“Exploring the parameters for the optimum funding of Australian incubators from an incubator manager perspective”.

By

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Acknowledgments

This thesis is dedicated to my beautiful father Arie Pieter De Haas and my brother Ronald who have both shown such bravery while very ill. When I think of the million or so things I learned from them, one in particular stands out and that is: to never give up. It has helped me pursue and finish this PhD.

Even though the PhD journey has been mostly one of solitary contemplation, different people have walked beside me at different times and so contributed to this work. I like to thank the following people for their support:

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I want to acknowledge the entrepreneurs running incubators and working in incubators without whom this study would not have taken place. My thanks go to
forty six incubator tenants who allowed me to conduct research within their businesses and interview them, and to ten incubator managers, in particular, the three BI managers in Melbourne: Mr. Graeme Walker, who founded and managed the Brunswick Business Incubator, Ms. Jenny Pietch, who founded and managed the Monash Enterprise Centre and Ms. Sue Bell, manager of the La Trobe Enterprise Centre. In addition I would like to thank Mr. Arnold Stroobach CEO of Zernike Australia Pty. Ltd., shareholder of EiR and manager of the Bently Industry Park in Perth. They all generously shared their insights and time during the course of this research.
Declaration

This project contains no material that has been accepted for the award of another degree, diploma or award at any University or other educational institution. To the best of my knowledge and belief, it contains no material previously published or written by another person or persons, except where due reference has been made.

In relation to the various articles where I was the lead author, this has been clearly indicated in the citation and only the material for which I am personally and directly responsible has been included in the thesis.

Signed,

........................................
Abstract

Incubators assist new businesses to grow by providing start-up entrepreneurs with physical and/or internet space, access to shared equipment, administrative services and business assistance programs. This qualitative research study explored management and stakeholder practices in business incubators to gain deeper insights about the motivations and objectives of incubator sponsors and the clients-entrepreneurs served by the incubator manager.

The thesis is centred on two major research questions:

1. What are the challenges of the not-for-profit incubator manager, split between the social objectives of the sponsors and the need to run the incubator as a self-sustaining entrepreneurial business oriented organisation?
2. What are the parameters for optimum sponsorship and funding of Australian not-for-profit incubators?

These questions, divided into a number of sub-questions, were investigated in ten incubators during two research phases with data collected over a period of two and a half years from forty six incubator tenants, four Australian incubator managers and six managers of incubators and incubator programs in Portugal, the UK and the Netherlands.

The data sets were coded and analysed following grounded theory principles primarily using NVivo®7 software in which the data was subjected to open, axial and selective coding processes.

The findings showed that there was a direct link between the sponsor’s strategic orientation whether for-profit and not-for-profit and the effectiveness and organisational performance of the incubator manager and thus the incubator as a whole. The findings further indicated that despite inadequate finance, lack of profit making tools, autonomy and training to optimise success, not-for-profit incubator managers almost single-handedly contributed to the successful performance of the incubators because of their high levels of social capital and entrepreneurial orientation styles. Based on these findings, a new conceptual model was developed in order to determine the parameters for the funding of not-for-profit incubators that would facilitate both its financial success and its socio-economic mission.

Following the dialectic system of requisite holism and critical realism perspectives (Neergaard, 1999; Rebernik and Mulej, 2000) which views incubators as part of a complex social system, a new conceptual model was developed depicting relationship-based traits and activities recognised as socio-economic tools that have an impact on business performance and success in Australian and international incubators.
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<td>ABS</td>
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<tr>
<td>AGSE</td>
<td>Australian Graduate School of Entrepreneurship</td>
</tr>
<tr>
<td>ANZABI</td>
<td>Australian and New Zealand Association of Business Incubation</td>
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<td>BBI</td>
<td>Brunswick Business Incubator</td>
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<td>BI</td>
<td>Business Incubation or Business Incubator</td>
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<td>BIIA</td>
<td>Business Incubation and Innovation Australia</td>
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<td>BITS</td>
<td>Building on IT Strengths (Australian government program to strengthen the IT sector)</td>
</tr>
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<td>BTC</td>
<td>Bedrijfs Technologisch Centrum (incubator in Enschede, Netherlands)</td>
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<tr>
<td>CSIRO</td>
<td>Commonwealth Science and Industry Research Organisation</td>
</tr>
<tr>
<td>CV</td>
<td>Corporate Ventures</td>
</tr>
<tr>
<td>DECL</td>
<td>Darebin Enterprise Centre Limited; a Melbourne incubator</td>
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<tr>
<td>DEST</td>
<td>Department of Education, Science and Training</td>
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<tr>
<td>EA</td>
<td>Entrepreneurial activity</td>
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<tr>
<td>EC</td>
<td>European Commission</td>
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<td>EiR</td>
<td>Entrepreneurs in residence (a BITS incubator in Perth, WA)</td>
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<tr>
<td>EO</td>
<td>Entrepreneurial Orientation</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>iDISC</td>
<td>Information Development (InfoDev) Incubator Support Centre</td>
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<tr>
<td>FP</td>
<td>For-Profit</td>
</tr>
<tr>
<td>ICT</td>
<td>Intellectual property</td>
</tr>
<tr>
<td>IP</td>
<td>Intellectual and Communications Technology (ies)</td>
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<tr>
<td>MBSI</td>
<td>Manchester Business School Incubator</td>
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<td>MEC</td>
<td>Monash Enterprise Centre (incubator in Melbourne)</td>
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<tr>
<td>NBIA</td>
<td>National Business Incubation Association (USA)</td>
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<td>NBDS</td>
<td>New Business Development Services (SME survival program)</td>
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<td>NENSI</td>
<td>North European Network for Service Incubators</td>
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<tr>
<td>NFP</td>
<td>Not-For-Profit</td>
</tr>
<tr>
<td>NIKOS</td>
<td>Dutch Institute for Knowledge Intensive Entrepreneurship</td>
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<tr>
<td>NTBF</td>
<td>New Technology Based Firm</td>
</tr>
<tr>
<td>NSW</td>
<td>New South Wales, Australia</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation and Development</td>
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<tr>
<td>ROI</td>
<td>Return On Investment</td>
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<td>SC</td>
<td>Social Capital</td>
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<tr>
<td>SME</td>
<td>Small and medium sized enterprises</td>
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<td>TEC</td>
<td>Technology Enterprise Centre, (a Melbourne incubator connected with LaTrobe University)</td>
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<td>TOP</td>
<td>Tijdelijke Ondernemings Plaatsen (Dutch program for start-up entrepreneurs)</td>
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<tr>
<td>TT</td>
<td>Technology Transfer</td>
</tr>
<tr>
<td>TPP</td>
<td>Technological product and process innovation</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>UKBI</td>
<td>United Kingdom Business Incubator</td>
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<tr>
<td>UMIC</td>
<td>University of Manchester Incubator Corporation</td>
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CHAPTER 1.
INTRODUCTION

1.0 Introduction

Small business collectively forms the biggest business group in Australia (English 1995). According to the latest available statistics, there are an estimated 1.88 million small businesses in Australia employing 3.6 million people and with a total capitalised worth of $4.3 trillion, 4 times that of the Australian stock exchange (Cosboa, 2008). Even though over half of the businesses are very small, in total they represent 96% of private enterprises and provide jobs to over half of the private sector workforce. Consequently, the contribution small business makes to the Australian economy, the employment market and to the Australian way of life is substantial. Every business, including many well known large corporations, have started off small and were built by no more than one or two entrepreneurs who no doubt had to overcome hurdles in their first years of operation.

During the last twenty five years, a growing number of start-up entrepreneurs have chosen to set up and develop their new business in a business incubator. Not only in Australia, but worldwide the phenomenon of business incubation and the conducting of business in incubators has become a popular way to help start-up entrepreneurs grow their new ventures in the critical first years of operation. Worldwide, business incubation has become a fast growing and popular ‘economic development tool’ for developing, boosting and sustaining of local and regional economies (European Commission, Enterprise Directorate General, 2002; BIIA, 2007).

To introduce the basic incubator concept in this study, incubators are portrayed in Figure 1.1 as a catalyst for business growth, functioning as a bridge between the somewhat protected incubation environment and the outside business environment.
In this thesis, a business incubator is viewed as an entity, mostly incorporating a physical environment consisting of office space, other industrial or factory space. Incubators assist new businesses to grow by providing the incubator tenants i.e. start-up entrepreneurs with physical and/or internet space, access to shared equipment, administrative services and business assistance programs. In addition, business incubators commonly have a ‘nurturing’ aspect. They can facilitate strategic networking, business monitoring and business mentoring to new start-ups in their first years of operation, when money is tight, knowledge is basic and business know-how is in its infancy. Some incubators also provide access to financial resources including venture capital.

After an interview and recruitment process, the prospective tenant is invited to move into an office or other space in the incubator and forms part of the incubator program or process. If the business survives within an agreed period, generally around three years in Australia, the start-up graduates, and moves out into the local or regional business environment with the expectation that it will expand further through improved business turnover and/or employee growth.
1.1 Australian chronological overview of incubation and incubators

In order to provide the Australian context for this research study, a brief chronological overview of incubation and incubators in Australia is provided. A more detailed review of the phenomenon world-wide is included in section 2.1.

Incubators in Australia started to appear in the mid 1980s in response to the problem of unemployment and industry restructuring at the time. Government, industry and universities were in search of ways to support start-up businesses that would also provide a boost to local economies and assist the research and development of new ideas to the commercialisation stage (ANZABI, 2004; Austrade, 2006). In addition there was the ‘go getting’ nature of new entrepreneurs themselves, of which many were migrants, looking for networks, support services and access start-up capital; willing to take risks and move into new environments. By 1989, seventeen incubators, of which two were privately owned, were established with a presence in almost all Australian states (Small Business Council, 1989). These were public sector incubators started as either state or local government economic development initiatives.

Although the majority of Australian incubators had received some to all of their funding from state and local governments under various programs, the Australian Federal Government started to seriously finance incubators in 1991 by providing them with funds for the set up of their facilities (ANZABI, 2004). These funds ranged from a couple of hundred thousand Australian dollars (AUD) to around one million dollars to either refurbish an existing building or build one specifically tailored to the locality or type of tenant targeted. Research conducted in the USA, Europe and Asia report similar actions by Governments there (Abetti, 2004; European Commission, 2002; NBIA, 2002; O’Neal, 2005; Peters, Rice and Sundararajan, 2004).

