufacturing SC37
EV294	1976	PL11W	\N	\N	Labour Force	Wyndham-East Kimberley labour force in

					Wholesale/Retail SC37
EV295	1981 PL11W	\N	\N	Labour Force	Wyndham-East Kimberley labour force in Wholesale/Retail SC37
EV297	1981 PL11C	\N	\N	Labour Force	Wyndham-East Kimberley labour force in Community Service SC37
EV298	1976 PL1A	\N	\N	Labour Force	Kimberley labour force in Agriculture/Fisheries SC37
EV299	1981 PL1A	\N	\N	Labour Force	Kimberley labour force in Agriculture/Fisheries SC37
EV300	1976 PL1M	\N	\N	Labour Force	Kimberley labour force in Mining SC37
EV301	1981 PL1M	\N	\N	Labour Force	Kimberley labour force in Mining SC37
EV302	1976 PL1N	\N	\N	Labour Force	Kimberley labour force in Manufacturing SC37
EV303	1981 PL1N	\N	\N	Labour Force	Kimberley labour force in Manufacturing SC37
EV304	1976 PL1W	\N	\N	Labour Force	Kimberley labour force in Wholesale/Retail SC37
EV569	2001 PL4	\N	\N	Aquacultural	All licences for Wyndham project obtained. Main delay was in dealing with 14 different Government Departments

					SC120
EV305	1981 PL1W	\N	\N	Labour Force	Kimberley labour force in Wholesale/Retail SC37
EV570	2001 PL2	\N	\N	Aquacultural	Works approval for Derby project (K.P.C.) should be given soon. It has taken 6 years to get this far. Plan is for 10 ponds in first year SC121
EV306	1976 PL1C	\N	\N	Labour Force	Kimberley labour force in Community Service SC37
EV307	1981 PL1C	\N	\N	Labour Force	Kimberley labour force in Community Service SC37
EV312	1976 PL13E	\N	\N	Labour Force	Employed at Broome SC37
EV313	1981 PL13E	\N	\N	Labour Force	Employed at Broome SC37
EV314	1976 PL13U	\N	\N	Labour Force	Unemployed at Broome SC37
EV315	1981 PL13U	\N	\N	Labour Force	Unemployed at Broome SC37
EV316	1976 PL13Y	\N	\N	Labour Force	Under 15 years and N.I.L.F. at Broome SC37
EV317	1981 PL13Y	\N	\N	Labour Force	Under 15 years and N.I.L.F. at Broome SC37
EV318	1976 PL3E	\N	\N	Labour Force	Employed at Halls Creek SC37
EV319	1981 PL3E	\N	\N	Labour Force	Employed at Halls Creek SC37
EV320	1976 PL3U	\N	\N	Labour Force	Unemployed at Halls

					Creek SC37
EV321	1981 PL3U	\N	\N	Labour Force	Unemployed at Halls Creek SC37
EV322	1976 PL3Y	\N	\N	Labour Force	Under 15 years and N.I.L.F. at Halls Creek SC37
EV323	1981 PL3Y	\N	\N	Labour Force	Under 15 years and N.I.L.F. at Halls Creek SC37
EV325	1981 PL5E	\N	\N	Labour Force	Employed at Derby-West Kimberley SC37
EV326	1976 PL5U	\N	\N	Labour Force	Unemployed at Derby-West Kimberley SC37
EV327	1981 PL5U	\N	\N	Labour Force	Unemployed at Derby-West Kimberley SC37
EV328	1976 PL5Y	\N	\N	Labour Force	Under 15 years and N.I.L.F. at Derby-West Kimberley SC37
EV329	1981 PL5Y	\N	\N	Labour Force	Under 15 years and N.I.L.F. at Derby-West Kimberley SC37
EV330	1976 PL11E	\N	\N	Labour Force	Employed at Wyndham-East Kimberley SC37
EV331	1981 PL11E	\N	\N	Labour Force	Employed at Wyndham-East Kimberley SC37

EV572	1982 PL2	\N	\N	Shipping/Ports	Derby Council has received no response from Premier O'Connor about development of port at Black Rocks 32 km north of Derby along King Sound. Maximum ships at Broome/Derby 20,000DWT but at Black rocks 60,000DWT and 100,000 on single buoy mooring SC122
EV332	1976 PL11U	\N	\N	Labour Force	Unemployed at Wyndham-East Kimberley SC37
EV333	1981 PL11U	\N	\N	Labour Force	Unemployed at Wyndham-East Kimberley SC37
EV334	1976 PL11Y	\N	\N	Labour Force	Under 15 years and N.I.L.F. at Wyndham-East Kimberley SC37
EV308	1982 PL7	\N	PD12	Pastoral	Cattle exported live and slaughtered at Broome:- 8000 : 35883 SC38
EV309	1982 PL4	\N	PD12	Pastoral	Cattle exported live and slaughtered at Wyndham:- 1000 : 68000 SC38
EV535	2000 PL7	\N	PD12	Shipping/Ports	Record shipments of cattle through Broome - 84,097 SC105

EV536	2000	PL7	\N	PD12	Shipping/Ports	Trade through Broome port increased 60% over 1999. Cattle represent 38% of ports turnover SC105
EV310	1983	PL7	\N	PD12	Pastoral	Estimate (mean) Cattle Live : slaughtered at Broome for 1988:- 5000 : 42000 SC38
EV311	1983	PL4	\N	PD12	Pastoral	Estimate (mean) Cattle Live : slaughtered at Wyndham for 1988:- 12500 : 75000 SC38
EV537	2000	PL1	\N	PD12	Pastoral	Total regional cattle exports for 1999:- 90,000 SC106
EV335	1981	PL11Y	\N	\N	Labour Force	Under 15 years and N.I.L.F. at Wyndham-East Kimberley SC37
EV81	1886	PL2	\N	PD2	Pearling	300 tons of pearls shell exported \N
EV430	1906	PL7	\N	PD2	Pearling	Pearl shell prices fell in 1907 ending flourishing period for Broome till 1905/6 SC72
EV432	1910	PL7	\N	\N	Pearling	Bad cyclones over Broome took edge off profits and gear, boats and lives were lost SC72

EV433	1910 PL7	\N	PD2	Pearling	Prices high until 1912 but Broome was dull. Prices of boats and land dropped. European conditions did not help SC72
EV434	1910 PL7	\N	PD2	Pearling	Pearlers and other labour employers feeling effects of 1901 immigration laws (white Australia policy)
EV452	1963 PL7	\N	PD2	Pearling	Plastic replaces pearl shell for buttons. Only 6 luggers now operating at Broome. SC76
EV336	1976 PL1E	\N	\N	Labour Force	Employed in Kimberley SC37
EV337	1981 PL1E	\N	\N	Labour Force	Employed in Kimberley SC37
EV338	1976 PL1U	\N	\N	Labour Force	Unemployed in Kimberley SC37
EV339	1981 PL1U	\N	\N	Labour Force	Unemployed in Kimberley SC37
EV340	1976 PL1Y	\N	\N	Labour Force	Under 15 years and N.I.L.F. in Kimberley SC37
EV436	1910 PL7	\N	PD2	Pearling	Pearling industry & Broome took years to recover from downturn which began in 1910 and affected economy into 1920s. 1000 names taken off electoral roll in 1910 did not reappear until 1917. SC72

EV341	1981 PL1Y	\N	\N	Labour Force	Under 15 years and N.I.L.F. in Kimberley SC37
EV324	1976 PL5E	\N	\N	Labour Force	Employed at Derby-West Kimberley SC37
EV282	1976 PL5N	\N	\N	Labour Force	Derby-West Kimberley labour force in Manufacturing SC37
EV342	1983 PL124	\N	\N	Labour Force	Kimberley unemployment by age groups 20-24 SC39
EV343	1983 PL119	\N	\N	Labour Force	Kimberley unemployment by age groups 15-19 SC39
EV344	1983 PL144	\N	\N	Labour Force	Kimberley unemployment by age groups 25-44 SC39
EV345	1983 PL145	\N	\N	Labour Force	Kimberley unemployment by age groups over 45 SC39
EV346	1983 PL1UT	\N	\N	Labour Force	Kimberley unemployment – Total SC39
EV694	1947 PL7	\N	\N	Commercial	Commonwealth Bank branch opens in Broome SC178
EV695	1971...PL9	\N	\N	Commercial	Commonwealth Bank opens in Kununurra SC178

EV696	1889	PL12	\N	\N	Infrastructure	Mud brick Post Office built at Halls Creek SC179
EV690	1987	PL9	\N	\N	Communications	First Aboriginal Radio Station commences in Kununurra SC177
EV438	1891	PL7	\N	PD2	Pearling	Broome production of pearl shell & value 541 tons & 89,000 pounds sterling SC73
EV691	1974	PL20	\N	\N	Air Transport	Kingfisher Aviation owned by the Wirrimanu people Balgo begins operations SC177
EV692	1993	PL1	\N	\N	Commercial	Northern Building Consultants (NBC Aboriginal Corporation) (Division of Northern Consultants & Associates) opened to undertake projects in WA SC177
EV482	1865	PL1	\N	\N	Shipping/Ports	Camden Harbour (North of Derby) never developed and abandoned 1865 \N
EV693	1985	PL9	\N	\N	Commercial	Mayaroong Constructions—a building company—owned by Kununurra-Waringarri Aboriginal Corporation opens in 1985 SC177
EV258	1976	PL13A	\N	\N	Labour Force	Broome Shire labour force in Agriculture/Fisheries

						SC13
EV259	1981 PL13A	\N	\N	Labour Force		Broome Shire labour force in Agriculture/Fisheries SC37
EV470	1980 PL8	\N	\N	Agricultural		Renewed cropping and large scale planned irrigation ditches trenched at Camballin SC79
EV260	1976 PL13M	\N	\N	Labour Force		Broome Shire labour force in Mining SC37
EV261	1981 PL13M	\N	\N	Labour Force		Broome Shire labour force in Mining SC37
EV471	1983 PL8	\N	\N	Agricultural		Extensive flooding and damage to farming area at Camballin SC79
EV472	1985 PL8	\N	\N	Agricultural		Liveringa/Camballin Farms bought by Anglo-Australian Foods Company (principal company, surplus machinery, equipment and buildings sold (Australian Investments Ltd) SC79
EV262	1976 PL13N	\N	\N	Labour Force		Broome Shire labour force in Manufacturing SC37
EV263	1981 PL13N	\N	\N	Labour Force		Broome Shire labour force in Manufacturing SC37
EV473	1986 PL8	\N	\N	Agricultural		Extensive flooding - level not seen since 1914 -levee bank breached

						and soil scoured in farming area near 17 mile dam. SC79
EV264	1976	PL13W	\N	\N	Labour Force	Broome Shire labour force in Wholesale/Retail SC37
EV265	1981	PL13W	\N	\N	Labour Force	Broome Shire labour force in Wholesale/Retail SC37
EV266	1976	PL13C	\N	\N	Labour Force	Broome Shire labour force in Community Service SC37
EV251	1971	PL11	\N	\N	Count or Census	Wyn-E. Kim Population SC37
EV70	1887	PL1	\N	PD11	Transport	Freight rate Derby -> Halls Creek goldfield \$300 per ton \N
EV267	1981	PL13C	\N	\N	Labour Force	Broome Shire labour force in Community Service SC37
EV439	1892	PL7	\N	PD2	Pearling	Broome production of pearl shell & value 428 tons & 78,000 pounds sterling SC73
EV440	1893	PL7	\N	PD2	Pearling	Broome production of pearl shell & value 353 tons & 57,000 pounds sterling SC73
EV441	1894	PL7	\N	PD2	Pearling	Broome production of pearl shell & value 362 tons & 35,000 pounds sterling SC73

EV347	1996 PL5	\N	\N	Agricultural	Fitzroy River Dam issues discussed - one and three dams—Dimond Gorge and that plus Margaret & Leopold dams SC40
EV442	1895 PL7	\N	PD2	Pearling	Broome production of pearl shell & value 366 tons & 26,000 pounds sterling SC73
EV348	1996 PL2	\N	\N	InfrastructureDerby	Hydro-Electric-Tidal Energy Australia Ltd—Environmental assessment (includes transmission line construction report SC41
EV349	1994 PL2	\N	\N	Aquacultural	Proposal for prawn farm in Derby by Ian Crimp \N
EV350	1999 PL2	\N	\N	Shipping/Ports	Western Metals proposals to ship zinc/lead concentrates via Derby (currently shipped via Wyndham) SC42
EV540	1885 PL14	\N	PD2	Pearling	Skin diving phase of pearling industry fading out SC108
EV352	1885 PL6	\N	\N	Discovery	Charles MacDonald explores the Fitzroy Crossing area at same time as Duracks pioneered the East Kimberley SC44
EV353	1885 PL6	\N	\N	Infrastructure	Suggestion of building a police

						station at Fitzroy Crossing SC44
EV354	1890	PL6	\N	\N	Commercial	Crossing Inn established by John Blythe SC44
EV26	1902	PL6	\N	\N	Declaration	Wallaberri townsite described (now Fitzroy Crossing) in Year Book SC45
EV355	1912	PL6	\N	\N	Declaration	Town gazetted as Fitzroy Crossing SC46
EV356	1915	PL6	\N	\N	Declaration	Name of Wallaberri cancelled (then still on some maps) SC44
EV35	1902	PL6	\N	\N	Communications	Telegraph station opens in Fitzroy Crossing SC44
EV358	1938	PL6	\N	\N	InfrastructureA.I.M.	Hospital opened in Fitzroy Crossing SC44
EV359	1958	PL6	\N	\N	InfrastructureGovernment	school opened in Fitzroy Crossing SC44
EV539	1861	PL14	\N	PD2	Pearling	Pinctada Maxima—the world's largest oyster found in Nichol Bay SC108
EV541	1887	PL7	\N	PD2	Pearling	Cyclone hits Thursday Island boats operating off Broome SC108
EV542	1887	PL7	\N	PD2	Pearling	Thursday Island boats using deep dress diving suits move to WA waters after poor fishing in

