Symbolic politics in the high technology debate in Australia

Richard Andrew Joseph
University of Wollongong

Recommended Citation
NOTE

This online version of the thesis may have different page formatting and pagination from the paper copy held in the University of Wollongong Library.

UNIVERSITY OF WOLLONGONG

COPYRIGHT WARNING

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site. You are reminded of the following:

Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material. Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.
In memory of my late Father,

ALBERT JOSEPH

1911-1986
CONTENTS

Declaration viii
Tables and Figures ix
Author's Publications Relating to this Research Topic x
Acknowledgments xi
Preface xii
Abstract xv
1. Introduction 1

2. The Emerging High Technology Debate in Australia: Confusion and Problems of Definition 8

2.1. Introduction 9

2.2. A Period of Change and Uncertainty: 1975-80. 9

2.3. High Technology is International 20

2.4. Definitions of High Technology 22

2.4.1. Definitions in use Overseas 22

(1) High Technology
(2) Key Technology/New Fields
(3) High Technology Industries
(4) High Technology Industrial Base
(5) High Technology Capital

2.4.2. Definitions in use in Australia 29

(1) Four General Definitions applied to Australia
(2) Definitions used by Governments and Government Agencies in Australia
(3) Academic and Industry definitions

2.5. Making Sense of High Technology Definitions in Australia 41

2.5.1. Alleviating Anxieties and Fears 43

2.5.2. Visions of the Future 45
2.5.3. Defining the "Political Landscape" 47

Appendix 2.1. High Technology Industries: Definition 1
USSIC/ASIC Correspondence Table 51

Appendix 2.2. High Technology Industries: Definition 1 54

Appendix 2.3. High Technology Industries: Definition 2 56

Appendix 2.4. High Technology Industries: Definition 3 57

Appendix 2.5. High Technology Industries: Definition 4 58

3. Symbolic Politics 69

3.1. Introduction 70

3.2. Symbolic Politics 70

3.3. Political Language 74

3.3.1. Form 74

3.3.2. Function 75

3.3.3. Context 76

3.4. Relevance of Symbolic Politics to Technology 78

3.5. The Role of Technology in Change in Australia 83

3.6. Applying Symbolic Politics 86

3.6.1 The Policy-making Process 87

4. The High Technology Debate in Australia: 91
1981 - 1986

4.1. Introduction 93

4.2. Liberal Government Politics and Institutional Power:
1981-March 1983 94

4.2.1. DST Forum on High Technology 95

4.2.2. The National Semiconductor Deal 97

4.2.3. Pre-budget politics 101

4.2.4. Post-budget politics 103
5.3. Examples of Political Myth and Ritual
5.4. Political Myths about Technology
5.4.1. The Post-Industrial Society Concept
5.4.2. The Post-Industrial Society Myth in the Australian High Technology Debate
5.4.3. The Silicon Valley Model
5.5. Applying Political Myth and Ritual

6. Technology Parks in Australia

6.1. Introduction
6.2. The Meaning of Technology Park
6.3. Overseas Experience
6.3.1. The Role of the University
6.3.2. Location
6.3.3. Creating New High Technology Complexes
6.4. Current Developments in Australia
6.5. The Origins of Technology Parks in Australia
6.5.1. Western Australia
6.5.2. South Australia
6.5.3. Australian Capital Territory
6.5.4. New South Wales
6.5.5. Queensland
6.6. Case Studies of Technology Parks
6.6.1. Western Australian Technology Park
6.6.2. Illawarra Technology Centre
6.6.3. North Ryde Industrial Area
6.7. Conclusion

Appendix 6.1. Types of Technology Parks listed in Table 6.1.
Appendix 6.2. Technology Park Authorities Interviewed
Appendix 6.3. List of Land Developers/Property Agents Interviewed 243
Appendix 6.4. Methodology: Technology Park Case Studies 243
Appendix 6.5. List of Companies/Organisations Interviewed 244
Appendix 6.6. Firms located in the North Ryde Industrial Area 246
Appendix 6.7. Profile of Companies Interviewed in North Ryde and Northern Suburbs 248

7. Venture Capital in Australia 257

7.1. Introduction 258
7.2. Analysis 259
7.2.1. Small Business Finance: 1979-81 259
7.2.2. The Department of Science and Technology's Influence 261
7.2.3. The Espie Report 268
7.3. Conclusion 270

Appendix 7.1. Venture Capital in Australia: Major Events and Commentary 276

8. Conclusion 284

8.1. Introduction 285
8.2. Current emphasis on high technology and economic growth 285
8.3. High technology politics in Australia 288
8.4. High technology and the policy-making process 290
8.5. The Role of the Department of Science and Technology 293
DECLARATION

This work has not been submitted for a degree to any other university or institution.