Whereas mixed industry incubators had taken off in the mid 1980s, technology incubators in Australia started to emerge in the late 1990s. Specifically from 1999, when the Federal Government announced a new initiative under the: ‘Building on Information Technology Strengths’ (BITS) incubator program, focussing on
innovations that would strengthen the Information Communications Technologies (ICT) sector. As part of this program, the Australian Government agreed to provide start-up capital to a small number of public/private partnership incubators. The chosen incubators could use part of the allocated funds for their daily operations and part to invest in their high technology incubator tenants, with start-up or seed capital sums of between AUD $50,000 to AUD $450,000 for each tenant business. This was viewed as relatively low investment compared to Europe where similar types of ICT technology incubators received funds of between AUD $900,000 and AUD $1.8m to invest in each new start-up venture (Econtech, 2003). A total amount of AUD $86 million was invested in ten ICT technology incubators located in different states and territories of Australia, mainly located in the major cities, with an eleventh incubator located on the island of Tasmania, funded under an additional growth program initiative. In May 2004, four years later, the Government provided additional funding (AUD $36 million) to eight out of the ten mainland incubators. The program was to be re-evaluated in 2008.

Including the ICT technology incubators, Australia currently counts around eighty small business incubators (Business Innovation and Incubation Australia (BIIA), 2007). Most are not-for-profit models and are in one form or another sponsored by the Australian Government. These incubators house a total number of around 1,200 start-up businesses or incubator tenants (BIIA, 2005; TPIA, 2006). As with many new concepts that have been tested in society before being systematically researched and reported on, statistics from the early years are lacking, but what is known is that the number of incubator tenants that have passed through incubators in Australia since 2000 is about 1,300. With the 1,200 currently housed, it makes for a pool of around 2,500 businesses that have experienced or are experiencing the incubation process in their first years of operation (BIIA, 2007). In addition to incubators known by the Australian associations, there are a small number of specialised private incubators not occurring in the general incubation statistics. Like in other countries, these are mainly for-profit models with shareholding structures and owned internally by corporate or externally by venture capitalist firms, which use private money and shareholding models to help new ventures grow in expectation of a quick return on investment (Becker and Gassmann, 2006).
They have not been the focus of academic research in Australia as they conform to the more traditional investment/return-on-investment scenario and direct data is difficult to obtain. Similarly they do not receive in-depth treatment in this thesis other than to both augment and counterpoint the discussion about not-for-profit incubators.

Most Australian incubators are general purpose incubators consisting of a mix of office based and small manufacturing start-up businesses coming from a variety of industries. In addition, there are some specialised incubators exclusively focussed on areas such as fashion design, arts and craft, building industry or food. Around 15% of Australian incubators are focussed on technology and these are often affiliated with universities. The history, growth and current state of incubation in Australia appears comparable to many countries with future success or failure to be decided primarily by the policies and actions of Governments and others who provide judgments on incubation as a viable phenomenon (Abetti, 2004; Bergek and Norrman, 2008; Bhabra-Remedios and Cornelius, 2003; Peters, Rice and Sundararajan, 2004).

How incubators have evolved over time can be reviewed through a variety of studies outlining the history as well as current state of incubation (Abetti, 2004; Allen and McCluskey, 1990; Aernoudt, 2004; Albert, Bernasconi and Gaynor, 2002; Autio and Klofsten, 1998; Bøllingtoft and Ulhøi, 2005; Hackett and Dilts, 2004a; OECD, 1999; Smilor, 1987; Van Tilburg, Van der Sijde, Molero and Casado, 2002).

The European Commission (2002) offers an evolution framework, which is reproduced in Figure 1.2.
1.2 Back ground of the study

The idea for a study on incubation originated between 1999-2001 while the author was developing and implementing a large federally funded small business survival program in the Northern Region of Melbourne Australia, and based in an incubator for three years. At that time, unemployment in the Northern region was high due to an influx of new immigrants. Many were interested in starting their own small business but a large proportion failed due to either lack of business know-how, starting capital or simply not being fluent in English. The three year program, classified as a Regional Assistance Program (RAP), took in over three hundred such participants and became known as ‘New Business Development Services’ (NBDS). It aimed at helping each start-up with a range of free services such as one-on-one business mentoring, participation in business seminars and workshops designed to impart business skills and free access to large networking events. It did not provide starting capital. The services spanned an area of seven local councils and were very successful (Burnett, 2000).
After three years of operation, nearly 80% of the start-up businesses participating in the program were still successfully trading, saving the Australian government and taxpayers an estimated AUD $16 million compared to the figures of earlier years when the region had an estimated 50-60% failure of start-up business. During this period, the headquarters of NBDS was located in one of the first business incubators in Melbourne, the Darebin Enterprise Centre Limited (DECL) which houses around forty-five start-up businesses. The NBDS program however, was not an in-house incubator service, but rather a mobile service aimed at struggling start-up entrepreneurs in the surrounding local business community. In terms of current incubator definitions (see section 2.3) the support service would be viewed as a ‘virtual incubator’ or ‘virtual incubator program’ as the program entailed going through a monitoring and mentoring process for a period of three years.

NBDS provided face to face mentoring sessions alternating between the participant’s workplace and the incubator, thereby facilitating many of its participants to ‘intermingle’ with the physical DECL incubator tenants. The NBDS participants were recognised by the incubator manager as start-ups from the local community and were welcomed into incubator network events. Occasionally, the NBDS participants were offered incubator space or were helped to move into the local region or council area. Through surveys conducted over the three year existence of the program, findings indicated that a number of NBDS participants had developed business relationships or friendships with incubator tenants which for some lead to joint ventures. The internal evaluation of the program including the results of a 100 plus participant survey, clearly showed the success of the program and a survival rate of around 80% of new start-up business. Despite this success, the program was unsuccessful in obtaining ongoing funding. Without further finance, the New Business Development Services were forced to close by the end of 2002, as the incubator did not have the means to provide free ‘outside’ mentoring services without financial support from the government.
1.3 Research problem

In 1999, after eight years of funding not-for-profit mixed incubator models, the Australian Government contracted PricewaterhouseCoopers (PWC), an independent consulting firm, to conduct a survey on the performance of seventy-two general and mixed business incubators operating in Australia. Their findings were that even though most incubators seemed to have an overall positive effect on business growth and economic development, the performance of a number of incubators was not as profitable as expected. The report thus concluded that based on turnover and employment growth a substantial number of business incubators did not seem to deliver a satisfactory return on investment to the Government (PWC, 1999). This conclusion is interesting in that it reveals the survey results to have been reported from a ‘for-profit’ perspective even though the initial concept was ‘not-for-profit’. This dichotomy and contradiction is explored further in the thesis.

Despite these findings, the Australian Government initiated the ten incubator BITS program discussed previously with the provision of seed capital to ICT incubator tenants. In 2003 however, independent evaluation reports on this program showed once more, that without additional funding most of the BITS incubators would not be financially viable despite the fact that these incubators themselves had generated 0.81¢ private funding for each $1 AUD of government funding (Allen Consulting Group, 2003; EconTech, 2003). From these insights and subsequent review of overseas literature, two major observations were made in the preliminary phase of this study. First, the effectiveness and success of incubators has been repeatedly questioned. Second, not-for-profit incubator success and performance are primarily judged in commercial terms (i.e. on the basis of financial performance and employment growth of the incubator and the tenant businesses) rather than judging the incubator’s broader impact on economic and community development.

Despite counter arguments found in the literature where some researchers propose that incubators require time to grow before they can provide any long term return on investment (Smilor, 1987; Sherman and Chappell, 1998), and independent
consultancy reports and academic studies suggesting that business incubation should be viewed as an effective economic and business development tool rather than a commercial business, the climate has not changed (Abetti, 2004; Allen and McCluskey, 1990; Hansen, Chesbrough, Nohria and Sull, 2000).

With these observations, a central research problem of ‘apparent non-performance’ of incubators was identified. The researcher, having had first-hand experience at an incubator, was inspired to delve deeper into the nature of this problem and found that it resonated with the words of researchers like Allen and McCluskey (1996) and Abetti (2004). Allen and McCluskey (1990: 66) note the problem as the “...balancing between the enterprise-development mission and the necessity to run the incubator as a self sustaining real estate operation”. This was elaborated upon by Rice and Abetti (1996) and Abetti (2004: 20) who note that a central not-for-profit incubator problem similar to Australia existed in the Helsinki region in Finland:

“On the one hand, incubators and their sponsors represent predominantly non-profit entities, but on the other hand, the clients they serve are entrepreneurs driven by the imperative of creating and growing profitable businesses. This dichotomy between the motivations and objectives of the sponsoring organizations and those of the clients–entrepreneurs is the source of two controversial issues: (1) The parameters for optimum sponsorship and funding of incubators and (2) the split role and difficult challenges of incubator managers, torn between the social objectives of the sponsors and the need to run the incubator as a self-sustaining entrepreneurial business-oriented organization.

Abetti (2004) further states that because of this dichotomy, no pattern of sponsorship and funding has emerged worldwide as a preferred model, let alone as optimum model.

“Rather, the experimentation continues, with competition among the various modalities, leading to increased stress and turnover of incubator managers, high mortality rates of incubators and on-and-off funding” (Abetti, 2004: 20).
Limited research has addressed these issues and very few researchers have undertaken research directly investigating this problem. This notion therefore has been identified as one of the major gaps in the literature and hence the exploration of these issues is central to this thesis.

1.4 Research questions and conceptual model

It is clear from the above dichotomy that the split role of the incubator manager is at the heart of the problem. For an incubator to be successful, a social as well as a commercial mindset is required by the sponsor as well as the incubator manager. The incubator manager needs to cultivate this social mission and develop strategies in order to manage the motivations of the stakeholders. At the same time, it is imperative for the incubator manager to also be able to financially develop and manage the incubator as an enterprise in its own right. Hence the benchmarking and evaluation of incubator models relies heavily on the clear definition of the role of the incubator and incubator manager.

The study therefore examined the following key research problems and subsidiary problems from an incubator manager perspective by posing the following questions:

Main research question A: What are the challenges of the not-for-profit incubator manager, split between the social objectives of the sponsors and the need to run the incubator as a self-sustaining entrepreneurial business oriented organisation?

This question was divided into:

A.1 What are the financial challenges faced by not-for-profit incubator managers?

A.2 What are the social challenges faced by not-for-profit incubator managers?
A.3 What is the optimum balance between financial and social objectives of not-for-profit incubators?

A.4 How can the not-for-profit incubator manager achieve the balance between financial and social objectives?

To finally address the second main research question:

Main research question B: What are the parameters for optimum sponsorship and funding of Australian not-for-profit incubators?

The conceptual framework, depicted in Figure 1.3, frames the central research dilemma: the split role of the incubator manager (centred) who has to be a commercial entrepreneur on the one hand and a social entrepreneur on the other.

Figure 1.3 - Conceptual Framework

The model reflects the explorative nature of this study by indicating how the role of the incubator manager appears to influence both the incubator model and the results. In other words, how can an incubator manager play a dual and perhaps conflicting role in managing the incubator and incubation process.

1.5 Objectives of the study

The objectives of this research based on the research problem and the review of the extant literature are stated below.
i. To understand the growing phenomenon of business incubation as a profit making enterprise and/or not-for-profit social enterprise (i.e. economic development tool for the local community) and as a contributor to economic growth on a larger scale.

ii. To assess the role and position of a business incubation manager and explore some of the challenges and dilemmas occurring within their working environment.

iii. To gain a better understanding about the complexities of incubator processes and relationships and contribute to definition of a funding model.