					Torres Strait SC108
EV543	1887 PL7	\N	PD2	Pearling	Repairs to Thursday island boats undertaken at Roebuck Bay SC108
EV544	1889 PL7	\N	\N	Shipping/Ports	Jetty constructed at Broome SC108
EV545	1914 PL7	\N	PD2	Pearling	Broome lugger fleet numbered up to 400 from 1890 -1914 and supplied 80% of worlds mother of pearl shell SC108
EV546	1914 PL7	\N	PD2	Pearling	Independent minded pearler exacerbated situation at end of WW1 by refusing to accept concept of collective bargaining with Japanese divers who dominated the profession SC108
EV547	1937 PL7	\N	PD2	Pearling	Japanese fleets from north created glut on world pearl shell market many Broome pearlers went broke SC108
EV362	1982 PL6	FD17 \N		Social	Sports oval, new sports facilities and bitumen surfacing of basket ball courts funded by B.H.P. at Fitzroy Crossing SC47
EV361	1980 PL6	\N	\N	Infrastructure	Health Department takes over hospital in Fitzroy Crossing SC44

EV360	1976 PL6	\N	\N	Infrastructure	New A.I.M. hospital opened. (Old site subject to flooding in wet) Named Mindi Rardi after the ridge it is built on in Fitzroy Crossing SC44
EV364	1889 PL5	\N	\N	Pastoral	Brooking Springs established by Joseph Blythe SC49
EV365	1887 PL5	\N	\N	Pastoral	Oscar Range Station taken up SC49
EV366	1974 PL6	\N	\N	Government	New town site for Fitzroy Crossing planned to alleviate flood problems SC50
EV54	1940 PL7	\N	PD2	Pearling	WW II ended old style pearling industry. Luggers sent south to prevent capture by Japanese and Japanese crews were interned SC108
EV367	1935 PL6	\N	\N	Transport	First low level bridge built at Fitzroy Crossing SC51
EV368	1958 PL6	\N	\N	Transport	Fitzroy Bridge built up and widened SC51
EV549	1945 PL7	\N	PD2	Pearling	World prices recover but there are neither luggers nor Japanese divers at Broome to take advantage of this SC108
EV49	1967 PL6	\N	\N	Transport	High level bridge over

						Fitzroy River to be built \N
EV550	1950	PL7	\N	PD2	Pearling	New luggers and Japanese divers return to Broome SC108
EV88	1936	PL2	\N	\N	Air Transport	Frequency increased from once to twice weekly from Perth to Derby \N
EV369	1974	PL6	\N	\N	Transport	New bridge built at Fitzroy Crossing SC51
EV33	1923	PL1	\N	\N	Air Transport	First commercial air transport service in Australia started by Maj Brealy: Perth-Derby via Geraldton \N
EV517	1973	PL2	FD24	\N	Air Transport	M.M.A. building opened in Derby. Has freight & passenger facilities and is Airlines biggest investment in the region SC96
EV370	1894	PL6	\N	\N	InfrastructurePolice	station (tin shed) built at Fitzroy Crossing SC51
EV371	1930	PL6	\N	\N	InfrastructureNew	Police station built at Fitzroy Crossing SC51
EV372	1972	PL6	\N	\N	InfrastructureNew	court house at Fitzroy Crossing SC51
EV373	1976	PL6	\N	\N	InfrastructurePolice	station and new court house built at new Fitzroy Crossing town site near hospital

SC51

EV519	1965	PL2	FD25	\N	Air Transport	New hangar built at Derby by Dampier Mining Corp for Twin Pioneer aircraft on Koolan and Cockatoo Island runs SC97
EV520	1960	PL2	\N	\N	Air Transport	Dampier Mining Co starts air runs to Koolan and Cockatoo Islands SC97
EV374	1985	PL6	\N	\N	Pastoral	New abattoir built at Fitzroy crossing (30 cattle, 36 sheep & 6 pigs per week) - 4 employed. Product stamped by Derby meat inspector for sale anywhere in W.A. Broome abattoir has no inspector and Wyndham caters for exports only SC52
EV375	1974	PL1	\N	\N	Transport	Since 1961 36 new bridges built between Broome & Wyndham. Black top covers 2/3 distance SC53
EV376	1989	PL6	\N	\N	Commercial	Ownership of Crossing Inn -> 1897 Charles Blythe -> 1906 George Brodie -> 1950s Don Copley -> 1960s Sandalford Family. Half owned by Aboriginal people of the valley since 1989 SC49
EV521	1963	PL2	FD26	\N	Air Transport	235,000 pounds (\$470,000) to be spent on Derby airport by Dept

						of Civil Aviation SC97
EV522	1999	PL7	\N	\N	Air Transport	Pearl Aviation closes in Broome SC98
EV523	1991	PL7	FD27	\N	Air Transport	New hangar built in Broome by Pearl Aviation SC98
EV524	1996	PL7	\N	\N	Air Transport	Pearl Aviation loses Coast Watch contract to National Jet. Former reduces from 5 aircraft & 30 people to 1 & 4 for Western Metals contract only SC98
EV380	1986	PL3	\N	\N	Count or Census	Halls Creek Shire aboriginal population 2109 SC54
EV379	1986	PL13	\N	\N	Count or Census	Broome Shire aboriginal population 2495 SC54
EV378	1991	PL5	\N	\N	Count or Census	Derby-West Kimberley Shire population total & aboriginal 7019 – 3791 SC54
EV377	1986	PL5	\N	\N	Count or Census	Derby-West Kimberley Shire population total & aboriginal 6330 - 2955 SC54
EV381	1986	PL11	\N	\N	Count or Census	Wyndham-East Kimberley aboriginal population 1910 SC54
EV382	1991	PL13	\N	\N	Count or Census	Broome Shire aboriginal population 3166 SC54

EV383	1991	PL3	\N	\N	Count or Census	Halls Creek Shire aboriginal population 1922 SC54
EV384	1991	PL11	\N	\N	Count or Census	Wyndham-East Kimberley aboriginal population 1878 SC54
EV525	1983	PL2	FD28	\N	Air Transport	Curtin Air Base commenced construction costing \$52M. Construction workforce 200 SC99
EV526	2000	PL7	\N	\N	Air Transport	Northwest Airlines & Broome Aviation commence regional service. Exmouth, Karratha, Port Hedland, Fitzroy Crossing, Halls Creek & Kununurra. Govt Subsidy of \$75,000 pa SC100
EV385	1988	PL6	FD18	PD19	Tourism	Fitzroy River Lodge to open 1989 - 40 motel units; 6 safari lodges; 60 powered sites—all i metre above highest known flood level SC55
EV55	1966	PL2	\N	PD19	Tourism	Boab Inn to open at year end—6 double & 6 single rooms \N
EV527	2000	PL20	FD29	\N	Air Transport	Regional Airport Development Scheme. \$25,000 for Balgo SC101

EV528	2000	PL21	FD29	\N	Air Transport	Regional Airport Development Scheme. \$40,000 for Billiluna for runway lighting SC101
EV386	1993	PL1	\N	PD19	Tourism	\$129.2M spent by tourists in Kimberley. 74% from intrastate - \$80.8M; 23% from interstate - \$37.8; *.7% international - \$8.7M and \$1.9M unspecified SC54
EV387	1994	PL5	\N	PD12	Pastoral	165000 cattle on 40 cattle stations in Derby-West Kimberley with turn-off of 35000 valued at \$12.5M SC54
EV388	1946	PL5	\N	PD12	Pastoral	Air-beef scheme trialled by M.M.A. and Gordon Blythe of Glenroy Station \N
EV389	1949	PL5	\N	PD12	Pastoral	Abattoir built at Glenroy Station. (First time any major physical work done in Kimberley in wet. M.M.A. DC3 flew in material \N
EV390	1950	PL5	\N	PD12	Pastoral	Bristol freighter joins DC3 on air beef scheme \N
EV391	1962	PL5	\N	PD12	Pastoral	Construction of good beef roads for chiller trucks ends Air-beef Scheme. Original cost comparison in 1948:- Road \$28 per ton; air \$12 per ton

					\N	
EV530	2000 PL6	FD29	\N	Air Transport	Regional Airport Development Scheme. \$34,590 for Fitzroy Crossing for pilot activated runway lighting	SC101
EV392	1968 PL1	\N	PD12	Pastoral	Major problems in beef industry. 20% of herd of 120000 die in the dry season. Turn off is only 12.3%. Problem is lack of local market for store cattle.	SC56
EV87	1934 PL2	\N	\N	Air Transport	MMA starts up having won mail contract from Brealeys Western Australian Airlines	SC90
EV394	1970 PL4	FD20	PD12	Pastoral	New U.S. requirements force expenditure at Wyndham meatworks - \$150,000	SC57
EV393	1970 PL7	FD19	PD12	Pastoral	New U.S. requirements force major expenditure at Broome meatworks - \$50,000	SC57
EV395	1970 PL2	FD21	PD12	Pastoral	New U.S. requirements force expenditure at Derby meatworks—\$50,000	SC57
EV396	1965 PL1	FD22	PD12	Transport	Main Roads spend \$3M (inc \$750,000 from Commonwealth) on Kimberley beef roads	

					SC58
EV397	1974 PL1	\N	\N	Transport	Main Roads program ends in the Kimberley SC59
EV398	1993 PL1	\N	PD12	Pastoral	Live cattle exports from Kimberley - 28,945 SC60
EV506	1995 PL7	\N	\N	Air Transport	Flights start from Broome to Bali SC89
EV399	1998 PL1	\N	PD12	Pastoral	Live cattle exports from Kimberley - 73,764 SC60
EV531	1964 PL2	\N	\N	Government	Shire Clerk - A Ridge -discovers stone suitable for building Derby Civic Centre and Shire offices 56 miles from Derby near Fraser River SC102
EV532	1976 PL2	\N	\N	Commercial	Dorio De Biasi to establish new industry to quarry and process sandstone, marble and granite discovered near Derby. Jowalenga variety of stone from near Fraser River used to build new library SC103
EV400	1983 PL2	\N	PD12	Pastoral	Paper from Derby seminar on Pastoral Industry by Ernie Bridge for Primary Industry Association of W.A. - Pastoral Challenge. Basic proposal - move away from large amalgamated absentee landlord properties to smaller locally owned

					properties \N
EV401	1999 PL1	\N	PD12	Pastoral	Plan for a sustainable Kimberley beef industry SC61
EV529	2000 PL22	FD29	\N	Air Transport	Regional Airport Development Scheme. \$46,641 for Mulan for runway lighting SC101
EV403	1983 PL2	\N	\N	Shipping/Ports	Study of Black Rocks site - 30 kms north of Derby - as a new deep water port goes to Government SC63
EV404	1983 PL2	\N	\N	Shipping/Ports	State Ships service ends after grounding of MV Pilbara. SC64
EV533	2000 PL1	FD30	\N	Pastoral	Indigenous Land Corporation paid \$8M to Great Northern Pastoral Co (of Melbourne) for a property bought by the latter a year earlier for \$1.3M after GNP had leased it for 2 years. GNP holds management contract and right to share of profits. Enquiry to be held SC104
EV534	1999 PL7	\N	PD12	Shipping/Ports	Record shipments of cattle through Broome - 73,275 SC105
EV405	1985 PL5	\N	PD6	Mining	Home Energy producing 1400 barrels per day - 1000 from Blina (6 wells); 200 from

					Sundown (4 wells); and 200 from new West Terrace. Oil goes by road to Broome and then sea to Kwinana \N
EV207	1983 PL5	\N	PD6	Mining	Production at Blina started. 4 wells—130KI per day SC17
EV406	1981 PL5	\N	PD6	Mining	First flow at Blina of 367 degrees API oil 100 kms south east of Derby. Participants:- Home Oil Aust Ltd (27.5%); Australian Occidental Petroleum (27.5%); Alberta Eastern Gas (20%) and Vamgas Ltd (20%) SC65
EV407	1881 PL5	\N	\N	Pastoral	Liveringa drawn by lottery. Winners:- W. Marmion, Pearce Bros, M.C. Davies & Scoll. Subsequent partners included:- J.P. & W.B. McLarty & A. Cornish \N
EV501	2000 PL7	\N	PD27	Aquacultural	90,000 fingerlings of barramundi raised at Broome aquaculture Park for Lake Argyle Fisheries from larvae imported from N.T. SC88
EV408	1889 PL5	\N	\N	Pastoral	Brooking Springs leased by C.C. Blythe & his father J.J. Blythe. They later took up a lease on Millywindy Station \N

EV409	1898 PL5	\N	\N	Pastoral	Fairfield and Mount House Stations leased by J. Blythe and taken over by his 3 sons in 1910 \N
EV410	1903 PL5	\N	\N	Pastoral	600 shorthorn Durhams moved from Brooking station (later Brooking Springs) to Millywindy so that former can concentrate on sheep - 4000 pure merinos. Wool moved by horse & mule trains to Derby and thence by sea to London. (1/6 per lb scoured) SC66
EV502	1991 PL11	\N	PD27	Aquacultural	Lake Argyle Fisheries aquaculture program started but no commercial production until 1997/1998 SC88
EV503	1999 PL11	\N	PD27	Aquacultural	60 tonnes of barramundi produced by Lake Argyle Fisheries -expected to double in 2000 SC88
EV402	1997 PL5	\N	\N	Agricultural	New approach to cattle and agriculture at Birdwood Downs by Robyn Treadwell SC62
EV351	2001 PL13	\N	PD3	Agricultural	Opposition to cotton growing near Broome SC43
EV504	2000 PL2	\N	\N	Aquacultural	Kimberley Prawn Company (Ian Crimp) still waiting to hear from E.P.A., Fisheries W.A.