R.A. JOSEPH
## Tables and Figures

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2.1.</td>
<td>High Technology Definitions: Common Themes and Problems</td>
<td>22</td>
</tr>
<tr>
<td>Table 2.2.</td>
<td>Comparison of Definitions 1-4: High Technology Industries in Australia</td>
<td>31</td>
</tr>
<tr>
<td>Table 2.3.</td>
<td>Operational Definitions of High Technology in Australia</td>
<td>34</td>
</tr>
<tr>
<td>Table 2.4.</td>
<td>Academic and Industry Definitions of High Technology in Australia</td>
<td>39</td>
</tr>
<tr>
<td>Table 3.1.</td>
<td>Technology as a Symbol</td>
<td>82</td>
</tr>
<tr>
<td>Table 3.2.</td>
<td>Gross Expenditure on R &amp; D in Australia</td>
<td>85</td>
</tr>
<tr>
<td>Table 5.1.</td>
<td>Political Myth and Ritual</td>
<td>161</td>
</tr>
<tr>
<td>Table 6.1.</td>
<td>Technology Park Type Developments by State (May 1985)</td>
<td>195</td>
</tr>
<tr>
<td>Table 6.2.</td>
<td>Linkages of Firms in the WATP</td>
<td>224</td>
</tr>
<tr>
<td>Table 6.3.</td>
<td>Linkages of Firms in the ITC and its vicinity</td>
<td>229</td>
</tr>
<tr>
<td>Table 6.4.</td>
<td>Linkages of Firms in North Ryde and Adjoining suburbs</td>
<td>233</td>
</tr>
<tr>
<td>Table 6.5.</td>
<td>Reasons for choosing North Ryde</td>
<td>234</td>
</tr>
<tr>
<td>Table 6.6.</td>
<td>Locational Preferences</td>
<td>236</td>
</tr>
<tr>
<td>Table 6.7.</td>
<td>Opinions on Technology Parks in General</td>
<td>236</td>
</tr>
<tr>
<td>Table 7.1.</td>
<td>Board Estimate of Australian Professionally Managed Venture Capital Funds: 1986</td>
<td>274</td>
</tr>
<tr>
<td>Figure 1.1.</td>
<td>Structure of the Argument</td>
<td>7</td>
</tr>
<tr>
<td>Figure 3.1.</td>
<td>Structure for Symbolic Politics</td>
<td>78</td>
</tr>
<tr>
<td>Figure 7.1.</td>
<td>Initial Share Floats of High Tech Companies</td>
<td>272</td>
</tr>
</tbody>
</table>
Author's Publications Relating to this Research Topic


Technology Parks: a study of their relevance to industrial and technological development in New South Wales, A Report to the NSW Department of Industrial Development and Decentralisation, DIDD, Sydney, 1986.

ACKNOWLEDGMENTS

The simple listing of names cannot do justice to my experiences during my time in Wollongong. The constellation of personalities, events and emotions surrounding this work will forever remain a mystery to me.

The completion of this work would not have been possible without the continued support and love from my family. The difficult times encountered over the last three years were made so much easier through their demonstration to me of what it meant to be in a family. Likewise, my many friends in Wollongong provided a "family" of help and friendship. I am especially grateful to John and Helen Warmus, the Adorni-Braccesi family, especially Anna, and my many friends in the Catholic faith.

The completion of this work depended vitally on the cooperation and perseverance of my supervisors, Professor Ron Johnston and Dr. Stuart Macdonald. They provided both moral support and helpful criticism. The theoretical framework for this study owes much to Paul Couchman, a friend and companion through what seemed to be, at times, a wilderness. There were, of course, many people who assisted this project in less direct ways. I am especially grateful to Peter Drahos, Peter Bryant, Dr. Richard Badham, Dr. Pam Scott, Dr. Rod Badger, Randall Wilson and of course, the many people who cooperated with me in my fieldwork. I am indebted to June Aspley for the excellent job she has done in typing this thesis and whose cheerful outlook on life was always a sign of hope that I would successfully complete this work.

Finally, I am grateful for the leave from the Australian Public Service and the financial support provided through a Commonwealth Postgraduate Research Scholarship.
**PREFACE**

This doctoral thesis is, in essence, a commentary on Australian science and technology policy. It represents also, an important personal achievement, in that it attempts to impose some form of order and sense on my experience with Australian science and technology policy. This experience has been varied, covering the perspectives of public servant, academic researcher, consultant, an active member of a professional society (Australian Institute of Physics) and, of course, student.