The study thereby explored a number of commercialisation and managerial issues in order to shed new light on management styles and relationships within and outside the incubators with stakeholders, tenants, and local business communities in Australia. Approached from an entrepreneurial and social capital perspective it led to a shift in thinking about the incubation concept and its operation and provided insights on possible measures of performance from a market and financial perspective as well as providing a community perspective from those benefiting either directly or indirectly from different incubation models.

1.6 Research terms and definitions

To help with the reading of this study, the following is a list of terms used frequently in relation to the incubation environment.

**Incubator - incubation**

According to Hackett and Dilts (2004a) there is confusion in the literature between usages of the words ‘incubator’ and ‘incubation’, with researchers commonly resorting to hyphenated terms like ‘incubator-incubation’. ‘Incubator’ or ‘incubator model’ is used in this thesis to indicate a structure and ‘Incubation’ is used in this thesis as a general term when discussing the incubation phenomenon. However, as ‘incubation’ refers to an activity, the term ‘incubation process’ is used through this
thesis when referring to incubator activities. This is clarified further in the literature review.

**Incubator model**

In this thesis the term ‘incubator model’ is the high level, non-specific label used by the researcher when discussing descriptions of incubators, which can vary greatly. For example, the for-profit, not-for-profit and hybrid models each have their own specific sets of circumstances, such as vision, revenue streams and locale, management and set of tenant firms. In addition, incubator dynamics vary – for example, in size and culture – even from those within similar industries.

**Incubator tenant**

Incubator tenant refers to the start-up entrepreneur (firm) housed in the incubator and undergoing the incubation process. Even though some researchers use the term ‘client’ (Martin, 1997; O’Neal, 2005) by which they attempt to reflect an advice or support relationship, most Australian incubator managers use the term ‘tenant’ as their primary income is received through rent and not through shareholding or business advice.

**Incubatee**

The term ‘incubatee’ (Hackett and Dilts, 2004) is also used often to mean incubator tenant where the process of incubation is discussed.

**Sponsor/Sponsorship**

The term ‘sponsor’ (Collins Dictionary, 1985: 1407) is defined as “a person or group that promotes either another person or group in an activity or the activity itself”. This sets up sponsorship as a focus on incubator activity as distinct from a focus on funding issues.

**Not-for-profit (NFP) enterprise and for-profit (PF) enterprise**

The concept of the NFP enterprise is that it operates for a benevolent purpose without the necessity for financial benefit for its founders or for those who support it (Lasprogala and Cotton, 2003; Salamon, 1999). In general a not-for-profit (NFP)
organisation is formed for the purpose of serving a public or mutual benefit other than the pursuit or accumulation of profits for owners or investors. Not-for-profit is closely related to the term ‘non-profit’ but the latter is not used here as there are circumstances when incubators attempt to be profitable. Within this thesis, the focus is on not-for-profit incubators. The for-profit enterprise on the other hand operates to provide return on investment for its shareholders. Use will be made of for-profit incubators in this thesis to both augment and counterpoint the discussion about not-for-profit incubators.

**Small business**

Australian incubators as well as nearly all of their tenants fall under the classification of a micro or small business. The Australian Bureau of Statistics (ABS) makes use of employment levels as a criterion for the designation of micro and small business status (ABS, 1998; 2001). The ABS definitions are as follows:

- A small business is a business employing fewer than twenty full-time or equivalent fractional staff (ABS, 2001). These include sole proprietors, partnerships and company structures.

- A micro business is a small business employing less than five full-time or equivalent fractional staff. These include non-employing businesses, i.e. sole proprietors and partnerships without employees.

In addition to this employee delineation, small businesses are considered to have the following characteristics for the purpose of reporting. They are independently owned and operated, the owner is in close control of operations and operating capital and the owner/managers are principal decision-makers (Gerber 1995; Robbins, Millett, Cacioppe, and Waters-March, 2003).

**Entrepreneurial orientation (EO)**

The literature regularly uses the term EO to refer to the entrepreneurial strategic orientation that organisations adopt in order to improve or maintain the performance of their firms (Wiklund, 1999). The concepts relating to the five EO dimensions were used to guide the questions during the semi-structured interviews.
These are: autonomy, innovativeness, risk-taking, pro-activeness, competitive aggressiveness (Lumpkin and Dess, 1996).

**Social Capital (SC)**

Social Capital is referred to regularly as SC throughout this study. The construct of Social Capital was defined by Bourdieu (1983: 24) as:

> “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition - or in other words, to membership in a group.”

Social Capital in this study thus refers to the relationships of and between stakeholders in the incubator environments researched. Other terms regularly used can be found in the list of acronyms and abbreviations section in the beginning of this thesis.

### 1.7 Justification for the study

The NBDS circumstance and poor financial status of not-for-profit incubators that struggle to survive are not uncommon and need further investigation given the fast growth of incubators worldwide (Lalkaka, 2001). Even though a small number of practitioners and researchers in other parts of the world have commented on the challenges of running of incubators and acquiring ongoing funds (Allen, 1988; Abetti, 2004; Hackett and Dilts, 2004a; O’Neal, 2005), few empirical studies have focused on this matter in general let alone in Australia. This study aimed at providing a better understanding of this research area in an Australian context.

While considerable attention has been given to business incubation as a new phenomenon in recent years and has been the subject of many studies, research still reflects the immature status of the field. For example, Hackett and Dilts (2004a) argue that many studies lack a solid theoretical foundation or use poorly defined concepts and measures for the factors under investigation. Other literature does not explore the seemingly obvious research questions and little evidence or data is
available derived directly from the incubator managers themselves. This study endeavoured to provide deeper insights into the operational reality of the incubator using direct evidence as provided by the managers and tenants. Despite reports that many incubators in Australia do not seem to perform successfully relative to the expectations of their sponsors, the Australian Government and other governments worldwide continue to spend large amounts of money on the establishment and refurbishment of incubators. This study attempts to provide a better understanding of the value generated by the expenditure of public funds in this area. It is expected that the findings may help justify increased investment in incubators as a means of economic growth. In order to find a deeper meaning and possible solutions within the context of the research problem faced, this study is thus justified and worthwhile. In addition, given that there is limited academic research focused on the funding of incubators or the challenges facing incubator managers in Australia, this study has real potential to contribute to incubation research from a national as well as international perspective with respect to future collaborative studies and policy development worldwide.

1.8 Selection of research paradigms

The first philosophical paradigm which underpinned the research is requisite holism, a form of holism that allows for not only viewing the world as connected wholes within a larger whole, but also takes into account some of the essential individual parts (Rebernik and Mulej, 2000). In this thesis, the researcher takes the view that even though one can attempt to analyse the incubator, the incubator manager and incubator tenants as individual entities, they must be viewed as part of the wider incubator process, and thus as part of the local community which in turn is part of the larger (global) society.

The second paradigm is critical realism, used to make sense of our place in the world and to acknowledge the notion that there is an external world or a system outside of the researcher’s mind. The ontological (what we are) and epistemological (what we know) assumptions underpinning the critical realist
paradigm are that there is reality out there, waiting to be discovered and that reality is multi-layered (Bhaskar, 1979). Even though the world is composed of real objects, one cannot directly observe everything about them as they are influenced by underlying factors (Neergaard, 1999). The researcher attempts to impartially observe what is ‘true', realising that reality is a subjective assessment. The combination of these perspectives has recently been defined as ‘the dialectic system of requisite holism/realism’ (Mulej, 2007). The philosophical paradigms are associated with an induction approach and are discussed in detail in chapter three, section 3.1.

1.9 Research methodology

This qualitative research study used a case study model (Eisenhart, 1989; Yin, 2003). The first twelve months of the research consisted of an exploratory research phase interviewing a total of forty six incubator tenants and a first round of interviews with the three incubation managers in Melbourne. A research instrument developed by the researcher was used to collect information and data from these participants. The analysis and results of the guiding questionnaire provided enough foundation for further investigation and pre-empted a revisit of the literature, so that interview themes could be redefined and refined. This was followed by a second and (major) research phase of two years consisting of a series of in-depth problem based semi-structured interviews (Witzel, 2000) with each of the three not-for-profit business incubator (BI) managers in Melbourne and one BI manager in Perth plus a further six interviews with incubator program managers in Europe who provided different insights into the research problems under investigation. This mixed sample provided the foundation for triangulation, which enhances the reliability of this study.

The method of analysis was based on grounded theory principles: formulating new theory based directly on the interview data and other gathered information (Charmaz, 2006; Glaser and Strauss, 1967; Strauss and Corbin, 1990, 1998; Saunders, Lewis, and Thornhill, 2000). This research used NVivo®7 qualitative software to make the analysis rigorous and objective. This method also adopts the
position as outlined by Makela and Turcan (2007) and Yin (2003) where a case ‘system’ framework can be used for ‘analytical generalization’ purposes and as a template, rather than discussing each case in-depth in the body of the thesis. An introduction with detailed information about each individual case however, can be found in appendix 4.

The practical side of the study was organised as follows:

1. Organising and conducting discussion groups with incubator tenants, one incubator manager and academic colleagues for conceptual development of the PhD proposal
2. Reviewing the literature, classification of incubator models and research indicators
3. Designing the structured interview questionnaire, pre-testing and administration
4. Data coding, data analysis and results
5. Revisiting the literature, using findings and literature to redesign and refine interview themes for the semi-structured interviews to follow
6. Conduct regular interviews with the BI managers of the three incubators in Melbourne and one in Perth over the span of two years
7. Conduct interviews in Portugal, UK and the Netherlands during two visits
8. Interview transcriptions, data entry, data coding, analysis process and findings
9. Discussion of findings and revisit of the literature
10. Writing thesis and conclusion.

The detailed methodological road map of the research journey is discussed in detail and depicted in the research framework Figure 3.2 in chapter three.

1.10 Scope of the study

This study investigated a two part research problem central to incubation, by i) investigating some of the dilemmas and difficulties Australian not-for-profit
incubator managers seem to experience with regards to their sponsors, tenants and performance of the incubator and ii) by exploring the parameters for optimum sponsorship and funding of incubators in an Australian context. The literature review covers three research areas: an introduction to incubation followed by two sections focussing on those areas in entrepreneurship and social capital that relate to the different parts of the research problem within incubation. Even though the research occurred mainly in Melbourne, Australia, the visits and interviews conducted in Perth and in Europe played a major part in the study and have greatly enriched the findings and quality of this work.

1.11 Limitations of the study

A first limitation is that for-profit incubator models operating in Europe were required because there were simply not enough for-profit Australian incubators available to make up a representative sample from which to compare and contrast their operations with not-for-profit models.