					D.O.L.A on proposed prawn farm development at Doctors Creek near Derby \N
EV414	2000 PL7	\N	\N	Agricultural	Ostrich farm opened 30 km east of Broome. Paul & Karen Higgins SC69
EV415	2000 PL7	\N	\N	Commercial	Flying school opens at Broome. Amity Aviation. Only one in Kimberley SC70
EV416	2000 PL7	FD12	PD19	Tourism	Broome sanctuary Resort to be opened in 2002. 100 tourist apartments & 60 residential suites (@ \$140,000 ea). 200 bed backpacker facility to come later. \N
EV417	1909 PL7	\N	\N	Shipping/Ports	"All tides" extension requested for jetty by Archie Male (Mayor of Broome) but refused by Sir Newton J. Moore—first State Premier to visit Broome SC71
EV418	1909 PL7	\N	\N	Shipping/Ports	Hugh Norman of Pearling Association asked State Government for new crane SC71
EV41	1940 PL7	FD12	PD12	Pastoral	Broome Meatworks established by Farrell Bros SC71
EV420	1964 PL7	FD23	\N	Shipping/Ports	Construction of deep

					water jetty at Entrance Point started at Broome SC71
EV421	1964 PL1	FD23	\N	Shipping/Ports	Indonesian confrontation with Malaysia prompts new port facilities at Wyndham & Derby as well as Broome SC71
EV509	1935 PL4	\N	\N	Infrastructure	Australian Aerial Medical Services established at Wyndham SC93
EV422	1966 PL7	FD23	\N	Shipping/Ports	New Broome jetty at Entrance Point completed SC71
EV423	1967 PL7	\N	\N	Shipping/Ports	Old Broome jetty destroyed by PWD after 77 years service SC71
EV424	1999 PL7	\N	\N	Shipping/Ports	First ever new crane arrives at Broome for jetty SC71
EV425	1889 PL7	\N	\N	Shipping/Ports	Broome proclaimed a warehousing port SC71
EV518	1981 PL1	\N	\N	Air Transport	M.M.A. becomes Airlines of Western Australia Ltd SC95
EV426	1896 PL7	\N	\N	Shipping/Ports	Jetty contract awarded in 1896 for "spring tide" only port at Mangrove Point in Broome (Town Beach) SC71
EV427	1978 PL7	\N	\N	Shipping/Ports	Broome port made its

					first profit after 109 years SC71
EV516	1934 PL1	\N	\N	Air Transport	Flights extended to Daly Waters by M.M.A. SC95
EV114	1994 PL7	\N	PD12	Pastoral	Broome Meat Works close SC71
EV511	1921 PL2	\N	\N	Air Transport	Derby airport site selected and taken over by Commonwealth Govt in 1922 SC94
EV429	1904 PL7	\N	PD2	Count or Census	Influx of pearlers at Broome pushed aboriginal population from 2370 to 4400 SC72
EV515	1989 PL2	\N	\N	Air Transport	Damaged caused by larger aircraft forces RPT flights to be moved to Curtin R.A.A.F Base SC94
EV428	1898 PL7	\N	\N	Shipping/Ports	Broome jetty & tramway completed representing and end to lean years during depression of 1890s SC72
EV510	1938 PL2	\N	\N	Air Transport	Derby has two airports (Town Marsh - dry only and Six Mile aerodrome) SC93
EV512	1951 PL2	\N	\N	Air Transport	Derby airport E-W runway extended to 1737 metres and N.E - S.W. runway extended to 1250 metres & permanent runway lighting installed

						SC94
EV431	1907 PL7	FD3	\N	Shipping/Ports	State Government builds new tramway at Broome	SC72
EV513	1963 PL2	\N	\N	Air Transport	Derby airport E- W runway sealed	SC94
EV514	1969 PL2	\N	\N	Air Transport	Visual approach system installed at both ends of main runway and major areas re-sealed twice in past 12 years	SC94
EV505	1992 PL7	\N	\N	Air Transport	Broome airport granted international status	SC89
EV435	1913 PL7	\N	\N	Communications	Wireless station opened in Broome and 7 months latter cable station closed	SC72
EV507	1988 PL2	\N	\N	Air Transport	Curtin R.A.A.F. Base opened by Prime Minister R.J. Hawke	SC91
EV437	1889 PL7	\N	\N	Commercial	Notable development in Broome from 1889-1893 and from 1898 -1910	SC72
EV508	1963 PL1	\N	\N	Air Transport	Ansett Transport Industries take a shareholding in M.M.A.	SC92
EV412	2001 PL7	\N	\N	Air Transport	Cost to move Broome airport 12 km N. E. of town estimated at \$30M. Airport handles 46 jets a week & 250,000 pax a year. Expected to grow	

						at 12% per year. Airport divides old & new town and hampers northern development SC67
EV411	1991	PL7	\N	\N	Air Transport	Plans to move Broome airport SC67
EV158	1963	PL2	FD13	\N	Air Transport	Airstrip being sealed to make it an all weather field SC7
EV91	1959	PL1	\N	\N	Air Transport	First Turboprop Aircraft used in Kimberley (Fokker Friendship) \N
EV90	1955	PL1	\N	\N	Air Transport	WAA and MMA amalgamate \N
EV89	1938	PL1	\N	\N	Air Transport	Perth-Darwin route inaugurated \N
EV86	1921	PL2	\N	\N	Air Transport	WAA - Perth - Derby via Geraldton \N
EV443	1998	PL7	\N	PD19	Tourism	Eco Beach Resort opens north of Broome SC74
EV444	2000	PL7	\N	PD19	Tourism	Eco Beach Resort north of Broome destroyed by cyclone Rosita SC74
EV483	1939	PL19	\N	PD5	Mining	Report 50 of Ariel Geological & Geophysical survey of Northern Australia assesses iron ore above high water mark at Cockatoo Island at 18M

						tonnes of 69% ore Leases held by Australian Iron & Steel (subsidiary of BHP) SC80
EV97	1944	PL18	\N	PD5	Mining	Australian Iron & Steel (BHP) develop Koolan Island \N
EV445	1900	PL7	\N	\N	Commercial	Streeter and Male supply stores to pearling boats at Streeters Jetty in Broome till 1905. SC75
EV446	1975	PL7	\N	\N	Commercial	Streeter & Male hardware store built in Broome SC75
EV447	1976	PL7	\N	\N	Commercial	Streeter & Male liquor store built in Broome SC75
EV448	1980	PL7	\N	\N	Commercial	Streeter & Male Supermarket extended into bulk stores SC75
EV449	1998	PL7	\N	\N	Commercial	Streeter & Male supermarket closes. Drapery, haberdashery & news agency continue in main store premises. Supermarket had over 200 customers when it closed SC75
EV485	1944	PL19	\N	PD5	Mining	Australian Iron & Steel (BHP) develop Cockatoo Island \N
EV484	1939	PL18	\N	PD5	Mining	1st grade reserves at Koolan Island estimated at 54M tons

						SC80
EV100	1965	PL18	\N	\N	Mining	Koolan Island deposits mined (iron ore) \N
EV99	1951	PL19	\N	\N	Mining	Cockatoo Island deposits mined (iron ore) \N
EV56	1938	PL5	\N	PD5	Mining	1938 Legislation prevents export of iron ore from Australia SC80
EV486	1984	PL19	\N	PD5	Mining	BHP ceased mining at Cockatoo Island SC81
EV487	1991	PL19	\N	PD5	Mining	Nugold Hill Mines NL buy rights to mine & process low grade ore stockpiled at Cockatoo Island over 33 years. produces 66% concentrate—as good as anything from Pilbara SC81
EV468	1975	PL8	\N	\N	Agricultural	ALCO in financial trouble at Camballin SC79
EV488	1998	PL13	\N	PD3	Agricultural	Western Agricultural Industries granted MOU with W.A. Government to investigate feasibility of cotton cropping on 20,000 ha of Nita Downs and Shamrock Stations SC82
EV489	2000	PL13	\N	PD3	Agricultural	W.A.I. granted extension of original 1998 MOU to investigate feasibility of cotton cropping on Nita Downs and Shamrock

					Stations SC82
EV490	1998 PL13	\N	PD3	Agricultural	W.A.I. would not dam Fitzroy River but cotton needs 93% of La Grange ground water. Would look at taking Fitzroy River surface water and at cropping corn, chickpeas, lucerne. sorghum and horticultural crops SC82
EV62	1909 PL2	\N	PD3	Agricultural	Company formed at Derby to trial cotton as a crop. 1000 acres taken up, 50 planted. Arthur Male has shares in project. There is enough skilled labour in area SC83
EV491	1963 PL11	\N	PD3	Agricultural	Cotton industry starts on Ord River scheme SC84
EV492	1966 PL11	\N	PD3	Agricultural	23 farms and 4 share farmers get 777 lbs per acre from 12,500 acres. More farmers (27 in all) to try in 1967. SC85
EV493	1974 PL11	\N	PD3	Agricultural	Ord cotton growing scheme fails & closes owing to insect plagues, low prices & low yields SC84
EV455	1883 PL7	\N	\N	Declaration	Broome town site gazetted 21/11/1883 SC77
EV494	1994 PL11	\N	PD3	Agricultural	Trial of insect resistant cotton in Ord River area. SC84

EV456	1930 PL1	\N	\N	Recession	Great Depression
EV495	1999 PL11	\N	PD3	Agricultural	12 farmers have planted 90 million plants on Ords black soil plains SC84
EV458	1990 PL1	\N	PD1	Commercial	Value of cultured pearls is \$55M and industry employs 200 divers \N
EV496	1998 PL11	\N	PD3	Agricultural	380 ha produced 2951 bales of cotton & cotton seed valued at \$1.8M. Seed sold to Japan as cattle feed. SC84
EV497	1999 PL9	\N	PD3	Agricultural	Cotton Gin at Kununurra a joint venture of Colly Farms and Ord River District Cooperative SC84
EV498	2000 PL11	\N	\N	Aquacultural	Call for expression of interest in aquaculture on Lake Argyle SC86
EV499	2001 PL11	\N	PD27	Aquacultural	5 applications made about farming fin fish such as barramundi. All rejected because no applicant had technical or economic resources to undertake major development SC87
EV500	1997 PL7	\N	PD27	Aquacultural	Cooperative project between Fisheries W.A. and Kimberley College of T.A.F.E. produced 60,000 larvae of

					barramundi at Broome aquaculture Park SC88
EV467	1973 PL8	\N	\N	Agricultural	Grain & fodder sorghum produced at Camballin SC79
EV469	1979 PL8	\N	\N	Agricultural	Levee bank planned and constructed to protect farming area at Camballin SC79
EV459	1987 PL17	\N	\N	Mining	Cadjebut mine to open 11/1/1988 with 100 employees plus 20 on a fly-in - fly-out basis - 7 days on - 7 days off. 80 km south of Fitzroy Crossing SC78
EV202	1983 PL16	\N	PD26	Mining	6.2 carats of diamonds produced at Argyle SC17
EV203	1984 PL16	\N	PD26	Mining	11.4 carats of diamonds produced at Argyle SC17
EV204	1984 PL16	\N	PD26	Mining	Estimate of subsequent years at full production - 3M tonnes crushed for 25M carats at Argyle SC17
EV101	1951 PL8	\N	\N	Agricultural	Rice grown at Camballin by Northern Development Company. SC79
EV460	1951 PL8	\N	\N	Agricultural	Northern Development Company incorporated in Sydney N.S.W to develop Camballin

					irrigation scheme SC79
EV461	1955 PL8	\N	\N	Agricultural	W.A. Government takes interest in Camballin irrigation scheme (John Tonkin Minister for Works) SC79
EV105	1960 PL8	\N	\N	Agricultural	Completion of barrage on Fitzroy River at Camballin. 1400 acres irrigated for rice & sorghum SC79
EV462	1957 PL8	\N	\N	Agricultural	Barrage on Fitzroy River - construction started SC79
EV463	1957 PL8	\N	\N	Agricultural	Liveringa flood plain surveyed SC79
EV464	1958 PL8	\N	\N	Agricultural	Fitzroy River flood destroys earthen & cement wall of 17 mile dam SC79
EV38	1961 PL8	\N	\N	Agricultural	Camballin irrigation area opened by Minister SC79
EV465	1968 PL8	\N	\N	Agricultural	Liveringa/Camballin bought by U.S.A. interests—Australian Land & Cattle Company. SC79
EV466	1971 PL8	\N	\N	Agricultural	Inkata feedlot and yards built at Camballin SC79
EV14	1889 PL2	\N	\N	Shipping/Ports	Year Book describes 102 ft jetty & 1.25 miles of rail track over marsh