Inevitably, the thesis, in its final form, has been strongly influenced by this experience. First, as an undergraduate student in Queensland (1975-78) and later as a post-graduate at Manchester University (1979-80) in the U.K., I was able to gain an appreciation of the importance of industry and technology policy for Australia and other countries. Second, for the following four years which were spent in the public service in Canberra (1981-84), I was primarily involved in the analysis of science and technology policy. One of the main benefits of working in a number of positions in technology-related departments was the experience at first-hand of inter-departmental politics and the chance to participate in policy-making itself (e.g. The National Technology Strategy). Another benefit was an opportunity to see how the bureaucracy coped with the change of federal government from the Liberal-National Coalition to Labor in March 1983. Finally, my position in the public service provided that flexibility in employment conditions which enabled me to experience other dimensions of the political process. Included in this was a two month secondment to Wollongong University (Jan.-Feb. 1984) to assist writing a report on regional technology transfer, a four month consultancy with the NSW Department of Industrial Development and Decentralisation (July-Nov. 1985) studying technology parks, an association with the Australian Institute
of Physics as Secretary to its Science Policy Committee and of course, the chance to complete this thesis full-time.

My special 'inside' position introduces a breadth of personal experience and knowledge which is uniquely valuable and relevant to the writing of this thesis. Of course, being so close to the subject matter can, unintentionally, limit one's perspectives and even inadvertently lead to the exclusion of some events which from another view may be seen to be quite important. With these advantages and disadvantages in mind, every attempt has been made to provide a non-biased view as possible.

It should be stressed that at a very basic level, the perspective chosen for this thesis has been influenced by my experience of the policy-making process and the everyday business of discussing issues with colleagues and absorbing and accepting the culture of an organisation. At a greater level of detail, this experience suggests the following points as being crucially important:

- the importance of political rhetoric, both within the bureaucracy and in wider political debate

- a divergence or at least inconsistency between the allocation of resources to new technology and its prominence and function in political debate

- a lack of clarity in the definition of issues and the appropriateness of terms

- an adherence and dominance of certain powerful phrases or ideas by parts of the bureaucracy and in political debate generally.
The theoretical perspective chosen for this thesis, namely that of symbolic politics, reflects my experience and consequently, is a subjective judgement of what is most important. While this does not capture everything, I believe the choice of theory and subject matter (the high technology debate in Australia) are adequate for achieving my aim of imposing some sense and meaning onto the recent and important political debate concerning high technology.

Wollongong
October 1987
ABSTRACT

Symbolic Politics in the High Technology Debate in Australia

High technology has become prominent in political debate in Australia since the early 1980s. It has been portrayed in debate as being of national significance and vital to the future well-being of the Australian economy. The aim of this study is to examine the nature of high technology through politics by analysing the contemporary high technology debate in Australia. The framework adopted for the analysis is that of symbolic politics.

Symbolic politics highlights the importance of both instrumental political activity and expressive political activity. The former deals with what is normally thought of as political activity such as bargaining for funds and power. The latter analyses the form, function and context of political language. Symbolic forms such as political rhetoric, symbols and political myths can function to give events political meaning and cue responses from interest groups.

The argument begins with background to the emerging high technology debate in Australia during 1975-80. In this debate there was dispute over the role of technology in the economy, the role of government in promoting it and the precise meaning of the term high technology. It can be postulated that high technology has a political dimension. The framework of symbolic politics is developed for this analysis. It is argued that this framework is both relevant to technology because of technology's highly symbolic nature and to Australia. The framework is applied at two distinct levels. First, the high technology debate in Australia from 1981-86 is analysed as a sequence of events or 'news'. The rhetoric used in the debate
provides an insight into the role of high technology in political processes. Second, the policy-making process is analysed using the symbolic forms of political myth and ritual. The policy areas of technology parks and venture capital in Australia are studied in detail.

In the high technology debate in Australia, high technology has been associated with economic growth and the future well-being of Australia. These claims are not self-evident. The symbolism associated with high technology was particularly powerful in that it provided a source of political cues for others to have faith in high technology and the benefits it might bring. This faith in turn bestowed even greater force on high technology as a symbol. The important symbolic role of high technology in political debate can be seen from the way it was manipulated by the former Department of Science and Technology and its Minister, Barry Jones. High technology rhetoric was used in political debate in an attempt to gain authority and set the political agenda.

In high technology policy-making, political myth and ritual have played an important role. These symbolic forms helped to simplify complex issues, overcome contradictions and guide policy development for high technology. The post-industrial society myth and the Silicon Valley myth were important in Australia. Symbolic politics provides a revealing perspective on high technology in Australian politics and the underlying political forces which are likely to continue to shape debate in this area of national interest.