A second limitation can be seen by some (e.g. Curran and Blackburn 2001) as the use of multi methods to collect data. It has been found however that a questionnaire followed by semi-structured interviews formed a confirmatory - or non-confirmatory basis - upon which to develop subsequent deeper stages of analysis, and was found to add to the rigor of the study. Multi-methods reduce reliance on a single data source and are recommended by Yin (2003) and Neergaard and Madsen (2004). The additional triangulation strategy was further expected to provide a fuller, composite picture of incubator processes and entrepreneurial behaviours of interest.

A third limitation is that the forty six structured interviews with tenants using a questionnaire during the first year of the study were found to be too small a sample for quantitative software. As the data was meant for theme category analysis and not for SPSS software measuring, they were coded and stored in excel spreadsheets. These were later inserted into NVivo®7 for qualitative interpretation. Even though acknowledged as rigorous by qualitative researchers, this could be
perceived by quantitative researchers as somewhat reducing their validity or reliability.

A fourth limitation is the time duration of this study. The true effect that both the incubator and the incubator manager have on their direct and indirect environment (locally, regionally and globally), takes years to mature, meaning that a study in these settings would have benefited from a longitudinal approach of say ten years instead of the four the researcher devoted (Hackett and Dilts, 2004 a; Mian, 1997; Peters, Rice and Sundararajan, 2004).

Finally, all findings in the study are limited by the extent to which the respondents were honest in their answers, both during the interviews as well as in the surveys and also to what extent the researcher has been successful in remaining objective and unbiased. It is taken as true that all the participants in the study as well as the researcher have acted with integrity. Although interview data lack statistical generalizability, it is felt that the limitations are acceptable because the primary goal was theory building rather than theory testing (Markman, Phan, Balkin and Gianiodis, 2005).

1.12 Contributions to the literature

The value of this study is summarised as follows. First, it provides insights into the lack of alignment between sponsors’ expectations and their incubators’ performance criteria. Second, it discusses the reality of good incubation management from a BI manager’s point of view. Even though many have views about it currently, very little evaluative data is available on how incubator managers handle their seemingly difficult job. Third, the study provides new insights into for-profit and not-for-profit incubation helpful for policy makers, and fourth, it provides new theory with regards to entrepreneurial orientation and social capital.

The research combined three key factors important for incubation, namely i) the difference between running a NFP vs. a FP incubator from a social and financial point of view, ii) the entrepreneurial orientation in incubators from a manager
perspective and iii) the impact of social capital in incubator environments and surrounding local community. The impact of this research is thus contributing and expanding the existing theory in important ways. The comprehensive conceptualisation presented in this study may be very useful for policy makers who need to benchmark the success of not-for-profit incubators, the BI managers who are running incubators, and the many start-up entrepreneurs who have made incubators their work environments. Contributions will be discussed further at the end of this thesis.

1.13 Layout of the thesis

Based on the research questions, objectives, the process and contextual propositions, the following content map of the thesis, Figure 1.4 has been developed to provide a snapshot of the study.
The layout of the thesis is as follows:

Chapter 2 - Literature Review: examines the extant literature and research on Business Incubation, Entrepreneurship and Social Capital culminating in two research questions with 4 related sub-questions for clarity.

Chapter 3 - Methodology: provides the research methodology, which includes the research methods, instrumentation and data collection and also includes the philosophical paradigms framing the research.

Chapter 4 - The analysis process: describes the analysis process of both the questionnaire and interview data and provides the analysis outcomes and findings of the empirical data using NVivo®7 generated models.

Chapter 5 - Discussion of research questions: integrates the findings into the discussion of the research questions.

Chapter 6 - Conclusion: provides conclusions, significance, recommendations and future research direction.

1.14 Summary

This chapter has set the scene for the study. It has provided an introduction to business incubation and a discussion on the problems and challenges of developing sustainable incubation in Australia from which a central research problem and related research questions were developed. Methodology, limitations, structure and justification of the study were also outlined. The following chapter reviews the literature by examining extant research relevant to incubation, its processes and its impact on economic and social development.
CHAPTER 2.
LITERATURE REVIEW

2.0 Introduction

This review is divided into three sections and leads to the identification of major gaps in the literature, the discovery of the main research problem and the development of a number of related research questions. Figure 2.1 outlines the domain of the study and illustrates the overall structure and content of this literature review.

Section one of this chapter starts with a review of works on incubators and incubation as this is the arena within which this research is based. The readings provide an appreciation of the environment in which the research data was acquired and the motivation behind the endeavour. Literature reviewed in this section cover
the purpose of incubators, a variety of models and typologies, studies on the impact of incubation and incubator performance and also addresses the challenges and not-for-profit status of incubators. Section two reviews entrepreneurship literature focussing on new venture development, entrepreneurial orientation and entrepreneurial behaviour. It considers the incubator as a for-profit or not-for-profit enterprise run by entrepreneurial incubator managers and populated by start-up entrepreneurs. Section three introduces the concept of social capital. This literature assists in building an understanding of the dynamics of some of the sub-processes occurring during the incubation process and gives context to the entrepreneurial flair required to manage a successful incubator.

Studies will be discussed in the context of a holistic view that places the incubator in an environment of complex social systems wherein relationship-based traits and activities are recognised as being important to business performance and success. The researcher suggests that these are equally important to incubator performance.

2.1 Incubation literature

General literature searches on incubation and business incubators reveal that research on the phenomenon is new, relatively small and overwhelmingly explorative (O’Neal, 2005). The incubation literature is divided into two categories. First, there is extant academic literature, predominantly from the USA, and more recently from Scandinavia and other parts of Europe, Asia, New Zealand and Australia. In general, the literature on incubation and incubators from the USA, Europe and other parts of the world including the handful from Australia focus on topics such as incubation-incubator definitions, the development of different types and models of incubators and some focus on the impact, benchmarking and incubator success (Bollingtoft and Ulhøi, 2005; Bhabra-Remedios and Cornelius, 2003, Hackett and Dilts, 2004 a; O’Neal, 2005). Second, as academic research is still underdeveloped and incubation is a practitioner based and active process, there is a large amount of professional literature available with information appearing on websites, in annual incubator reports, consultancy survey and benchmarking
reports, in ‘how to run incubator’ handbooks, magazines and various other publications (NBIA, 1993; Mian, 1997; O’ Neal, 2005).

According to estimates carried out by the European Commission Enterprise Directorate General, there are over 3,000 business incubators worldwide (European Commission, 2002). A rough breakdown of incubator numbers by country is reproduced in Figure 2.2. North America has the highest concentration of incubators as they were the first to experiment with the concept.

**Figure 2.2 - Geographical Distribution of Incubators, Numbers per Region**

Source: European Commission, 2002, section 2: 10

### 2.2 Incubation history

As the concept of incubation and use of incubators and early research about them is attributed to and mostly derived from the USA, it is generally believed that the first successful business incubator was the Batavia Business Centre - a for-profit (FP) model - established in Batavia, New York in the late fifties (Lewis, 2002; Bhabra-Remedios and Cornelius, 2003). The Centre was founded by Joe Manusco and his family in 1959 (Phipps, 2007). The whole business incubator idea including the name, came about after Massey Ferguson; a heavy equipment manufacturer
vacated an 850.000 square feet factory and left Batavia to move to another region. Manusco’s family bought the vacant site in the hope to rent it out, make some money and at the same time boost their local low socio economic region, which counted more then twenty percent unemployment at that time. Unable to find one tenant large enough to fill the whole site, Manusco decided to sub-let portions to a variety of small start-up businesses. The first tenant recruited happened to be a Connecticut chicken hatchery, hence the name ‘incubator’ (Adkins, 2001). The Batavia Centre ‘hatched’ many start-up businesses since and still exists today. Estimations are that in the forty seven years of operation, more than 1,100 businesses have had their start there (Phipps, 2007).

Ten years after the USA, France followed with the development of the Sophia Antipolis, an international science park (incubator) based in the French Riviera. It was established in 1969. This incubator, created by Pierre Lafitte was a not-for-profit (NFP) organisation using a mixed private/public partnership structure. Lafitte’s philosophical idea was to marry universities, schools, research centres and high-technology industry with state-of-the-art services and it became know as the ‘Quartier Latin’ in the countryside, an intellectual ‘hub’, connecting research to business know-how. From the handful of pioneers at the beginning, the centre has now grown into a small city with over 250 businesses directly supporting around 8,500 jobs and indirectly supporting around 100,000 other people, who are in one form or anther involved in entrepreneurship (Lafitte, 2007).

In the UK, the Cambridge Science Park, established by Trinity College, followed in 1970. This is still the UK’s oldest and most prestigious science park, housing over 90 high-technology companies from small start-ups to subsidiaries of multinational corporations (Storey and Tether, 1998; Cambridge-science-park, 2007). Despite the going interest in incubation worldwide, in the 1960s and 1970s the uptake of the phenomenon in the US and Europe was slow (Nyrop, 1986; Smilor and Gill, 1986). There were various initiatives offering buildings at cheap rent and allowing the shared use of equipment or secretarial services, but incubators were not developed on a large scale. One highlight in the 1960s was the development of the University City Science Centre (UCSC) in Philadelphia (USA) consisting of a consortium of around thirty academic and scientific institutions collaborating in the
commercialisation of research outputs (Adkins, 2001; Scheirer, Nieva, Gaertner, Newman and Ramsey, 1985). The consortium, made up of academics, management consultants, mentors and commercial business partners grew out to become very successful. The centre itself has grown to 17 acres, has an attached technology park and has been instrumental in the setting up of more than 350 start-up businesses with facilities ranging from offices for entrepreneurs with new ideas to incubator space with fully-equipped laboratories (UCSC, 2006).

During the mid 1980s the growth of incubation accelerated to such extend that since then, new incubators have been opening at the rate of about one per week (NBIA, 2002). The first published research study appeared in 1984 as: “The Business Incubator Profiles: A National Survey” an extensive US survey on the configuration of fifty five incubators conducted by Temali and Campbell. In this comprehensive report, the researchers identified key services offered by incubators such as flexible leasing and management of space, centralised services to help reduce overhead costs for tenant companies and various types of business assistance. They also introduced the incubator, manager, tenants and incubator services as units of analysis. Most of the incubators at the time were housed in existing or in vacant buildings donated by private corporations and most received some proportion of their funding through government loans and grants (Plosila and Allen, 1985). A year after this study, the (US) National Business Incubator Association (NBIA) was established to highlight and represent the now popular phenomenon. The network involves more than 500 business incubators, mainly located in the US, and can be regarded as one of the most influential and largest incubator networks in the world (Callegati, Grandi, and Napier, 2005). Other incubator network organisations are: the United Kingdom Business Incubator (UKBI) organisation established in 1998 and the Information Development (also known as InfoDev) Incubator Support Centre (iDISC) a worldwide virtual incubator network that conducts regular research in developing countries.
2.3 Defining incubation and incubator

One is struck by the definitional ambiguity surrounding the actual terms ‘incubator’ and ‘incubation’ with researchers commonly resorting to terms like ‘incubator-incubation’ (e.g. Hackett and Dilts, 2004a). Even though it can be difficult to separate the phenomenon and the environment from the process, using both terms interchangeably is problematic from a research perspective, especially when generalising or comparing different models of incubators or discussing incubation as a process or a form of business assistance (e.g. Clarysse, Wright, Lockett, van der Velde, and Vohora, 2005; Hackett and Dilts, 2004a, 2004b; Swierczek, 1992).