					(Charge made) \N
EV651	1915 PL4	\N	\N	Agricultural	Forrest River Mission self-sufficient and supplies fresh vegetables to Wyndham. Also keep sheep, goats & fowl. Goats & eggs supplied to Wyndham SC162
EV702	2002 PL7	\N	\N	Shipping/Ports	Camels - 59 - exported from Broome for the first time SC183
EV703	2002 PL2	\N	\N	Shipping/Ports	Investigations being conducted into Derby re-commencing the export of live cattle SC184
EV704	2002 PL2	\N	\N	Social	Derby identified as the most expensive place to live in Western Australia SC185
EV705	1996 PL9	\N	\N	Infrastructure	30 MW hydro power station constructed as part of Ord Scheme to supply power to Argyle Diamond Mine and to provide additional power to Western Power for Kununurra and Wyndham SC186
EV706	1927 PL7	\N	\N	Infrastructure	24 hour public electricity supply power station operated by Roads Board built 1927 in Broome SC187
EV707	1972 PL7	\N	\N	Infrastructure	Power generation and supply taken over by SEC (later Western Power) in

Broome
SC187

EV708	1937 PL2	\N	\N	Infrastructure	24 hour public electricity supply power station operated by Roads Board built in 1937 in Derby SC187
EV710	1970 PL9	\N	\N	Infrastructure	Kununurra power supply taken over by SEC (later Western Power) in 1970 SC187
EV709	1970 PL12	\N	\N	Infrastructure	Halls Creek power supply taken over by SEC (later Western Power) in 1970 SC187
EV711	1945 PL15	\N	\N	Infrastructure	State Electricity Corporation—SEC—formed in 1945 SC187
EV712	2001 PL1	\N	\N	Infrastructure	Contracts to supply Kimberley towns with gas-fired power stations collapse giving new impetus to Tidal Power in Derby SC188
EV268	1976 PL3A	\N	\N	Labour Force	Halls Creek Shire labour force in Agriculture/Fisheries SC37
EV269	1981 PL3A	\N	\N	Labour Force	Halls Creek Shire labour force in Agriculture/Fisheries SC37
EV270	1976 PL3M	\N	\N	Labour Force	Halls Creek Shire labour force in Mining SC37
EV271	1981 PL3M	\N	\N	Labour Force	Halls Creek Shire labour force in Mining

					SC37
EV474	1986 PL8	\N	\N	Agricultural	Feedlot/farm cropping experiments conducted at Camballin. SC79
EV475	1987 PL8	\N	\N	Agricultural	Feedlot/farm cropping experiments cease at Camballin. SC79
EV272	1976 PL3N	\N	\N	Labour Force	Halls Creek Shire labour force in Manufacturing SC37
EV477	1990 PL8	\N	\N	Agricultural	Water Authority of W.A. ceases responsibility for running irrigation system at Camballin SC79
EV478	1990 PL8	\N	\N	Agricultural	17 mile dam waters released (vandalism) and dam dry by end of year at Camballin SC79
EV273	1981 PL3N	\N	\N	Labour Force	Halls Creek Shire labour force in Manufacturing SC37
EV476	1987 PL8	\N	\N	Agricultural	Major water rating disputation at Camballin irrigation project. Liveringa reverts to cattle station function SC79
EV274	1976 PL3W	\N	\N	Labour Force	Halls Creek Shire labour force in Wholesale/Retail SC37
EV275	1981 PL3W	\N	\N	Labour Force	Halls Creek Shire labour force in Wholesale/Retail SC37
EV480	1993 PL8	\N	\N	Agricultural	Sale of Fitzroy River Barrage and 17 mile

					dam housing, sheds. Theft barrage gate and lifting gantries and further vandalism SC79
EV276	1976 PL3C	\N	\N	Labour Force	Halls Creek Shire labour force in Community Service SC37
EV479	1993 PL8	\N	\N	Agricultural	Two floods in 1991 and two in 1993—latter comparable to 1914 levels—increase scouring and levee bank damage. Volunteers do some repairs to 17 mile dam levees SC79
EV277	1981 PL3C	\N	\N	Labour Force	Halls Creek Shire labour force in Community Service SC37
EV278	1976 PL5A	\N	\N	Labour Force	Derby-West Kimberley labour force in Agriculture/Fisheries SC37
EV279	1981 PL5A	\N	\N	Labour Force	Derby-West Kimberley labour force in Agriculture/Fisheries SC37
EV280	1976 PL5M	\N	\N	Labour Force	Derby-West Kimberley labour force in Mining SC37
EV281	1981 PL5M	\N	\N	Labour Force	Derby-West Kimberley labour force in Mining SC37
EV283	1981 PL5N	\N	\N	Labour Force	Derby-West Kimberley labour force in Manufacturing SC37

EV481	1993 PL8	\N	\N	Agricultural	Consultants report on future of Barrage and 17 mile dam:- (1) Lease as is (2) Restore & maintain (3) Demolish both. Third above seems most likely and practical SC79
EV284	1976 PL5W	\N	\N	Labour Force	Derby-West Kimberley labour force in Wholesale/Retail SC37
EV285	1981 PL5W	\N	\N	Labour Force	Derby-West Kimberley labour force in Wholesale/Retail SC37
EV286	1976 PL5C	\N	\N	Labour Force	Derby-West Kimberley labour force in Community Service SC37
EV287	1981 PL5C	\N	\N	Labour Force	Derby-West Kimberley labour force in Community Service SC37
EV288	1976 PL11A	\N	\N	Labour Force	Wyndham-East Kimberley labour force in Agriculture/Fisheries SC37
EV713	2002 PL2	\N	\N	Infrastructure	Derby-West Kimberley Shire Council lobbying State & Federal MPs re- funding for Tidal Power. Contracts for Kimberley power stations will not be re-called by State Govt until federal funding intentions for tidal power made clear SC188
EV714	1962 PL2	\N	\N	Commercial	National Bank opens in

					Derby 31/10/1962 SC189
EV715	1980 PL2	\N	\N	Commercial	National Bank closes in Derby 15/10/1980 SC189
EV716	1961 PL4	\N	\N	Commercial	National Bank opens in Wyndham 26/07/1961 SC189
EV717	1974 PL4	\N	\N	Commercial	National Bank Closes in Wyndham 20/02/1974 SC189
EV718	1964 PL9	\N	\N	Commercial	National Bank Agency opens in Kununurra 26/06/1964 SC189
EV719	1964 PL9	\N	\N	Commercial	National Bank Agency closes in Kununurra 16/07/1964 SC189
EV720	1964 PL9	\N	\N	Commercial	National Bank opens in Kununurra 17/7/1964 SC189
EV721	2002 PL5	\N	\N	Mining	Ellendale diamond project proved commercial by Kimberley Diamond Company who purchased the Ellendale tenements from Argyle Diamonds. SC190
EV722	2002 PL2	\N	\N	Commercial	Boab Inn—second best hotel in Derby closed in February-March 2002 SC191
EV725	1889 PL7	\N	\N	Communications	Submarine cable between Broome and Banji Wanji, Indonesia

					laid SC192
EV726	1889 PL7	\N	\N	Communications	Roebourne to Broome telegraph line completed SC192
EV727	1889 PL7	\N	\N	Infrastructure	Customs House (now the Museum) built SC192
EV728	1890 PL7	\N	\N	Communications	Cable Building (now the Court House) erected SC192
EV723	1861 PL1	\N	PD1	Pearling	Pearling industry begins in Pilbara & Kimberley SC192
EV729	1891 PL7	\N	PD1	Pearling	Diving suits now in use SC192
EV730	1893 PL7	\N	PD1	Pearling	20 men & 10 luggers lost in cyclone SC192
EV731	1894 PL7	\N	\N	Infrastructure	Old lock-up off Hammersley street built SC192
EV732	1903 PL7	\N	\N	Infrastructure	Anglican Church built on present site SC192
EV733	1905 PL7	\N	PD1	Pearling	Pearling blackmarketeer murdered exchanging pearl shell for money SC192
EV734	1911 PL7	\N	\N	Infrastructure	Manse for Uniting Church erected SC192
EV735	1925 PL7	\N	\N	Infrastructure	Uniting Church built SC192
EV30	1912 PL7	\N	\N	Pearling	Maximum pearling

					production in Broome \N
EV736	1912 PL7	\N	\N	Shipping/Ports	138 passengers & crew go down with Koombana SC192
EV737	1912 PL7	\N	PD1	Pearling	White Australia policy prevents Asian wives joining divers SC192
EV738	1913 PL7	\N	PD1	Pearling	Broome receives a decompression chamber for bends treatment SC192
EV739	1914 PL7	\N	PD1	Pearling	33 divers died from bends SC192
EV740	1914 PL7	\N	\N	Labour Force	225 Broome men joined armed forces—54 did not return SC192
EV741	1917 PL7	\N	PD1	Pearling	108.8 grain pearl—Star of the West—discovered SC192
EV742	1921 PL7	\N	\N	Air Transport	First airmail service started in Broome—delivered by Brealey, Taplin & Kingsford-Smith] SC192
EV743	1925 PL7	\N	PD1	Pearling	Broome has 400 luggers producing 80% of world market SC192
EV744	1925 PL7	\N	\N	Count or Census	Broome population 5000 SC192
EV457	1935 PL7	\N	\N	Pearling	Cyclone sinks 21 vessels and 140 persons

					killed at Broome. SC192
EV745	1937 PL2	\N	\N	InfrastructureDerby	Leprosarium opens with 340 patients SC192
EV746	1939 PL7	\N	\N	Pastoral	Original Broome Meatworks built SC192
EV747	1941 PL7	\N		Social	Japanese—largest ethnic group in Broome— interned even though many were born there SC192
EV748	1942 PL7	\N	PD1	Pearling	Pearling industry closed down for duration of World War II SC192
EV749	1942 PL7	\N	\N	Social	Women & children evacuated from Broome after Darwin bombing SC192
EV750	1942 PL7	\N	\N	Air Transport	14 Dutch flying boats wrecked in Roebuck Bay by Japanese aircraft SC192
EV751	1942 PL7	\N	\N	Social	On 3rd March 70 people killed and \$130,000 worth of diamonds lost owing to Japanese bombing SC192
EV752	1944 PL7	\N	\N	Commercial	Bert Kennedy built his store after losing all his luggers SC192
EV753	1963 PL7	\N	\N	Pastoral	Broome Meatworks re-built on a larger scale SC192

EV754	1970 PL7	\N	\N	Social	First Shinju Matsuri (Festival of the Pearl) held in Broome SC192
EV755	1972 PL7	\N	\N	Infrastructure	Nulungu College for young aboriginals opened in Broome SC192
EV756	1982 PL7	\N	PD1	Pearling	Pearl Producers Association formed in 1982 SC193
EV757	1994 PL7	\N	PD1	Pearling	South Sea Pearl Consortium set up comprising the PPA, two Japanese companies and one each from Hong Kong and USA. Objective is to promote Australian Pearls SC194
EV758	1986 PL2	\N	\N	Infrastructure	Derby Leprasarium closes \N
EV724	1880 PL7	\N	\N	Infrastructure	Roebuck Bay settlement established SC192
EV759	1916 PL7	\N	\N	Commercial	Sun Pictures opened in Broome SC195
EV760	1979 PL7	\N	\N	Infrastructure	Port Hedland-Broome road sealed SC195
EV761	1978 PL1	\N	\N	Government	Kimberley Land Council established SC195
EV762	1967 PL10	\N	\N	Government	Referendum—indigenous people allowed to vote SC195

EV763	1987 PL7	\N	\N	Commercial	Magabala Books established in Broome SC195
EV764	1993 PL10	\N	\N	Government	Native Title Act passed SC195
EV765	1997 PL10	\N	\N	Government	Native Title Amendment Act passed \N
EV766	1905 PL15	\N	\N	Government	Aborigines Protection Act Amendment passed by State Government SC195
EV767	1935 PL15	\N	\N	Government	Native Administration Act (State) passed SC195
EV768	2002 PL19	\N	PD5	Mining	Mining resumes on Cockatoo Island SC196
EV769	1887 PL11	\N	\N	Government	East Kimberley Road District established and Gazetted on 10/2/1887 SC197
EV770	1888 PL11	\N	\N	Government	First election for East Kimberley Road District held SC197
EV771	1896 PL11	\N	\N	Government	Road District renamed to Wyndham Road District SC197
EV637	1919 PL4	\N	\N	Shipping/Ports	Tramway to new jetty at Storey Point at Wyndham constructed SC197
EV772	1934 PL4	\N	\N	Air Transport	Inaugural flight of passenger air service to Wyndham from Perth.