The term ‘incubator’ was found in the literature to include: ‘Research Park’ (Money, 1970, cited in Bøllingtoft and Ulhøi, 2005), ‘Science Park’ (Martin, 1997), ‘Knowledge Park’ (Bugliarello, 1998), ‘Industrial Park’ (Autio and Klofsten, 1998), ‘Innovation Centre’ (Campbell, 1989) and ‘Technopole’ (Castells and Hall, 1994). In addition, one finds terms like ‘business accelerator’ (Barrow, 2001), ‘seedbed’ and ‘venture lab’ (Felsenstein, 1994). Again, from a research point of view, this diversity of the terminology of incubators alone can in some instances make it difficult to choose compatible and comparable incubator models for a survey, or any form of qualitative study and is therefore a potential limitation. Problems identified can range from modifying or adapting the original concept of incubation to redefining the term incubator to fit local conditions of research. An example of this is Clarysse et al (2005) who describe a whole region, the Silicon Valley in the USA, as an ‘incubator’ for fast growing companies, due to the strong entrepreneurial community and levels of innovation in the surrounding area.

To avoid further confusion, in this thesis, the researcher defines the terms as follows:

‘Incubator’ is a noun that is indicative of an apparatus and will be used to indicate a structure or better termed the ‘what’ of the endeavour. In the literature researchers also frequently refer to a particular ‘incubator model’ which generally also involves a discussion of the theoretical basis for the endeavour or better termed the ‘why’.
Therefore, as much as possible within the literature review and the thesis as a whole, when the material being discussed refers to the ‘what’ and/or ‘why’, the terms ‘incubator’ or ‘incubator model’ will be used.

‘Incubation’ is also a noun that has been used in the literature as a general term when discussing the phenomenon of incubation at a high level; this practice will be continued here. However, as ‘incubation’ is by definition a noun that implies a process that is enacted, as much as possible within this literature review and throughout the thesis as a whole, when the material being discussed refers to the ‘how’ and/or ‘who’ of the process of incubation, the term ‘incubation process’ will be used. This treatment is schematised in Figure 2.3 and formulated as follows.

Figure 2.3 - The Phenomenon of Incubation

The ‘incubation’ phenomenon (I) is made up of the [‘incubator’ structure (IS), the ‘what’ of an incubator model + the incubator purpose (IP) or the ‘why’ the conceptual basis for the endeavour] combined with [the activities or the ‘how’ performed by the participants + the ‘who’, in particular the incubator management (IM)]. The latter two are viewed as the ‘incubation process’ (IProc). This will thus be formulated as follows:

\[ I = f [IS \ (\text{what}) + IP \ (\text{why})] + IProc \ [(\text{how}) + IM \ (\text{who})] \]
In the light of the variety of terms discussed earlier, well used definitions describing the concept of incubation have been chosen from the literature to highlight different phases of incubator development and to provide some insights gained by researchers in the last twenty five years of incubation research.

The first definition of incubation is from Brooks (1986) focusing on community building and development.

“Incubation is a process through which an attitude of encouragement and support for start-up companies is fostered within the community” (Brooks, 1986: 24).

With this definition, Brooks (1986) describes incubation as a process, although fails to distinguish it from the phenomenon of incubation that takes place within the community. He also describes the incubation process as having a social mission, which emphasizes an attitude of nurturing and caring. This description does not however clarify the process of how nurturing and caring can be instituted in an incubator.

The purpose and functioning aspects of incubation do appear in subsequent years both in journal articles and publications of the National Business Incubation Association (NBIA) which defines incubation as a dynamic process of enterprise development.

“Business incubation is a dynamic process of business enterprise development. Incubators nurture young firms, helping them to survive and grow during the start-up period when they are most vulnerable. Incubators provide hands-on management assistance, access to financing, and orchestrated exposure to critical business or technical support services. They also offer entrepreneurial firms shared office services, access to equipment, flexible leases, and expandable space - all under one roof” (NBIA, 2004).

This definition takes in the whole concept of incubation as a phenomenon by explaining where it happens: the incubator, what happens: the incubation process and ‘how’ this provides assistance in business development as a process of
nurturing. However, the inclusion of ‘access to financing’ is not common practice in not-for-profit incubators and the incubator management, in other words, the ‘who’ is absent.

Most researchers in the literature emphasise some form of nurturing or assisting new entrepreneurs and view incubation beyond the simple provision of a shared office or workspace (Allen and McCluskey, 1990; Barrow 2001; OECD, 1999). Some researchers mention the provision of hands-on management assistance (Smilor and Gill, 1986), others mention networking and knowledge exchange or organised access to business networks (e.g. Becker and Gassmann, 2006; Birley, 2000; Bøllingtoft and Ulhøi, 2005; Hansen et al, 2000; O’ Neal, 2005). While contemporary research has provided different perspectives of the process of nurturing and assisting new ventures, researchers have come back to Brooks (1986) inclusion of community development and have in addition adopted more flexible definitions with regards to the physical housing of incubator tenants. This resulted in NBIA modifying its definition as stated below.

“Business incubation is a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts. A business incubator’s main goal is to produce successful firms that will leave the program financially viable and freestanding” (NBIA, 2007).

This description is also quite wide-ranging, covering the incubation process as well as the incubator as an organisation and providing scope for a larger audience; incubator models and processes. NBIA further explains incubation by referring to what incubators can provide and who provides the services, thereby recognizing for the first time the position of the incubator management and its network of contacts throughout the incubation process. This description does not however include the caring and nurturing aspect or take a holistic view of the incubator as being part of a community. Elsewhere on their website however, NBIA states that incubator graduates have the potential to strengthen local and national economies (NBIA,
With regards to the purpose and function of an incubator, the definition suggests that it should ‘produce successful firms’, which is a rather bold statement as incubators can only function as a catalyst and managers can only assist owners to grow their own business. It should be noted, that the NBIA definitions make no reference to being self-sustaining, let alone making a profit.

In addition to the three definitions above, one last definition is offered by the European Commission (2002) which captures a broader variety of business incubators:

“A business incubator is an organisation that accelerates and systematises the process of creating successful enterprises by providing them with a comprehensive and integrated range of support, including: incubator space, business support services, and clustering and networking opportunities. By providing their clients with services on a 'one-stop-shop' basis and enabling overheads to be reduced by sharing costs, business incubators significantly improve the survival and growth prospects of new start-ups” (European Commission, 2002: 5).

This more refined definition also assumes that incubators are successful in improving small business success rates and portrays the incubator tenant as a client highlighting cost sharing, networking and clustering; a recognition of the importance of both internal and external relationship development beyond the management contacts. This last definition has been adopted as a working definition. However, as this definition lacks a community inclusion, Brooks’ (1986) elements of community support and nurturing have also been adopted.

2.4 Incubator classifications

A common approach in the reviewed literature is to classify incubators into groups representing various incubator stakeholders such as real estate, local councils and universities (Allen and McCluskey, 1990; Barrow, 2001; Bhabra-Remedios and Cornelius, 2003; Bøllingtoft and Ulhoi, 2005; Hulsink and Elfring, 2001; OECD, 1999; Rice and Matthews, 1995). Early research started by drawing out the
Brooks (1986) was the first to introduce a not-for-profit (NFP) phase followed by a for-profit (FP) phase. He suggested a concept whereby start-ups first find space in a so called ‘economic growth incubator’ (NFP) in order to gain access to the shared support services, external support networks, and other resources. Once companies have attained a more advanced state of business development they can move into a commercial ‘real estate incubator’ (FP) which provides office space and shared services.

Another model that incorporates distinctions between for-profit and not-for-profit incubator models was developed by Allen and McCluskey (1990: 65) who defined four types of incubators along a value adding continuum, grouping incubator models from least value adding to most value adding. The researchers thereby suggest that the real estate operation added the least value, while a seed capital model adds the greatest value. Their model is reproduced in Figure 2.4.
This model is interesting, as it also differentiates between the different drivers and profit motivations of each set of stakeholders. The drivers of the for-profit models were as expected; whereas the drivers of the not-for-profit models were much more diverse including job creation and faculty-industry collaboration with secondary objectives to develop entrepreneurial potential, diversify economic base and the creation of good-will.

Business incubation has historically arisen either to take advantage of an opportunity or to meet a social need. The money behind these ventures therefore has also fallen naturally into two categories. In the for-profit case; private interest is funded by private money and in the not-for-profit case; public interest is usually funded by government to NGO’s with a public interest motivation. These connections appear simple enough but with modern double- and triple-bottom-line imperatives have become a complex web, resulting in much of the motivation for
this thesis. Table 2.1 shows the list of major researchers discussed in the following sections categorised by incubator type, researchers and year.

### Table 2.1 - Classification of Incubator Models

<table>
<thead>
<tr>
<th>Incubator model</th>
<th>Researcher(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Estate model – profit model. Property and/or land development, market rent, serviced offices, often located around new land developments, or inner cities</td>
<td>Allen and McCluskey, 1990; Barrow, 2001; Brooks, 1986; Burnett and Yamin, 2005; Nyrop, 1986; Rice and Matthews, 1995</td>
</tr>
<tr>
<td>For profit VC and corporate models focussed on ROI</td>
<td>Barrow, 2001; Callegati, Grandi, and Napier, 2005; Nash-Hoff, 1998</td>
</tr>
<tr>
<td>Mixed industry models, economic development tools, often started by local councils to boost low socio-economic areas. Can also be specific model incubator, such as food, craft, fashion etc.</td>
<td>Abetti, 2004; Allan and McCluskey, 1990; Bhabra-Remedios and Cornelius, 2003; Bollingtoft and Ulhoy, 2005; Burnett and Yamin, 2005; Hansen et al, 2000; OECD, 1999; Pacholski, 1988; Plosila and Allen, 1985; Temali and Campbell, 1984</td>
</tr>
</tbody>
</table>

The table shows how this thesis approaches classification from the basis of a relative for-profit to not-for-profit return on investment (ROI) perspective which, as it turns out is intimately related to the funding providers’ motivations, expectations and performance criteria.
2.4.1 For-profit models

For-profit models are incubator models that are looking for shareholding, property and other financial return on investment.

1. The Real Estate models describe the sponsors’ focus on space provision, property development and shared services, rather than mentoring, nurturing and networking. These models are driven by the buying and selling of land and buildings and/or renting out of building or space. They are popular when vacant land or property is available for occupancy or as a catalyst to commercial development when occupancy rates in existing buildings are high. The operation of these models is primarily property management driven towards rent and expansion of property portfolios with services being an add-on to attract tenancy (Barrow, 2001; Brooks, 1986; Campbell, Kendrick and Samuelson, 1985; Nyrop, 1986; Rice and Matthews, 1995; Smilor and Gill, 1986).