						Took about a week SC197
EV31	1919	PL4	FD44	\N	Pastoral	Wyndham meatworks completed. East Kimberley supplies UK; West Kimberley supplies southern markets SC197
EV773	1959	PL4	\N	\N	Shipping/Ports	Wyndham Jetty extended and improved. Allowed "round trips" by tramway by connecting both ends of jetty to shore. SC197
EV664	1949	PL11	\N	\N	Agricultural	Experimental farm abandoned but Kimberley Research Station (KRS) established as a joint venture with commonwealth Government on Ivanhoe Plain. Demonstration crops:- rice, cotton, safflower, linseed, sugar cane (all under irrigation) SC197
EV774	1962	PL11	\N	\N	Agricultural	Diversion Dam at Bandicoot Bar completed SC197
EV775	1962	PL4	\N	\N	Commercial	New shops and housing established at 3 mile area of Wyndham SC197
EV776	1965	PL4	\N	\N	Commercial	Wyndham Hotel demolished and new building put up SC197

EV777	1966	PL11	\N	\N	Transport	Bitumen road between Wyndham & Kununurra completed SC197
EV778	1966	PL4	\N	\N	Commercial	New Wyndham Hotel opened SC197
EV779	1967	PL4	\N	\N	Commercial	Government sold meatworks to private enterprise after 48 years of operations SC197
EV780	1968	PL4	\N	\N		Infrastructure New Post Office opened at 3 mile as Wyndham Post Office. Old town now known as Wyndham Port SC197
EV782	1971	PL1	\N	\N	Shipping/Ports	State Shipping Service withdraws passenger service from Fremantle to Pilbara and Kimberley SC197
EV783	1973	PL4	\N	\N	Infrastructure	Community Health moves from grounds of old Native Hospital to Koojarra Street. SC197
EV784	1974	PL4	\N	\N	Social	New 9 hole golf course opened at 12 mile SC197
EV785	1975	PL4	\N	\N	Infrastructure	Wyndham Prison opened in old Hospital buildings to take prisoners from Wyndham, Kununurra, Halls Creek and occasionally Fitzroy Crossing SC197
EV786	1976	PL4	\N	\N	Infrastructure	S.E.C leases Power House

from Shire at Wyndham
SC197

EV787	1976 PL4	\N	\N	Communications	Local telephone exchange automated at Wyndham SC197
EV788	1976 PL4	\N	\N	Commercial	Wyndham Community Club under auspices of Shire bought the 6 Mile Hotel SC197
EV789	1978 PL4	\N	\N	Pastoral	Norwest Beef Industries Kimberley Cold Stores doubles freezer space at Wyndham Export Abattoirs. Beef chain extended to take up to 600 animals per day SC197
EV790	1979 PL4	\N	\N	Shipping/Ports	Container park established to hold 130 reefers all on power SC197
EV791	1980 PL4	\N	\N	Infrastructure	Wyndham District High School extensions completed to cope to year 10 and 350 pupils SC197
EV792	1980 PL4	\N	\N	Infrastructure	Wyndham District Hospital takes over administration of Halls Creek Hospital from Australian Inland Mission SC197
EV793	1980 PL4	\N	\N	Communications	Direct dialling to Kununurra from Wyndham established SC197
EV794	1981 PL4	\N	\N	Infrastructure	Wyndham Volunteer Fire

					Brigade inaugurated and affiliated with W.A. Fire Brigade Board. SC197
EV795	1982 PL4	\N	\N	Air Transport	Airlines of W.A. withdraws bus service between Wyndham and Kununurra. Limited service provided by local agent SC197
EV796	1984 PL4	\N	\N	Infrastructure	Wyndham Fire Station completed and opened SC197
EV798	1985 PL4	\N	\N	Pastoral	Wyndham Meatworks closes after 66 years operation SC197
EV799	1986 PL4	\N	\N	Infrastructure	Wyndham town water scheme extended to settlers at 7 mile. SC197
EV800	1986 PL4	\N	\N	Infrastructure	St Johns Ambulance Sub-Centre opened at Wyndham SC197
EV797	1984 PL4	\N	\N	Infrastructure	Wyndham St Johns Ambulance Sub-centre construction commenced SC197
EV781	1970 PL4	FD45	\N	Infrastructure	New Regional Hospital opened at Wyndham SC197
EV801	1989 PL4	\N	\N	Commercial	Wyndham Crocodile Farm established in 1989 SC198
EV802	1996 PL4	\N	\N	Commercial	Wyndham Crocodile Farm received B Class zoo license

SC198

=====

Table: "sources"

These are the "raw" events which were entered into the table as they were discovered. For each entry there is always:

- (1) a source identification: source_id
- (2) a name: name
- (3) a date: date

Columns 3 may be "\N" - a null entry. This means that an appropriate entry is either not known or not required.

Column Headings:

This table is sufficiently small for column headings to be shown above the relevant information as displayed in tabular form.

<u>source_id</u>	<u>name</u>	<u>date</u>
SC87	West Australian 7/6/2001	2001
SC88	Fisheries W.A. May 2000	2000
SC89	Broome Advertiser 23/6/1999	1999
SC90	Rag, Sticks & Wire - Australians Taking to the Air by Bill Bunbury - an A.B.C. book	\N
SC91	Boab Babbler 24/6/1988	1988
SC92	M.M.A. letter to clients 31/8/1970	1970
SC5	Boab Babbler Vol 19 No 11	2000
SC1	West Australian Magazine for Royal Show 20/9/1997	1997
SC2	West Australian 16/2/1977	1977
SC3	West Australian 20/9/1997	1997
SC4	Northern Times 4/10/62	1962

SC93	Aviation in W.A. in 1938 - Peter Harradine R.F.D.S. Kimberley Manager	1987
SC6	Boab Babbler 29/4/1988	1988
SC7	Sunday Times 4/8/63	1963
SC8	West Australian 8/7/1962	1962
SC9	Boab Babbler 20/11/87	1987
SC10	Boab Bulletin Oct 1997	1997
SC94	Department of Transport Report 22/6/1989	1989
SC95	Air W.A. 1984	1984
SC11	Office of Regional Administration & North West - July 1962	1962
SC12	Broome Advertiser 10/01/2001	2001
SC13	Kimberley Echo 17/02/2000	2000
SC14	Broome Advertiser 19/04/2000	2000
SC15	Boab Babbler 11/08/2000	2000
SC16	Western Roads Vol 20 No 4 January 1998	1998
SC178	Letter from Commonwealth Bank dated 17/01/2002	2002
SC17	Western Australias North Progress & Prospects (Govt Publication)	1999
SC18	K.D.C. Newsletter September 1999	1999
SC19	West Australian 27/10/93	1993
SC20	West Australian 14/12/94	1994
SC21	Prospect Sept/Nov 1993	1993
SC22	Kimberley Echo 8/11/1993	1993

SC23	West Australian 5/7/1978	1978
SC24	Sunday Times 13/6/1976	1976
SC25	West Australian 10/1/1079	1979
SC26	Kimberley Echo 18/4/98	1998
SC27	West Australian Travel Section 27/5/1999	1999
SC28	Kimberley Echo 15/6/2000	2000
SC29	West Australian 1/8/2000	2000
SC30	Kimberley Echo 2/12/1999	1999
SC31	West Australian 21/10/2000	2000
SC32	West Australian 20/10/2000	2000
SC33	West Australian 15/11/2000	2000
SC34	West Australian 21/2/2001	2001
SC35	Broome Advertiser 7/2/2001	2001
SC36	Report of Roy McClymont to brother Jim Anderson	1958
SC37	A.B.S. Census Statistics and Hedland College Occasional Paper No 1 (Fitzgerald & Gidley) March 1984	1984
SC38	Transport Strategy Committee Report	1983
SC39	C.E.S. Kimberley Office, Broome	1983
SC40	Memorandum by Tim Fisher of A.C.F. 21/11/1996	1996
SC41	Report by Halpern, Glick and Mounsell 6/12/1996 1996	1999
SC42	Environs Kimberley Inc Bulletin No 12 Dec	1999
SC43	Environs Kimberley Inc Bulletin No 17 April 2001	2001

SC44	Notes collected by Margaret Stevens (Library Officer - Derby)	/N
SC45	Year Book	1902
SC46	W. A. Government Gazette	1912
SC47	Kimberley Times 6/9/1982	1982
SC48	News of the North 14/7/1983	1983
SC49	Guest Information Pamphlet at Crossing Inn	\N
SC50	West Australian 4/11/74	1974
SC51	Broome Advertiser 9/9/98	1998
SC52	West Australian 11/4/1985	1985
SC53	Main Roads Publication	\N
SC55	Boab Babbler 13/5/1988	1988
SC56	West Australian 23/10/1968	1968
SC57	West Australian 21/10/1970	1970
SC58	Northern Territorian 18/2/1965	1965
SC59	Sunday Times 24/11/1974	1974
SC60	Kimberley Echo 31/12/1998	1998
SC61	Kimberley Echo 25/2/1999	1999
SC62	West Australian (Magazine) 20/9/1997	1997
SC63	Kimberley Times 17/3/83	1983
SC64	West Australian 26/11/1983	1983
SC65	West Australian 12/5/1981	1981
SC66	History of N. W. Australia - Battye Library	\N
SC67	West Australian 7/6/2001	2001
SC68	Broome Advertiser 18/10/2000	2000

SC69	West Australian 9/8/2000	2000
SC70	Broome Advertiser 23/8/2000	2000
SC71	Broome Advertiser 11/8/1999	1999
SC72	Boab Bulletin Aug 1999 (Cathie Clement)	1999
SC73	Broome Advertiser 25/2/1998	1998
SC74	West Australian 22/4/2000	2000
SC75	Broome Advertiser 4/3/1998	1998
SC76	Unknown. Notes on History of Broome	\N
SC77	Shire of Broome information directory	\N
SC78	Boab Babbler 25/9/1987	1987
SC79	J. Andersons Collection 1998. Chronology of Camballin Irrigation Scheme	1998
SC80	"Walkabout" Vol 12 No 2 1/12/1945	1945
SC81	"Project" March-May 1996	1996
SC82	Broome Advertiser 6/12/2000	2000
SC83	Broome Chronicle 7/8/1909	1909
SC84	West Australian 10/4/1999	1999
SC85	West Australian 3/5/67	1967
SC86	Fisheries W.A. - March 2000 (Publication of the Fisheries Minister & Fisheries W./A.)	2000
SC183	Broome Advertiser 14/02/2002	2002
SC179	www.ozemail.com.au/~kimsoc the site of the Kimberley Society (which publishes the Boab Bulletin)	2001
SC54	Derby Planning for the Future Profile 1995 A.B.S. Census figures	1995
SC177	Aboriginal People in the Economy of the Kimberley Region by Greg Crough	1993

& Christine Christopersen; Australian
National University North Australia
Research Unit

SC180	Broome Advertiser 15/04/1998 page 21	1998
SC181	Report by Tanya Suba to Heritage Council of W.A.	1998
SC182	W. A. Year Book 1889	1889
SC184	Broome Advertiser 07/02/2002	2002
SC185	West Australian (online edition) 14/02/2002	2002
SC96	Western Traveller March 1973	1973
SC97	Northern Times	1965
SC98	Broome Advertiser 3/3/1999	1999
SC99	Sire of Derby W. Kimberley Directory circa 1983	\N
SC100	West Australian 1/5/2000	2000
SC101	Kimberley Echo 5/10/2000	2000
SC102	Northern Times 16/10/1965	1965
SC103	West Australian 14/4/1976	1976
SC104	West Australian 8/6/2000	2000
SC105	Broome Advertiser 3/1/2001	2001
SC186	Western Power web site www.westernpower.com.au	2002
SC106	Kimberley Development Council News April	2000
SC107	West Australian 8/9/1984	1984
SC108	Broome Advertiser - Shinzu Matsuri - by Kevin Lawton 14 - 24/8/1997	1997
SC109	West Australian 2/6/2001	2001

SC110	The White Divers of Broome (the true story of a fatal experiment) by John Bailey	/N
SC111	Broome Advertiser 13/8/1997	1997
SC112	Broome Advertiser 17/9/1997	1997
SC113	Broome Advertiser 25/3/1998	1998
SC114	Broome Advertiser 9/6/1999	1999
SC115	Broome Advertiser 9/6/1999	1999
SC116	Sunday Times 5/8/2001	2001
SC117	KDC News April 2000	2000
SC118	Broome Advertiser 23/12/1998	1998
SC119	Broome Advertiser 12/1/1998	1998
SC120	Kimberley Echo 22/2/2001	2001
SC121	Broome Advertiser 11/4/2001	2001
SC122	News of the North 11/11/1982	1982
SC123	Kimberley Times 2/9/82	1982
SC124	Boab Babbler 14/12/1981	1981
SC125	Telecom letter to DDHS by Kevin B. Johnson 5/12/1988	1988
SC127	Shire of Derby-West Kimberley Directory 1990	1990
SC128	West Australian 26/10/2000	2000
SC129	Broome Advertiser 28/2/2001	2001
SC130	West Australian 26/7/2000	2000
SC131	Broome Advertiser 26/1/2000	2000
SC132	West Australian 15/7/1975	1975