Like Allen and McCluskey (1990), Business Innovation and Incubation Australia (BIIA), Australia’s largest incubator network, puts real estate models in a low value category and specifically points out that real estate developments or facilities that do not encourage tenant graduation are not classified as incubators (BIIA, 2007). Despite this low value reputation amongst researchers and practitioners, the real estate incubator models are growing as they include technology transfer, networks and property investment opportunities (Allen and McCluskey, 1990; Hackett and Dilts, 2004a).

2. The Venture Capital incubator models or for-profit investment incubators are often started and managed by professional venture capitalist firms whose business it is to find promising small firms to invest in and take a shareholding position (Barrow, 2001; Rice and Matthews, 1995). Some venture capital incubators physically house their incubatees and some work as virtual incubators (Becker and Gassmann, 2006). Investment firms are also known to work with or make use of ‘business angels’, a particular type of informal investor. They are usually successful entrepreneurs themselves and are willing to invest in high-risk, high-
growth firms at a very early stage (Callegati, Grandi, and Napier, 2005). They also add value by supplying hands-on business advice. The term itself became popularised in the early 1980’s in the Silicon Valley where many small upcoming IT companies were looking for start up capital outside the usual bank loan system as it was difficult to obtain traditional loans for the often risky new ventures. Even though these forms of incubator seem successful according to the practitioners, there is limited academic research conducted on the success of venture capital incubators. It has been argued that being private organisations, primary data on the financial performance of incubatees, and primary data on private shareholders and return on investment (ROI) are difficult to obtain.

3. **The Corporate Venture incubator models** are also seen as fast growing and successful for-profit (FP) incubator models although empirical studies on this model are equally hard to find. Here, the incubation process is managed by large private organisations which bring in new small business ventures from outside or by ‘spinning out’ or ‘spinning off’ part of their own organisation. For example, turning a new service or product into a self sustaining, sellable small business. Examples of such corporations are Nokia, Siemens and Panasonic, where internal corporate incubator units are set up to commercialise new products, fast track non-core technologies or screen or exchange new knowledge between employees from different parts of the organisation (Becker and Gassmann, 2006). The ‘parent organisation’ becomes the incubator offering funding, facilities and expertise in return for a share in the newly formed businesses (Barrow, 2001; Becker and Gassmann, 2006).

2.4.2 Hybrid models

Although not defined as such in the literature, hybrid models are recognised here as incubators that try to make a profit and can distribute this profit amongst the shareholders but that generally rely partly on public funding as well as on private investment. Definitions of for-profit and not-for profit status will be further discussed in the entrepreneurship section of this literature review.
1. **The Technology Business Incubator models** have become increasingly popular since 1990’s onward with the emergence of new technologies like ICT and Bio technology (Chan and Lau, 2005; Lalkaka, 2001; Mian, 1997; O’Neal, 2005; OECD, 1997; Roper, 1999). It should be noted that technology incubators are not necessarily part of a university although they are frequently affiliated with them and tend to collaborate in one form or the other. They account for around 40% of all incubators in the United States and UK but only about 15% in Australia with varying proportions in other nations (NBIA, (2004); BIIA, 2007; UKBI, 2005). Technology incubators are typically more expensive to set up due to specific needs and facilities such as laboratories requiring specialised staff and hence higher staffing costs. As technology incubators have become such an important part of the incubation industry, they deserve further discussion.

Researchers and policy makers assert that technology incubators stimulate the innovation process and form links between technology research on one hand and customer needs and market demands on the other (Chan and Lau, 2005; Smilor and Gill, 1986; Bell, 2004; Bell and Smith, 2003; Mian 1991, 1994a, 1994b, 1997; Roper, 1999). Because of this mix of fostering new business development as well as transfer of technology, technology incubators are predominantly found in or in the vicinity of industrial parks and universities. They can serve as the mechanisms to assist and develop student and industry spin-offs and promote research and development, entrepreneurial activity and networking at the same time (Clarysse et al, 2005; Mian, 1997). They may instigate projects in collaboration with industry or government (Bell, 2004; Bell and Smith, 2003; Phan, Siegel and Wright, 2005; Roper, 1999).

For example, in Australia, as discussed earlier, there is a desire from the government to encourage the regional growth of technology based businesses in the Information and Communications Technologies (ICT) and Bio/Medical Technology sector. This certainly was one of the drivers behind the BITS program that funds the ten high-tech incubators in different regions in Australia. Despite their popularity, the larger part of contributions to technology incubator research over the years has been made by Mian (1991; 1994a, 1994b, 1996, 1997) with
studies focussed on the performance of incubators and conceptual frameworks. In addition, more recent studies examine technology transfer and the configuration of technology incubators in different parts of the world (Aernoudt, 2004; Bruton, 1998; Colombo and Delmastro, 2002; Lee and Osteryoung, 2004; Phan et al, 2005; Phillips, 2002). Most of these models appear to be mixes of for-profit and not-for-profit structures. This is also the case with a particular technology incubator model operating in Israel, described here as this model which provided the motivation for the development of the Australian BITS technology incubators (Econtech, 2003).

2. The Israeli technology model. This Israeli model is the integration of a soft loan program providing working capital with a sharply focused business incubation project. The soft loan program is designed to provide seed capital to assist start-ups, the repayment of the initial loan to be made from sales once the enterprise is operating profitably. The Israeli incubator program was initially established to further develop the expertise of highly educated and technically competent Russian-speaking Jewish citizens of the former USSR who entered Israel in the late 1980s and early 1990s when emigration restrictions under Gorbachov were lifted. The incubator program was thus established to build entrepreneurial companies around the intellectual property these immigrants brought with them. This particular group of start-up entrepreneurs became a significant component of the population of the state of Israel (Econtech, 2003; Lalkaka, 1996; Peters et al, 2004). The program only selected immigrants with robust business ideas and as part of the ‘management–tenant deal’, the immigrant entrepreneur had to agree to form a company to exploit the idea and transfer all rights and IP to the company. The company was thus formed according to a specified template that allocates defined portions of the equity to the entrepreneur, to the company’s employees, to the incubator and to prospective investors. The equity allocated to the entrepreneur and the company’s employees is held in escrow until the company graduates from the incubator (Allen Consulting Group, 2003; Econtech, 2003; Rothschild and Darr, 2005).

A specific authority group was established by the Israeli Government to implement this incubator program and has been well resourced with $US140 million. It has
been so successful that it has now been widened to include non-migrant entrepreneurs. Unlike many other initiatives, the Israeli incubator program has functioned since 1991 and has been consistently funded, thus having time and money on its side. It should be noted, however that this model took eight years before private finding matched government funding (Econtech, 2003).

3. **Virtual incubator models or incubators without walls** are incubators that do not physically house tenants. Sometimes they are perceived as private management consultant companies rather than real incubators (Bearse, 1998; Hackett and Dilts, 2004a). Some are virtual incubator models that function as helpdesks or referral networks, providing assistance via the internet (Brown, Harrell and Regner, 2000).

Recently, universities and physical incubators have started to offer a mix of physical and virtual incubator services that include access to seed capital, access to networks, mentoring and business training of which most consist of mixed partnerships (public/private funding) (Brown, Harrell and Regner, 2000; Clarysse et al, 2005; Lockett, Vohora and Wright, 2002; Van der Sijde, Groen, and van Benthem, 2004; Van der Sijde, Karnebeek and van Benthem, 2002; van Tilburg et al, 2002). In Australia virtual incubators also have mixed public/private sponsors (Allen Consulting Group, 2003; Econtech, 2003).

A small number of researchers have criticised the use of the word ‘virtual’ incubator or term ‘incubator without walls’ arguing that these are not a ‘real’ incubators because there are no physical tenants (Lewis, 2001). In particular, Bearse (1998) argued that it is questionable whether virtual incubators can be considered ‘bona fide’ incubators, suggesting that if they were, other entities such as management consultancies and accountancy firms that provide additional business services beyond financial advice to start-up entrepreneurs could also be considered ‘incubators’, which may or may not be necessarily true. In terms of research, this can be problematic as it significantly increases the population and heterogeneity of incubators, thus further constraining the ability to generalise research findings (O’Neal, 2005). To overcome this difficulty the use of typologies can offer some solace but cannot solve the problem in its entirety.
Currently, without a clear definition, it is very much up to what the researcher believes to be true incubation or not true incubation. If the researcher believes that the purpose of incubation is a process that helps new ventures through their first years of survival and if these incubatees are undergoing an ‘incubation process’ in some form or other then the NBIA, UKBI and European Commission definitions and corresponding classifications do apply.

For example, a ‘virtual incubator service’ gaining interest is a European project initiated by the North European Network for Service Incubators (NENSI). This virtual model is a regional incubator online network with 12 partners from the private and the public sector in Belgium, France, Ireland, UK, Germany and the Netherlands. The network provides service support desks for young enterprises and improves accessibility to management services (NENSI, 2007). Another model is a virtual incubator model aimed at students and run by the Saxion Centre for Innovation and Entrepreneurship in the Netherlands. The student start-up entrepreneurs are housed for 1-2 years in the workplaces of existing companies that have square metres to spare. The students can develop their business, learn from others and use a number of facilities such as secretarial office and IT-provisions (Garlick, Benneworth, Puukka, and Vaessen, 2006), blurring the distinction between real and virtual incubators even more.

Thus for the purpose of this study, the researcher proposes the following working definition of a virtual incubator.

“A virtual incubator is an incubation service for start-up entrepreneurs providing all of the services involved in the incubation process without the provision of a physical space. The services consist of encouragement, direct advice and assistance as well as access to business and technical services through the incubator networks. The services are provided during the first critical stages of the development of the new venture to significantly improve the survival and growth prospect of the business. The incubatee undergoes a full incubator process involving recruitment, development, growth, performance and assessment phases and finally graduation.”
2.4.3 Not-for-profit models

Not-for-profit models have no mandate to make a profit, and even if they do, have no policy for distribution to stakeholders and generally rely on funding for ongoing sustainability of the incubator in addition to the receiving of rent.

1. The industrial or mixed models as they are mostly known make up the largest number of incubators worldwide. These incubators are mostly government-funded and provide space and business services to a large array of start-ups. Space offered can range from light industrial or factory per square meter to serviced offices of various sizes. Incubator tenants mentioned in industrial incubator research studies range across the spectrum of industry and size including; light manufacturing to wholesale and consulting, the building industry, medical and health industry, business services and personal services, art and crafts, fashion, food processing, Bio-technology, ICT and more (Barrow, 2001; Pacholski, 1988; NBIA, 2007; OECD, 1997; Rice and Matthews, 1995). Some incubators are more specific than others depending on the local area needs and circumstances (BIIA, 2007). In most parts of the world, including Australia the industrial incubators rely on local, state or federal government funding for the setup of their buildings. In addition, many arrange for ongoing funding support on a yearly basis or until the incubator becomes commercially viable. In general, ongoing funding is based on the performance of the incubator in terms of turnover and employment growth of tenants’ businesses and economic development in the local region (ACG, 2003; Econtech, 2003; European Commission, 2002). Hence, industrial incubators are often established in economically depressed areas to boost local business development and combat small business failures. Note again that a profit stipulation is absent from these performance criteria.