SC133	West Australian 6/10/2000	2000	
SC134	Boab Babbler August 1999		1999
SC135	Broome Advertiser 20/4/1998		1998
SC136	Kimberley Echo 26/11/1998		1998
SC137	6PR Morning Program with Howard Sattler 10/8/1999		1999
SC138	West Australian 30/9/1999	1999	
SC139	West Australian 6/10/1999	1999	
SC140	West Australian 25/11/1999		1999
SC141	West Australian 3/11/1999	1999	
SC142	West Australian 28/10/1999		1999
SC143	West Australian 4/10/1999	1999	
SC144	Broome Advertiser 24/5/2000		2000
SC145	Weekend Australian 24-25/6/2000		2000
SC146	West Australian 20/7/2000	2000	
SC147	Broome Advertiser 4/8/1999		1999
SC148	West Australian 19/7/1999	1999	
SC149	West Australian 16/10/1964		1964
SC150	West Australian 3/5/2001		2001
SC151	West Australian 20/12/2000		2000

SC152	Boab Babbler 6/8/1999	1999
SC153	West Australian 3/1/2001	2001
SC154	Broome Advertiser 10/5/2000	2000
SC155	Kimberley Echo 24/12/1997	1997
SC156	Kimberley Echo 30/1/1997	1997
SC157	Broome Advertiser 23/8/1997	1997
SC158	Broome Advertiser 15/3/2000	2000
SC159	Kimberley Echo 22/7/1999	1999
SC160	Kimberley Echo 3/6/1999	1999
SC161	Kimberley Echo 8/7/1999	1999
SC162	Kimberley Echo 29/7/1999	1999
SC163	Kimberley Echo 4/2/1999	1999
SC164	Kimberley Echo 28/1/1999	1999
SC165	Kimberley Echo 4/6/1998	1998
SC166	Boab Bulletin June 1998	1998
SC167	West Australian 11/11/1999	1999
SC168	Australian Geographic July/September 1996	1996
SC169	West Australian 25/3/2000	2000
SC170	Kimberley Echo 11/5/2000	2000
SC171	West Australian 30/10/2000	2000
SC172	Kimberley Echo 18/1/2001	2001
SC173	Kimberley Echo 7/6/2001	2001
SC174	Sunday Times 6/5/2001	2001

SC175	Kimberley Echo 28/6/2001	2001
SC176	All media outlets	2001
SC126	Statement by P.M.G. 16/11/1967	1967
SC187	e-mail from Western Power 21/02/2002	2002
SC188	Broome Advertiser 21/02/2002	2002
SC189	Response from National Bank to enquiry	2002
SC190	ABC News 27/03/2002	2002
SC191	Personal observation	2002
SC192	Broome Museum information sheet	2002
SC193	Personal Interview with Mr John Woodman of Paspaley Pearls	2002
SC194	Pearling in W.A - a publication of Fisheries WA which re-printed & updated a piece by Cathy Anderson, 1996	2002
SC195	Broome Directory 2001	2001
SC196	ABC Breakfast Programme - Kimberley	2002
SC197	Brief History of Wyndham compiled with assistance of Battye Library and others	1986
SC198	Pamphlet of Wyndham Zoological Gardens and Crocodile Park	2002

=====

Table: "townsshires"

These are the "raw" events which were entered into the table as they were discovered. For each entry there is always:

- (1) a place identification : place_id
- (2) a name: name
- (3) a establishment date: establishment_date

Columns 3 may be "\N" - a null entry. This means that an appropriate entry is either not known or not required.

Column Headings:

This table is sufficiently small for column headings to be shown above the relevant information as displayed in tabular form.

<u>place_id</u>	<u>name</u>	<u>establishment_date</u>
PL1	Kimberley	\N
PL2	Derby	1883
PL4	Wyndham	1886
PL26	Bayulu	\N
PL27	Beagle Bay	\N
PL28	Kalumburu	\N
PL29	Kundat Djaru/Ringers Soak	\N
PL8	Camballin	\N
PL30	Lombardina	\N
PL31	Looma	\N
PL11	Wyndham-East Kimberley	\N
PL3	Halls Creek Shire	\N
PL12	Halls Creek	\N
PL13	Broome Shire	\N

PL5	Derby-West Kimberley	\N
PL14	Pilbara	\N
PL32	Mowanjum	\N
PL15	State of W. A.	\N
PL6	Fitzroy Crossing	1912
PL7	Broome	1883
PL16	Argyle	1993
PL17	Cadjebut	1987
PL18	Koolan Island	\N
PL19	Cockatoo Island	\N
PL20	Balgo	\N
PL21	Billiluna	\N
PL33	Nookanbah	\N
PL22	Mulan	\N
PL34	One Arm Point	\N
PL23	Kuri Bay	1956
PL24	La Grange/Bidyadanga	\N
PL25	World	\N
PL10	Australia	\N
PL9	Kunnunurra	1963
PL35	Wangkatjungka	\N
PL36	Warmun	\N

Table: "funds"

These are the "raw" events which were entered into the table as they were discovered. For each entry there is always:

- (1) an fund identification: fund_id
- (2) a funding source: funding_sources
- (3) a cost: Cost

Columns 3 may be "/N" - a null entry. This means that an appropriate entry is either not known or not required.

Column Headings:

This table is sufficiently small for column headings to be shown above the relevant information as displayed in tabular form.

<u>fund_id</u>	<u>funding source</u>	<u>.cost</u>
FD44	Capital invested by Government in WyndhamMeatworks in 1919	1000000
FD2	Commonwealth Government	60000000
FD3	State Government	\N
FD4	State Government	320000
FD5	Commonwealth Government	460000
FD6	Commonwealth Government	180000
FD45	State Government funds for New Wyndham Hospital	2000000
FD10	State - Local Govt	130000
FD8	State Government	2000000
FD9	State Government	1600000

FD7	State Government	6000
FD11	State Government	2000000
FD12	Private	\N
FD13	Commonwealth Government	297000
FD14	Private	7000000
FD15	Private	15000000
FD16	Private	522000000
FD1	Private	400000
FD17	Private - B.H.P.	\N
FD18	Private	6000000
FD19	Private	50000
FD20	Private	150000
FD21	Private	50000
FD22	Main Roads & Commonwealth Government	3000000
FD23	Commonwealth Government	\N
FD24	Private	160000
FD25	Dampier Mining Co	\N
FD26	Dept of Civil Aviation	470000
FD27	Pearl Aviation	\N
FD28	Dept of Defence (Commonwealth Govt)	52000000
FD29	Regional Airport Development Scheme	46231
FD30	Indigenous Land Corporation	8000000
FD31	State Government 1999 Budget	3800000
FD32	State Government Budget	4200000

FD33	Commonwealth Government	6000000
FD34	Commonwealth Government	10000000
FD35	Commonwealth Government	5000000
FD36	Commonwealth Government (funds to each station)	75000
FD37	Broome Shire Council - \$25,000; KDC one third; rest private	52000
FD38	State Government	25000
FD39	Private/State Government/Shire	15000000
FD40	Private	9600000
FD41	W.A. Government \$8M & Commonwealth Government \$12M	20000000
FD42	Main Roads Dept \$10M	10000000
FD43	Land & Water Resources Research & Development Corp, C.S.I.R.O., & Fisheries Research & Development Corp	7500000

=====

Table: "output"

These are the "raw" events which were entered into the table as they were discovered. For each entry there is always:

- (1) an product identification: product_id
- (2) a date: date
- (5) an quantity type: quantity_type

Columns 3 and 4 may be "\N" - a null entry. This means that an appropriate entry is either not known or not required.

Column headings:

product_id	date	value	quantity	quantity_type
PD1	1913	168000	\N	Pearls
PD2	1913	474000	\N	Pearl shells
PD3	1964	\N	\N	Cotton (1600 Acres)
PD4	1968	\N	\N	Bauxite
PD5	1966	\N	\N	Iron ore
PD6	1921	\N	\N	Oil
PD7	1909	\N	\N	Coal
PD8	1911	\N	\N	Tin
PD9	1880	\N	\N	Sheep
PD12	1984	\N	\N	Cattle slaughtered: Broome 24810; Wyndham 38720; Live shipments:- 12812; Sold in WA or interstate 66377
PD11	1887	\N	\N	Freight rate

PD12	1985	\N	\N	Cattle slaughtered Broome 32168; Wyndham 32768; Live shipments:14000; Sold in WA or interstate 65000
PD21	1998	631000000	\N	Value of minerals and oil produced
PD26	1993	500000000	34000000	Value and quantity produced at Argyle Diamond Mine (Dollars & Carats)
PD26	1979	\N	4207	Number of diamonds found by Ashton Joint Venture
PD12	1982	\N	\N	Cattle Live and slaughtered: Broome 8000; 35883; Wyndham 1000 : 68000
PD12	1988	\N	\N	Forecasts (mean) live slaughtered Broome: 5000 ; 42000; Wyndham12500 : 75000
PD19	1993	129200000	\N	Spent by tourists
PD12	1994	35000	12500000	Cattle turn-off from 40 stations in Derby-West Kimberley
PD12	1949/62	\N	55529	Cattle treated on Air-beef Scheme

PD12	1993	\N	28945	Live cattle exports from Kimberley
PD12	1998	\N	73764	Live cattle exports from Kimberley
PD6	1985	\N	1400	Oil production in barrels by Home Oil at Blina (1000), Sundown (200) and West Terrace (200)
PD6	1981	\N	38	No 1 oil well drilled at Blina Barrel production of 367 degrees API oil from first well
PD2	1891	89000	541	Pounds sterling & tons value & quantity of pearl shell produced in Broome
PD2	1892	78000	428	Pounds sterling & tons value & quantity of pearl shell produced in Broome
PD2	1893	57000	353	Pounds sterling & tons value & quantity of pearl shell produced in Broome
PD2	1894	35000	362	Pounds sterling & tons value & quantity of pearl shell produced in Broome

PD2	1895	26000	366	Pounds sterling & tons value & quantity of pearl shell produced in Broome
PD2	1957	1209602	991	Dollars and tons of pearl shell produced at Broome
PD10	1885	\N	\N	Labour rates
PD2	1885	200	\N	Pearl shells per ton
PD9	1885	\N	55000	Sheep
PD9	1949	\N	21000	Maximum sheep sent out of Derby in a year to date
PD2	1886	\N	300	Tons of pearl shell exported
PD1	1957	\N	19786	Dollars worth of pearls produced at Broome
PD1	1990	55000000	\N	Value of pearls (cultured) produced.
PD3	1967	\N	9712500	Pounds weight of lint from Ord River scheme
PD3	1998	1800000	\N	Value (Aus\$) of cotton & cotton seed produced on Ord
PD9	1969	\N	42000	Sheep relaced by cattle by ALCO Ltd

PD12	1949	\N	26000	Maximum cattle sent out of Derby in a year to date
PD12	1941	\N	12000	Average number of cattle sent from Derby per year 1937–1941
PD12	1948	\N	7000	Number of cattle sent out of Derby this year (plus further 7000) overlanded to Broome
PD12	1969	\N	12075	Number of cattle processed at DEMCO
PD13	1947	\N	\N	Lead
PD14	1947	\N	\N	Zinc
PD15	1947	\N	\N	Silver
PD16	1969	\N	1539	Bales of wool exported
PD7	1964	\N	50000000	Steaming coal reserves at Liveringa
PD17	1997	\N	\N	Bananas
PD18	1977	500000	6000	Sorghum to Singapore
PD12	1893	\N	2000	Cattle exported via Derby
PD9	1893	\N	2400	Fat sheep & lambs exported via Derby
PD27	1999	\N	60	Tons of barramundi produced by Lake

				Argyle Fisheries
PD12	2000	42000000	\N	Value of cattle exported through Broome in 2000
PD1	2000	200000000	\N	Value of Kimberley pearl exports (\$210M nationally)
PD12	1964	\N	9688	Cattle exported via Derby. 9543 slaughtered at DEMCO
PD12	1962	\N	10000	Cattle sent to Wyndham
PD12	1961	\N	4000	Cattle sent to Wyndham
PD28	1999	12000000	\N	Value of rock melon production on the Ord river Scheme
PD19	1997	\N	188000	Tourism Number of persons visiting Derby Jul–Dec1997
PD29	1999	25000000	\N	Value of total cucurbit production on the Ord: melon, pumpkin etc (including 1999 PD27 output)
PD19	1994	124500000	38100	Value of tourism– funds spent in 1994–Number of visitations (not number of people)

PD20	1954	\N	15642	Tons of cargo through Derby port
PD20	1955	\N	30579	Tons of cargo through Derby port
PD20	1956	\N	25615	Tons of cargo through Derby Port
PD20	1957	\N	31211	Tons of cargo though Derby port
PD20	1959	\N	37419	Tons of cargo through Derby port
PD20	1960	\N	46247	Tons of cargo through Derby port
PD20	1961	\N	41645	Tons of cargo through Derby port
PD20	1958	/N	26794	Tons of cargo through Derby port
PD19	1998	140000000	\N	Value of Tourism
PD22	1995	137000000	\N	Value of combined pearls and pearl shell
PD23	1998	42000000	\N	Value of Agriculture
PD24	1998	12000000	\N	Value of Fishing
PD25	1998	891000000	\N	Value of general exports of region
PD26	1983	\N	6	Diamonds (carats)

PD26	1984	\N	11	Diamonds (carats)
PD26	1986	\N	25000000	Estimate of diamonds (carats) to be produced in 1986 et seq from 3M tonnes of ore crushed
PD6	1983	\N	130	KI per day. Reserves 216000 KI at Blina and 180000 KI at Sundown and West Kara
PD21	1997	560000000	\N	Value of Minerals & petroleum
PD30	2000	35000	1000	Weekly production of cane spirit at The Hoochery in Kununurra

=====

Table: "people"

These are the "raw" events which were entered into the table as they were discovered. For each entry there is always:

- | | | |
|-----|-------------------------|------------|
| (1) | a date: | date |
| (2) | a place identification: | place_id |
| (3) | a population: | population |
| (4) | a European column: | european |
| (5) | an Aboriginal column: | aboriginal |
| (6) | an Asian column: | asian |
| (7) | a Chinese column: | chinese |
| (8) | a Filipino column: | filipino |
| (9) | a Japanese column: | japanese |

Columns 3, 4, 5, 6, 7, 8 and 9 may be "\N" - a null entry. This means that an appropriate entry is either not known or not required.