2. The Academic or University related incubator models are in theory closely related to university research. Funding comes mostly from universities or a connected technology park or from faculty-industry collaboration. Universities are themselves still funded and are under pressure to increase their income from fees, consultancies and the commercialisation of their intellectual property (Bell, 2004; Bell and Smith, 2003). Thus, the focus of these incubators are on the
commercialisation of university based research and new technologies via student or staff spin-off companies (Allen and McCluskey, 1990, Barrow, 2001; Bell, 2004; Bell and Smith, 2003; Bruton, 1998; Lee and Osteryoung, 2004; Mian, 1991, 1994a, 1994b, 1997; Rice and Matthews, 1995). In such a climate, university sponsorship of an incubator for start-up technology-based businesses, especially when it is situated in a technology park, is considered to be an effective way of enhancing the economic as well as educational mission of the university (Mian, 1997).

3. **Student incubator models** are also part of the university model. One example is the University of Twente in the Netherlands which has a physical incubator for students which hosts a number of student start-up companies. The start-up firms are provided with their own furnished office, common incubator areas with research facilities, a shared office equipment area, meeting rooms and kitchen/meals area. The incubator is run by the incubator board, comprising the University Student Entrepreneurs (USE). The duration of stay in the incubator is dependent on the registered status of at least one company member as a student of the university (USE, 2007).

2.4.4 **The Australian classification of incubators**

In addition to the types of incubators discussed, the Australian classification of incubators is categorised according to the BIIA (2007) and differs from the US and Europe. It is as follows:

i. standard independent or stand alone model: an independent usable space depending whether it is an industrial or office based businesses

ii. embedded model: smaller incubators dependent on another organisation for some of its operations,

iii. without walls model or virtual incubator. This type of incubator uses electronic and visiting services. Currently in the early development stage,
iv. special purpose model: industry specific e.g. high tech, food production, fashion, art, or aquaculture.

v. networked incubators: connected incubators on different sites or sharing sites (BIIA, 2007).

The European and US incubator classification using terms like university, technology and mixed industry incubator is more comprehensive with regards to sponsor and type of tenant and is recognised in the literature. The literature indicates a high degree of commonality amongst models: provision of services to (in-house) tenants, some form of small business assistance, nearly all encourage graduation after an agreed period of time and all have varying degrees of profit motivation. Therefore to make the discussion more meaningful, the more comprehensive classification will be used in this thesis when required.

The Australian Government funded incubation models seem driven by broader economic development perspectives such as local employment growth than the financial performance of the incubator, whereas the drivers for corporate venture and venture capital models are to create return on investment (in Australia mostly short term: 1-3 years). In contrast, the University models centre on the commercialisation of new ideas and technologies through student spin-offs, with some also focuses on shareholding positions. The core difference can thus be found in the objectives of the owners or sponsors rather than in the location or services provided by the incubators. The greatest indications of difference therefore are the organisational structure of the incubator, the differences in the management and between for-profit or not-for-profit models (Abetti, 2004; Econtech, 2003; European Commission, 2002; Hackett and Dilts, 2004a; Lewis, 2002; Rice and Abetti, 1996). The impact of sponsors and their funding criteria on the for-profit vs. not-for-profit motivation of incubators is discussed in the following section.

2.5 The impact of funding on incubator models

Funding models appear to be intimately related to where the incubator fits in the spectrum from for-profit to not-for-profit enterprise. Those who emphasise a
financially driven ROI are generally private individuals or companies who provide funding in expectation of a for-profit enterprise focus whereas when the motivation is economic development the funding generally comes from the public sector in support of a not-for-profit enterprise. However as straightforward as that seems, there appears to be confusion in reality.

There is limited research on the impact that both for-profit and not-for-profit status have on the performance of incubators, however, the literature implies that this status or perspectives on ROI are virtually inseparable from some of the basic performance criteria and thus is an important key factor in defining parameters of performance. This relationship has been noted by a number of practitioners, independent consultants and researchers (e.g. Abetti, 2004; Allen and McCluskey; 1990; ANZABI, 2004; BIIA, 2007; European Commission, 2002; Hackett and Dilts, 2004a, 2004b; Lalkaka and Abetti, 1999; Lumpkin and Ireland, 1988; NBIA, 2004; OECD, 1997; O’Neal, 2005) and is discussed below.

2.5.1 The impact of funding on not-for-profit models

As discussed in the introduction of this thesis, a number of researchers have referred to a dilemma that not-for-profit incubators find themselves in (e.g. Abetti, 2004; Allen and McCluskey, 1990; Bearse, 1998; Hackett and Dilts, 2004a; Rice and Abetti, 1996). This dilemma was more recently worded as:

“On the one hand, incubators and their sponsors represent predominantly non-profit entities, but on the other hand, the clients they serve are entrepreneurs driven by the imperative of creating and growing profitable businesses. ...This dichotomy between the motivations and objectives of the sponsoring organizations and those of the clients–entrepreneurs is the source of controversial issues: including the parameters for optimum sponsorship and funding of incubators” (Abetti, 2004: 20).

Sponsors usually consist of central, regional and local governments, economic development organisations, other not-for-profit organisations, universities and colleges or hybrid combinations whose motivation, consistent with their not-for-
profit status is local or regional economic development, reduced unemployment, etc rather than financial ROI.

The great majority of the not-for-profit incubators, be it technology or mixed are heavily reliant on direct funding (cash) and indirect funding (e.g. provision of the building) from their sponsors to the extent that they may engage in tactics designed to ensure further funding which allows them to continue to operate. Funding is usually provided for a limited period and is often withdrawn once the incubator produces surplus revenue (Allen Consulting Group, 2003). This leads to a situation whereby:

“Financial dependency forces incubators to operate in a politically charged environment where they must constantly demonstrate the success and benefits of the incubator and its tenants, in order to justify the continued funding of incubator operations with public funds” (Hackett and Dilts, 2004a: 58).

They further suggest that this leads to a tendency within the not-for-profit incubators to “underreport incubator-incubation failures and over-report successes” (Hackett and Dilts, 2004: 58). However, if success leads to cessation of funding, the incubator is in the precarious position that if a down-turn occurs, there is no assurance funding would recommence. The whole notion of success is poorly defined for this category of incubators with sponsors and also researchers tending to emphasise the importance of not-for-profit incubators operating as commercial enterprises (Abetti, 2004).

The literature reports some controversial findings with regards to funding. For example, Hackett and Dilts (2004a, 2004b) suggest that not-for-profit incubators could select higher failure risk ventures with a higher chance of them being poorly performing since their focus may be on the full occupancy. Thus, under this financial pressure, not-for-profit incubators could take in ‘any’ potential tenant trying to fill their offices and factory space ensuring an income and showing a funding ‘worthiness’.

Peters et al (2004) on the other hand, report in their study that the recruitment procedure of incubatees was much more lenient in the not-for-profit models than
the procedure in commercial for-profit models. They state that not-for-profit incubators who rely on rent and funding:

“...could also take time in selecting the best tenants since unlike the for-profit incubators, they did not face any pressure to lease out their office space on a regular basis” (Peters, Rice and Sundararajan, 2004 : 87)

These controversies raise interesting debate on the priority of an incubator: Is it the nurturing and growth of new ventures and the flow-on to socio-economic development or the financial performance of the business incubator? Some researchers tend to lean one way, some the other. Overall, little progress seems to have been made towards a theoretical understanding of incubators based on the differences between for-profit and not-for-profit principles and funding requirements. This is therefore a central theme of this thesis.

2.5.2 The impact of funding on hybrid models

Despite the hope that the combined public/private incubator models would fare better, the Australian BITS incubators, being funded by private sponsors as well as government funding, could not perform without government funding either as after four years into the program it was concluded that the BITS incubators were probably below the threshold for self-sustaining operations (Allen Consulting Group, 2003; Econtech, 2003). Allen Consulting Group (ACG, 2003) further reported that due to the fixed costs incurred such as electricity, gas, water, internet facilities, equipment and rent, smaller incubators had to invest more money and incurred higher costs per incubatee, thus it is not only the occupancy but also the size of the incubator that determines commercial viability. For-profit incubators can rely on shareholders for financial injections or rely on ROI from shareholding and investing in their tenants. Be it through the sale of their invested business shares for revenue or dividends. However, smaller and not-for-profit incubators face higher risks as they lack shares and lack critical mass. Therefore, despite the efforts of incubator managers and their 1-2 member teams, (in Australia mostly a personal assistant and an administrative officer) building incubators into commercial enterprises, have not translated into profitability (Allen Consulting
Group, 2003; Econtech, 2003; PricewaterhouseCoopers 1999). This has also been the case in the USA (Bearse, 1998). Unfortunately, incubator performance studies have not shed any light on these issues, and thus commercial viability is problematic.

2.5.3 The impact of funding on for-profit models

Other than the description of models as discussed in the previous section, the impact of funding on for-profit models is virtually not reported in the incubation literature. The likely cause of this is that the relationship between funding and the main performance criterion is straightforward; funding continues as long as there is an adequate ROI. The tactics employed by the for-profit incubators in response to the pursuit of maximising ROI are therefore similarly straightforward: they are the tactics of any start-up commercial enterprise (Schaper and Volery, 2004, 2007; Timmons and Spinelli, 2003). The establishment of start-up enterprises will be discussed in section two of this chapter. With regards to incubation, the creation of revenue for the for-profit models thus falls into fairly standard business practice categories:

- charge rents that are dictated by the market
- charge for services at a market rate
- select high potential and low business risk tenants or
- select very high potential - high risk tenants
- negotiate high profit share deals

It is worthy to notice here, that in the last decade; even this straightforward commercial relationship is no longer that simple and practicable. In the broader context, the growing interest into the triple bottom line, including social and environmental matters creeps into the motivation and expectation of commercial ventures. This will be further discussed in section 2.11.1 of this chapter.

2.6 Measuring performance of incubators, tenants and managers

Rather than focussing on incubator managers, much of the literature seems to have been focussed primarily on incubators striving either for increased tenant business
success or incubator profit. However, as the definitions of incubation showed, when this narrow economic perspective is broadened to socio-economic development, the social and political motivations of the sponsors become more apparent, as demonstrated by the existence of the large number of not-for-profit incubators. In measuring performance, the literature also focuses primarily on financial, general business and incubation process criteria rather than social criteria. The following summarises the major results of performance assessment with incubator performance identified in the literature as impact studies.