Column Headings:

date | place_id | population | european | aboriginal | asian |

chinese | filipino | japanese |

1886	PL3	3000	\N	\N	\N	\N	\N	\N
1887	PL3	600	\N	\N	\N	\N	\N	\N
1889	PL2	100	\N	\N	\N	\N	\N	\N
1889	PL5	250	\N	\N	\N	\N	\N	\N
1913	PL2	228	\N	\N	\N	\N	\N	\N
1913	PL5	450	\N	\N	\N	\N	\N	\N
1957	PL5	1143	\N	\N	\N	\N	\N	\N

1968	PL2	2600	\N	\N	\N	\N	\N	\N
1961	PL7	1462	\N	\N	\N	\N	\N	\N
1966	PL7	2061	\N	\N	\N	\N	\N	\N
1961	PL3	436	\N	\N	\N	\N	\N	\N
1976	PL3C	75	\N	\N	\N	\N	\N	\N
1961	PL5	2249	\N	\N	\N	\N	\N	\N
1981	PL3C	285	\N	\N	\N	\N	\N	\N
1961	PL10	1521	\N	\N	\N	\N	\N	\N
1966	PL10	2486	\N	\N	\N	\N	\N	\N
1976	PL5A	358	\N	\N	\N	\N	\N	\N
1981	PL5A	368	\N	\N	\N	\N	\N	\N
1960	PL2	2249	\N	\N	\N	\N	\N	\N
1964	PL2	2670	\N	\N	\N	\N	\N	\N
1976	PL5M	358	\N	\N	\N	\N	\N	\N
1981	PL5M	566	\N	\N	\N	\N	\N	\N
1994	PL2	6318	\N	\N	\N	\N	\N	\N
1999	PL2	7783	\N	\N	\N	\N	\N	\N
1976	PL5N	64	\N	\N	\N	\N	\N	\N
1981	PL5N	35	\N	\N	\N	\N	\N	\N
1976	PL5W	160	\N	\N	\N	\N	\N	\N
1981	PL5W	189	\N	\N	\N	\N	\N	\N
1976	PL5C	474	\N	\N	\N	\N	\N	\N
1983	PL13	5110	\N	\N	\N	\N	\N	\N
1983	PL5	6820	\N	\N	\N	\N	\N	\N

1983	PL3	2780	\N	\N	\N	\N	\N	\N
1983	PL11	5430	\N	\N	\N	\N	\N	\N
1981	PL5C	626	\N	\N	\N	\N	\N	\N
1983	PL1	20140	\N	\N	\N	\N	\N	\N
1966	PL13	2813	\N	\N	\N	\N	\N	\N
1966	PL12	574	\N	\N	\N	\N	\N	\N
1966	PL3	1793	\N	\N	\N	\N	\N	\N
1976	PL11A	226	\N	\N	\N	\N	\N	\N
1981	PL11A	356	\N	\N	\N	\N	\N	\N
1976	PL11M	46	\N	\N	\N	\N	\N	\N
1966	PL2	2683	\N	\N	\N	\N	\N	\N
1966	PL5	4765	\N	\N	\N	\N	\N	\N
1966	PL11	3329	\N	\N	\N	\N	\N	\N
1971	PL13	3024	\N	\N	\N	\N	\N	\N
1971	PL3	1917	\N	\N	\N	\N	\N	\N
1971	PL5	5492	\N	\N	\N	\N	\N	\N
1971	PL11	4169	\N	\N	\N	\N	\N	\N
1981	PL11M	185	\N	\N	\N	\N	\N	\N
1976	PL11N	185	\N	\N	\N	\N	\N	\N
1981	PL11N	243	\N	\N	\N	\N	\N	\N
1976	PL11W	141	\N	\N	\N	\N	\N	\N
1981	PL11W	182	\N	\N	\N	\N	\N	\N
1976	PL11C	337	\N	\N	\N	\N	\N	\N
1981	PL11C	509	\N	\N	\N	\N	\N	\N

1976	PL1A	925	\N	\N	\N	\N	\N	\N
1981	PL1A	1171	\N	\N	\N	\N	\N	\N
1976	PL1M	455	\N	\N	\N	\N	\N	\N
1981	PL1M	819	\N	\N	\N	\N	\N	\N
1976	PL1N	378	\N	\N	\N	\N	\N	\N
1971	PL1	14602	\N	\N	\N	\N	\N	\N
1981	PL1N	437	\N	\N	\N	\N	\N	\N
1976	PL1W	492	\N	\N	\N	\N	\N	\N
1981	PL1W	622	\N	\N	\N	\N	\N	\N
1976	PL1C	1222	\N	\N	\N	\N	\N	\N
1981	PL1C	1743	\N	\N	\N	\N	\N	\N
1976	PL13E	1437	\N	\N	\N	\N	\N	\N
1981	PL13E	1811	\N	\N	\N	\N	\N	\N
1976	PL13U	104	\N	\N	\N	\N	\N	\N
1981	PL13U	172	\N	\N	\N	\N	\N	\N
1976	PL13Y	2538	\N	\N	\N	\N	\N	\N
1981	PL13Y	1454	\N	\N	\N	\N	\N	\N
1976	PL3E	596	\N	\N	\N	\N	\N	\N
1981	PL3E	852	\N	\N	\N	\N	\N	\N
1976	PL3U	56	\N	\N	\N	\N	\N	\N
1981	PL3U	47	\N	\N	\N	\N	\N	\N
1976	PL3Y	1281	\N	\N	\N	\N	\N	\N
1981	PL3Y	740	\N	\N	\N	\N	\N	\N
1976	PL5E	2127	\N	\N	\N	\N	\N	\N

1981	PL5E	2879	\N	\N	\N	\N	\N	\N
1976	PL5U	105	\N	\N	\N	\N	\N	\N
1981	PL5U	213	\N	\N	\N	\N	\N	\N
1976	PL5Y	2815	\N	\N	\N	\N	\N	\N
1966	PL1	12700	\N	\N	\N	\N	\N	\N
1966	PL14	8907	\N	\N	\N	\N	\N	\N
1971	PL1	28985	\N	\N	\N	\N	\N	\N
1976	PL14	38687	\N	\N	\N	\N	\N	\N
1981	PL14	47284	\N	\N	\N	\N	\N	\N
1966	PL15	848100	\N	\N	\N	\N	\N	\N
1971	PL15	1030469	\N	\N	\N	\N	\N	\N
1976	PL15	1144343	\N	\N	\N	\N	\N	\N
1981	PL15	1273624	\N	\N	\N	\N	\N	\N
1981	PL5Y	1621	\N	\N	\N	\N	\N	\N
1976	PL11E	1823	\N	\N	\N	\N	\N	\N
1981	PL11E	2543	\N	\N	\N	\N	\N	\N
1976	PL11U	58	\N	\N	\N	\N	\N	\N
1981	PL11U	130	\N	\N	\N	\N	\N	\N
1976	PL11Y	2190	\N	\N	\N	\N	\N	\N
1981	PL11Y	1106	\N	\N	\N	\N	\N	\N
1976	PL13	4079	\N	1720	\N	\N	\N	\N
1976	PL3	1934	\N	1276	\N	\N	\N	\N
1976	PL5	5046	\N	2137	\N	\N	\N	\N
1976	PL11	4071	\N	1226	\N	\N	\N	\N

1976	PL1	15130	\N	6350	\N	\N	\N	\N
1981	PL13	4869	\N	1967	\N	\N	\N	\N
1981	PL3	2541	\N	1704	\N	\N	\N	\N
1981	PL5	6627	\N	2773	\N	\N	\N	\N
1981	PL11	5259	\N	1489	\N	\N	\N	\N
1981	PL1	19296	\N	7933	\N	\N	\N	\N
1976	PL7	2920	\N	901	\N	\N	\N	\N
1976	PL2	2411	\N	692	\N	\N	\N	\N
1976	PL12	767	\N	475	\N	\N	\N	\N
1976	PL4	1383	\N	330	\N	\N	\N	\N
1976	PL9	1540	\N	292	\N	\N	\N	\N
1981	PL7	3666	\N	1103	\N	\N	\N	\N
1981	PL2	2933	\N	1031	\N	\N	\N	\N
1981	PL9	2081	\N	436	\N	\N	\N	\N
1981	PL4	1509	\N	352	\N	\N	\N	\N
1981	PL12	966	\N	500	\N	\N	\N	\N
1976	PL1E	5984	\N	\N	\N	\N	\N	\N
1981	PL1E	8085	\N	\N	\N	\N	\N	\N
1976	PL1U	323	\N	\N	\N	\N	\N	\N
1981	PL1U	562	\N	\N	\N	\N	\N	\N
1976	PL13A	113	\N	\N	\N	\N	\N	\N
1981	PL13A	226	\N	\N	\N	\N	\N	\N
1976	PL13M	25	\N	\N	\N	\N	\N	\N
1981	PL13M	37	\N	\N	\N	\N	\N	\N

1976	PL13N	123	\N	\N	\N	\N	\N	\N
1981	PL13N	150	\N	\N	\N	\N	\N	\N
1976	PL13W	170	\N	\N	\N	\N	\N	\N
1981	PL13W	211	\N	\N	\N	\N	\N	\N
1976	PL13C	336	\N	\N	\N	\N	\N	\N
1981	PL13C	323	\N	\N	\N	\N	\N	\N
1976	PL3A	228	\N	\N	\N	\N	\N	\N
1981	PL3A	221	\N	\N	\N	\N	\N	\N
1976	PL3M	26	\N	\N	\N	\N	\N	\N
1981	PL3M	31	\N	\N	\N	\N	\N	\N
1976	PL3N	6	\N	\N	\N	\N	\N	\N
1981	PL3N	9	\N	\N	\N	\N	\N	\N
1976	PL1Y	8824	\N	\N	\N	\N	\N	\N
1976	PL3W	21	\N	\N	\N	\N	\N	\N
1981	PL3W	40	\N	\N	\N	\N	\N	\N
1898	PL12	50	\N	\N	\N	\N	\N	\N
1981	PL1Y	4921	\N	\N	\N	\N	\N	\N
1976	PL14E	19997	\N	\N	\N	\N	\N	\N
1981	PL14E	23452	\N	\N	\N	\N	\N	\N
1976	PL14U	600	\N	\N	\N	\N	\N	\N
1981	PL14U	1252	\N	\N	\N	\N	\N	\N
1981	PL14Y	8739	\N	\N	\N	\N	\N	\N
1976	PL14Y	8091	\N	\N	\N	\N	\N	\N
1976	PL15E	492713	\N	\N	\N	\N	\N	\N

1981	PL15E	553905	\N	\N	\N	\N	\N	\N
1976	PL15U	20314	\N	\N	\N	\N	\N	\N
1981	PL15U	37076	\N	\N	\N	\N	\N	\N
1976	PL15Y	631822	\N	\N	\N	\N	\N	\N
1981	PL15Y	349588	\N	\N	\N	\N	\N	\N
1983	PL124	488	\N	162	\N	\N	\N	\N
1983	PL119	259	\N	168	\N	\N	\N	\N
1983	PL144	790	\N	435	\N	\N	\N	\N
1983	PL145	235	\N	171	\N	\N	\N	\N
1983	PL1UT	1772	\N	936	\N	\N	\N	\N
1991	PL5	7019	\N	3741	\N	\N	\N	\N
1986	PL5	6330	\N	2955	\N	\N	\N	\N
1986	PL13	\N	\N	2495	\N	\N	\N	\N
1986	PL3	\N	\N	2109	\N	\N	\N	\N
1986	PL11	\N	\N	1910	\N	\N	\N	\N
1991	PL13	\N	\N	3166	\N	\N	\N	\N
1991	PL3	\N	\N	1922	\N	\N	\N	\N
1991	PL11	\N	\N	1878	\N	\N	\N	\N
1903	PL7	\N	\N	2370	\N	\N	\N	\N
1904	PL7	\N	\N	4400	\N	\N	\N	\N
1925	PL7	5000	\N	\N	\N	\N	\N	\N
1906	PL7	\N	\N	\N	1021	\N	\N	815
1907	PL7	\N	\N	\N	926	\N	\N	939
1908	PL7	\N	\N	\N	794	\N	\N	1027

1898	PL4	95	\N	\N	\N	\N	\N	\N
1912	PL4	160	\N	\N	\N	\N	\N	\N
1996	PL9	4500	\N	\N	\N	\N	\N	\N

=====

Table: "stock"

These are the "raw" events which were entered into the table as they were discovered. For each entry there is always:

- (1) an date: date
- (2) a place identification: place_id
- (3) Cattle: cattle
- (4) Sheep: sheep
- (5) Horses: horses

Columns 3, 4 and 5 may be "\N" - a null entry. This means that an appropriate entry is either not known or not required.

Column headings:

This table is sufficiently small for column headings to be shown above the relevant information as displayed in tabular form.

<u>date</u>	<u>place_id</u>	<u>cattle</u>	<u>sheep</u>	<u>horses</u>
1883	PL1	960	46839	287
1885	PL1	2122	55595	383
1886	PL5	\N	66159	\N
1900	PL5	204751	\N	\N
1905	PL5	380994	\N	\N
1955	PL1	440000	90370	\N
1943	PL1	\N	180000	\N
1944	PL5	\N	306000	\N
1964	PL5	\N	125000	\N

Appendix F

The Queries

Overview of Queries Devised

All of the queries devised are listed below together with short explanations of their effect, production or output when implemented. Not all are used for the purposes of the investigation relevant to Frank's second hypothesis and its corollary.

(For ease of reference:

The hypothesis is:

...that the satellites experience their greatest economic development and especially their most classically capitalist industrial development if and when their ties to their metropolis are weakest.

and its corollary is:

...when the metropolis recovers from its crisis and re-establishes the trade and investment ties which fully reincorporate the satellites into the system, or when the metropolis expands to incorporate previously isolated regions into the worldwide system, the previous development and industrialisation of these regions is choked off or channelled into directions which are not self-perpetuating and promising.)

Some were devised simply to keep a check on progress during the collection of the information of which the database is comprised.

An example of such a query is No. 21. This query provides the count of all events recorded in the database. This enabled a continuous check to be kept on the numbering of the events as they were entered into the events table over time. Although the decision to create a database was made owing to the difficulty of arranging collected material into a chronological list by hand such a list is not, in fact, of much use. The table resulting from running this query, No. 1 (This query re-arranges the events table into chronological order.), is not reproduced because little can be deduced from it by inspection. It has been used simply to avoid duplication of entries into the "raw" events table.

Further comments on the queries used have been made in previous chapters. Some of the queries were devised before it became clear that complete data with respect to certain aspects of the collected information was not available. Such detail is shown in the tables with "/N" entries. Queries involving the use of arithmetic functions, such as the "average" function, have not been devised. This is because the arithmetic involved following the output of the queries providing "count" details is very simple. All queries devised have been listed and explained simply for the sake of completeness.

The Queries

- | | | |
|-----|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | Name of query:
Query:
Explanation: | Chronological events
Select * from events order by date asc;
This query re-arranges the events table into chronological order. |
| (2) | Name of query:
Query:

Explanation: | Chronological events - limited data
Select date, event_type, event_description from events order by date asc;
This query does the same as query (1) above but limits the display of data to three columns for ease of viewing on screen. |
| (3) | Name of query:
Query:

Explanation: | Event count between dates at place
Select count (*) from events where events.date >= [parameter "date?"] and events.date <= [parameter "date?"] and townsshires.name = [parameter "name?"] and events.place_id = townsshires.place_id;
This query results in the display of the number of events that have occurred between given years at a given place. |
| (4) | Name of query:
Query:

Explanation: | Events and Places
Select event_id, event_type, date, event_description, name from events, townsshires where events.place_id = townsshires.place_id order by events.date;
This query produces a table of events that have occurred at a given place but displays limited data for ease of on-screen viewing (no horizontal scrolling needed). |
| (5) | Name of query:
Query:

Explanation: | Events at a Place Between Dates
Select event_id, event_type, event_description, date from events where events.date >= [parameter "date?"] and events.date <= [parameter "date?"] and townsshires.name = [parameter "name?"] and events.place_id = townsshires.place_id order by events.date asc;
This query produces a table of events that have occurred between given dates at a given place. |
| (6) | Name of query:
Query: | Events Between Dates Exc. an e_t
Select event_id, event_type, |

- event_description, date from events where not event_type = [parameter "event_type?"] and events.date >= [parameter "date?"] and events.date <= [parameter "date?"] order by events.date asc;
- Explanation: This query produces a table of events between given dates but excludes a given event type.
- (7) Name of query: Events Between Dates Overall
Query: Select event_id, event_type, event_description, date from events where events.date >= [parameter "date?"] and events.date <= [parameter "date?"] order by events.date asc;
- Explanation: This query produces a table of events between given dates.
- (8) Name of query: Events in a particular place
Query: Select * from events where events.place_id = townsshires.place_id and townsshires.name = [parameter "townsshires.name?"] order by events.date asc;
- Explanation: This query produces a table of events that have occurred at a given place.
- (9) Name of query: Events in a Particular Year
Query: Select * from events where date = [parameter "date?"];
- Explanation: This query produces a table of events that occurred in a given year.
- (10) Name of query: Events of a Particular Kind
Query: Select * from events where event_type = [parameter "event_type?"] order by date asc;
- Explanation: This query produces a table of events of a given type.
- (11) Name of query: Events ordered asc
Query: Select * from events order by event_id asc;
- Explanation: This query produces a table of events in "event identification" order. This is not in numerical order but is similar to that effect and the on-screen display does allow easy scrolling to a particular event.

- (12) Name of query: Labour force in LGAs
 Query: Select date, population, name from people, townsshires where people.place_id = [parameter "people.place_id?"] and townsshires.name = [parameter "townsshires.name?"];
 Explanation: This table produces labour force statistics for a given local government area.
- (13) Name of query: List of Event Types
 Query: Select distinct event_type from events;
 Explanation: This query produces a table of event types.
- (14) Name of query: List of towns etc alphabetical
 Query: Select place_id, name from townsshires order by name asc;
 Explanation: This query produces a table of towns, shires and other places in alphabetical order.
- (15) Name of query: List of towns/shires/regions
 Query: Select place_id, name from townsshires order by place_id asc;
 Explanation: This query produces a table of towns, shires and other places in place identification order.
- (16) Name of query: No of events at a place
 Query: Select count(*) from events where events.place_id = townsshires.place_id and townsshires.name = [parameter "townsshires.name?"];
 Explanation: This query provides the number of events that have occurred at a given place
- (17) Name of query: No of Events Excluding one e_t
 Query: Select count (*) from events where not event_type = [parameter "event_type?"];
 Explanation: This query provides the number of events that have occurred at a given place excluding from that count one given event type.
- (18) Name of query: No of Events Excluding two e_ts
 Query: Select count (*) from events where not event_type = [parameter "event_type?"] and not event_type = [parameter "event_type?"];
 Explanation: This query provides the number of events that have occurred at a given place excluding from that count two given event types.

- | | | |
|------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (19) | Name of query:
Query:

Explanation: | No of events of Particular type
Select count (*) from events where
event_type = [parameter "event_type?"];
This query provides the number of events
that have occurred that are of a given event
type. |
| (20) | Name of query:
Query:

Explanation: | Population in a place
Select date, population, aboriginal,
asian, japanese from people where people
.place_id = townsshires.place_id and
townsshires.name = [parameter
"townsshires.name?"]order by date asc;
This query produces a table showing the
population details at a given place. |
| (21) | Name of query:
Query:
Explanation: | Total Events
Select count (*) from events;
This query provides the count of all events
recorded in the database. |
| (22) | Name of query:
Query:

Explanation: | Number of distinct event types
Select count(event_type) as "number",
event_type from events group by event_type;
This query lists all event types and the
number of occurrences of each. |
| (23) | Name of query:
Query:

Explanation: | Event count between dates
Select count(*) from events where
events.date >= [parameter "date?"] and
events.date <= [parameter "date?"];
This query provides a count of the number of
events occurring between given dates. |
| (24) | Name of query:
Query:

Explanation: | Event count bet. dates of particular e_t
Select count(*) from events where
events.date >= [parameter "date?"] and
events.date <= [parameter "date?"] and
events.event_type = [parameter
"event_type?"];
This query provides a count of events of a
given event type between given years. |
| (25) | Name of query:
Query:

Explanation: | Single event
Select * from events where event_id =
[parameter "event_id?"]
This query provides the full details of a single |

particular event identified by the event identification number.

(26) Name of Query:
Query:

Event count bet dates exc event type

```
Select count(*) from events where  
events.date >= [parameter "date?"] and  
events.date <= [parameter "date?"] and  
notevents.event_type = [parameter  
"event_type?"];
```

Explanation:

This query provides a count of events between given dates excluding a particular event type.

Appendix G

Statistical Considerations

The tables 7.2 and 7.4 on pages 207 and 209 respectively in chapter 7 set out sample means in respect of the periods shown in those tables for the number of events of economic significance that occurred per year. The figures were rounded. That is, they were stated to the nearest whole number. The same approximation was made with respect to the mean per year of the number of events of economic significance for the whole of the twentieth century. The events specified in for the whole century may be statistically termed the "population". For the purposes of the argument in that chapter such approximations were sufficient. However, it may be argued that the more precision is necessary. The following calculations are set out to show that, where the average number of events per year for the various samples are less than the population mean then they are less by a significant margin. This can be done by applying "t-tests" to the figures derived from the database. Use of the t-test statistic is considered most suitable for use with small samples (Lewis & Traill, 1999, p 330).

The first figure to be adjusted for the sake of more precision is the population mean. This was taken in chapter 7 to have been 7. The calculation to arrive at this figure used 100 as the number of years in the century. In fact the number of years taken into consideration was from 1900 to 2000, or 101 years. The number of events in occurring in this period was 673. The "population" mean was therefore $673/101$ or 6.66. The number of events was obtained by use of query number 23 from Appendix F which provides a count of the number of events between particular dates. This query also allows the discovery of the number of events in each year of the sample periods in the tables mentioned. From these data frequency distribution tables can be constructed for each sample period. Sample means, variances from the means and standard deviations from the the means can then be calculated. With this information comparison with the population mean can be made. Statistical t-tests will allow statements to be made with regard to the comparison of the sample means to the population mean with a stated degree of confidence.

Sample 1901 - 1903

Number of Events		Frequency		
	X_i	f_i	$f_i X_i$	$f_i X_i^2$
	0	1	0	0
1		0	0	0
2		1	2	4
3		0	0	0
4		1	4	16
		-----	-----	-----
		n = 3	6	20
		-----	-----	-----

$$\begin{aligned}
 \text{Sample mean } \bar{X} &= \frac{\sum_{i=0}^n f_i X_i}{n} \\
 &= 6/3 \\
 &= 2
 \end{aligned}$$

$$\begin{aligned}
 \text{Sample Variance } S^2 &= \frac{\sum_{i=0}^n f_i X_i^2}{n} - \left(\frac{\sum_{i=0}^n f_i X_i}{n} \right)^2 \\
 &= 20/3 - 4 \\
 &= 6.67 - 4 \\
 &= 2.67
 \end{aligned}$$

$$\begin{aligned}
 \text{Sample Standard Deviation } \bar{S} &= \sqrt{S^2} \\
 &= \sqrt{2.67} \\
 &= 1.63
 \end{aligned}$$

Null Hypothesis $H_0: \mu = 6.67$

Alternative Hypothesis $H_1: \mu \ll 6.67$

Level of Significance $\alpha = 0.025$

Population mean $\mu_0 = 6.67$

Critical Region $T \ll t_{0.025} = 4.303$ (for $n-1$ degrees of freedom) (minus sign ignored)

Computations:

$X = 2, S = 1.63, n = 3, \mu_0 = 6.67$

$$\begin{aligned} t &= \frac{(\bar{X} - \mu_0)\sqrt{n}}{\bar{S}} \\ &= ((2 - 6.67)\sqrt{4})/1.63 \\ &= (-4.67 \times 1.732)/1.63 \\ &= 8.09/1.63 \\ &= 4.96 \text{ (minus sign ignored)} \end{aligned}$$

Conclusion:

Reject H_0 at the 0.025 level of significance and conclude that the sample mean is significantly less than the population mean with 95% confidence.

Other Tables

Similar calculations can be done with regard to all of the other periods shown in table 7.2 on page 207 in chapter 7 where the sample means are apparently less than the population mean. That is, it can be stated with 95% certainty that the sample means are significantly less than the population mean in the periods 1901–1903, 1915–1919, 1929–1934, 1939–1944, 1948–1950 and 1951–1957.

These results confirm those stated in chapter 8 that Andre Gunder Frank's second hypothesis does not arise from nor is it supported by this study of development in the Kimberley region of Western Australia.

The three periods for which the sample mean is apparently higher than the population do not require statistical examination because these periods were examined in full and in detail in chapter 7 in tables 7.6, 7.7 and 7.8. The other period which shows in table 7.2 a sample mean equal to the population mean, 1987–1994 does not, in view of the lack of support for the hypothesis by the other nine periods, materially affect the conclusion stated above and in chapter

7.

Support for the corollary to Frank's second hypothesis as shown in table 7.4 on page 218 in chapter 7 can be demonstrated by similar statistical calculations to that shown above. That is, those sample means that are apparently less than the population mean can be shown to be significantly less than that mean. The periods where the sample means that are clearly greater than the population mean have been examined in detail in tables 7.9 and 7.10 and support for the corollary is thus demonstrated. The marginal sample means which are close to the population mean do not then affect the conclusion drawn in chapter 7 since they represent only one or two possibly contrary results to the other eight or nine.

The detailed calculations mentioned above but not shown are available if required. The formulae and the mathematical and statistical methods used in the example given above is exactly the same with respect to all other periods mentioned in tables 7.2 and 7.4 with sample means less than the population mean.