Impact studies investigate if and how the incubator and incubation process has made any difference to the survival or success of new firms and sometimes on whether the presence of the incubator made any difference to the local environment, i.e. the socio-economic impact. To enhance clarity, the researcher has treated the review of impact studies in four categories: i) internal incubator success, ii) external incubator success, iii) internal incubatee success, and iv) external incubatee success.

2.6.1 Internal incubator performance

In measuring the success of the incubator itself, researchers have measured all kinds of milestones and highlights occurring amongst incubators. For example incubator variables that highlight incubatee selection processes (Merrifield, 1987), internal network formation and density (Bergek and Norrman, 2008; Bøllingtoft and Ulhøi, 2005; Hansen et al, 2000; Lichtenstein, 1992; Nowak and Grantham, 2000; O’ Neal, 2005) and measuring incubator manager - tenant relationships (Autio and Kloftsen, 1998; Fry, 1987; Rice, 2002; Sherman, 1999; Udell, 1990). Levels of innovation have also been studied (Burnett and McMurray, 2005).

For example, one can investigate the success of specific incubator services or measure the number and quality of partnerships or joint ventures taking place with or between tenants (Burnett and Yamin, 2005; Campbell and Allen, 1987; Hansen et al, 2000). Some incubator models seem to have particular strengths over others, like providing access to outside networks, access to venture capital and building
economy of scales (Hansen et al, 2000). Being able to attract public or private investors is particularly important as the incubator is able to introduce their pool of start-up entrepreneurs to new business opportunities, thereby enhancing entrepreneurship. Incubator success measures can thus throw a different light on the stage of development or effectiveness of the incubator itself and can indicate sustainability and strength of the incubator team, such as their mentoring capabilities, their policies and their abilities to provide business services (Abduh, D’Souza, Quazi and Burley, 2007; Allen, 1988; Bøllingtoft and Ulhøi, 2005; Mian, 1997; Sherman and Chappell, 1998).

Comparing incubators or tenants using different locations can also provide insights. Studies have compared business performance between tenants in different incubators or compared different incubators using different countries (ANZABI, 2004; Abetti, 2004; Autio and Klofsten, 1998; Clarysse et al, 2005; Lalkaka, 2002; Lee and Osteryoung, 2004).

A challenge in comparison studies is that each incubator is unique, and thus the research question needs to be clearly stated. A further challenge is the creation of a control group of non-incubator tenants whose developmental outcomes could be compared to incubated companies (Elfring and Hulsink, 2002, 2003; Sherman and Chappell, 1998). Some have been successful, for example Elfring and Hulsink (2003) were successful in finding three sets of start-ups: i) independent start-ups; ii) spin-offs from established companies and iii) start-ups in incubators and measured differences in the development path of networks.

2.6.2 External incubator performance

Hackett and Dilts (2004a) note that the most frequently cited publications on incubation are to be found in the ‘Economic Development Quarterly’ and the ‘Economic Development Review’, demonstrating that incubation research has been predominantly reported from an economic development perspective. However even here while they are cited as important economic development tools, the performance criteria still mainly fall into a limited spectrum of variables such as
employment growth, with the ‘ripple-effect’ of community well-being not being readily apparent.

Since the early 1980s, researchers have pointed out that business incubators should be viewed as economic development tools. They are often portrayed in studies as important community enhancers, building economic wealth for the local economy and local region (e.g. Abetti, 2004; Albert and Gaynor, 2001; Allen and Rahman, 1985; Bhabra-Remedios and Cornelius, 2003; Bøllingtoft and Ulhøi, 2005; Brooks, 1986; Bruton, 1998; Campbell et al, 1985; Campbell, 1989; Fry, 1987; Kuratko and Lafollette, 1987; Lumpkin and Ireland, 1988; Lyons, 1990; Markley and McNamara, 1995; Sherman and Chappell, 1998; Rice, 1992; Udell, 1990). Measuring the success of incubation and incubators on this basis however is problematic. The real impact of incubation with regards to the local community for example can take years to develop and measures of success can only be ascertained when small businesses start growing locally or trading regionally or globally; growing outside the local community.

In order to explore the impact of incubation on economic development, some studies have been undertaken to establish a ‘fit’ or a degree of success between the incubator services and the local market (Allen and McCluskey, 1990; Autio and Klootsen, 1998). These studies measure the increase in turnover or the increased numbers of employees or even sales over a period of time in the young firm (Allen and Weinberg, 1988; Bearse, 1998; Udell, 1990). Allen and McCluskey (1990) for example, used a knowledge exchange variable to measure the success of the incubator via knowledge that was accumulated over time with the in-coming and out-going of new ventures. The researchers used a number of variables such as employment growth of tenant firms, time spent in the incubator, and the retention of graduates in the local or regional community. Interestingly, despite the belief of many that incubators create more jobs, to the extent that not-for-profit incubators are still being benchmarked and measured using employment growth (ACG, 2003; Sherman and Chappell, 1998), researchers did not find any specific evidence that incubated businesses create more jobs than not incubated businesses (Allen and McCluskey, 1990; Campbell and Allen, 1987). Analysis provided for the NBIA by
Molnar, Adkins, Batts, Grimes, Sherman and Tornatzky (1997) however showed that the majority (62%) of the direct jobs generated by incubators were high value-adding, since they were created by R&D, technology and manufacturing enterprises.

There also is evidence that incubators are cost effective in comparison to other initiatives that attract new firms to local regions (Sherman and Chappell, 1998). In addition, Molnar et al (1997) argued that there was a tax benefit in the form of return on investment. Local, state and federal subsidies for incubators may be considered as investments for generating tax revenues from the companies assisted. In Molnar’s (1997) sample of 23 incubators firms, the return in terms of tax revenues was almost five US dollars for every dollar invested. This indicates that perhaps the benchmarking of not-for-profit incubator models should be focused on the ‘ripple effect’ of employment and the ‘saving of money for the community’ mindset, rather than relying on employment growth and ROI measurements within the incubator itself.

**2.6.3 Internal incubatee performance**

When attempting to measure incubator performance from an incubatee perspective, researchers and governments have often relied on the measuring of survival rates of businesses hatched in an incubator (internal incubatee success) compared to those that have become successful without the help of an incubator. This has been attempted in the UK where findings indicate that the survival rate of incubated businesses was 80% compared to 50% for those businesses based outside an incubator (Whettingsteel, 2000; TPIA, 2006). However, it should be noted that examining incubatee success through comparisons with non-incubatees may not be meaningful; as researchers believe that it is hard to find empirical evidence pointing to specific incubator advantages. (Allen and McCluskey, 1990; Bearse, 1998; Hackett and Dilts, 2004a; Peters, Rice and Sundararajan, 2004; Sherman and Chappell, 1998).
The NBIA involves more than 500 business incubators and is regarded as one of the most influential and largest incubator networks in the world (Callegati, Grandi, and Napier, 2005). The organisation has been undertaking regular research in the USA that involves internal incubatee success and has reported figures of up to 90% survival of incubated businesses (NBIA, 2002; O’Neal, 2005). Other incubator network organisations such as the United Kingdom Business Incubator (UKBI) organisation established in 1998 and the Information Development Incubator Support Centre (iDISC), a worldwide virtual incubator network with around 130 members in 70 countries, also conduct regular research and also report success rates of more than 90% (UKBI, 2007; iDISK, 2007). Numbers above 80% success rate are also mentioned in various other studies around the world (Atkins, 2001; Hackett and Dilts, 2004a; McKinnon et al, 1998; Molnar et al, 1997; O’Neal, 2005; SBA, 2000).

Apart from incubatee survival, research has been conducted in relation to incubatee selection procedures and performance. The selection of incubatees however can be problematic because of the subjective nature of the screening process, for example, a bias towards certain ‘weak but promising’ new ventures, the selection of tenants based on the ‘attractiveness’ of the new service or new product or simply looking for a ‘good fit’ (Bearse, 1998; Culp, 1996; Kuratko and Lafollette, 1987; Lumpkin and Ireland, 1988; Merrifield, 1987). This way of measuring however does not pose questions in relation to selection processes, for example whether it is the specific ‘fit’ of a person and a business opportunity or whether it is the incubator making the making the difference. In other words: would the incubatee have succeeded without the incubator anyway? The answer in the literature appears to depend on the structure of the incubator model. For example, a commercial technology incubator looking for shareholding may want to invest exclusively in upcoming technologies in the ICT sector and thus selects only those prospective incubatees with a high potential for success and thus generating high return on investment. A not-for-profit inner-city incubator on the other hand might not have that choice. Moreover, Allen and McCluskey (1990) suggest that until the incubator itself reaches a point of financial break even, it is more likely that the initial incubatees of such an incubator are companies that regularly pay their rent.
rather than high potential, but are also often high risk start-ups potentially reducing survival rates.

2.6.4 External incubatee performance

Incubators are recognised as providing a positive environment for start-up entrepreneurs and the most regular method used to measure external tenant success is by investigating the number of ‘graduates’ from the incubator. This is mostly undertaken by incubator management, as is the case in Australia, to indicate local success and thus facilitate funding and subsidies. Unfortunately, not many incubators seem to keep track of their graduates after they leave the incubator environment, thereby making it difficult to establish the overall impact of the incubator or of incubation on economic growth in the long term (NBIA, 2007).

However, three early studies by Allen (1988), Campbell (1987) and Smilor and Gill (1986) provided empirical evidence that a significant number of incubator tenants seem to stay in the local area once graduated. More than a decade later, Katz (2000) conducted a case study of eight manufacturers in Long Island and came to a similar conclusion that incubators encouraged incubator graduates to stay local. Together with the evidence of the earlier three studies, one can thus assume that this is still the case today.

2.6.5 Internal manager performance

The internal impact of the incubator manager is not well covered in the literature other than the general acknowledgement that managers are ‘critical’ or ‘vital’ to the (financial) success of an incubator (e.g. Albert, Bernasconi and Gaynor, 2002; Allen and Bazan, 1990; Bhabra-Remedios and Cornelius, 2003; Hackett and Dilts, 2004a; Lalkaka, 2002; Nash-Hoff, 1998; Rice, 2002; Weinberg, Allen and Schermerhorn, 1991). Lichtenstein (1992) in particular highlights this in an in-depth network study citing the actions of the incubator manager as the most important factor concerning interactions that occur within an incubator. The single most important action seen by researchers and consultants being the time spent
with incubator tenants discussing their business strategy. For instance studies showed that incubators where managers had little business experience and did not spend much time with tenants were still floundering after the start-up phase (e.g. Allen and Bazan, 1990). On the other hand, managers who spent significant amounts of their time interacting with their tenants in business planning, coaching, or mentoring were found to have higher levels of tenant success and better incubation outcomes (e.g. Allen and Bazan, 1989; Albert, Bernasconi and Gaynor, 2002; Hackett and Dilts, 2004b; Weinberg et al, 1991). The average time spent by managers advising clients in Europe was highlighted in the EU (2002) survey and stands at 39%. This was seen as the ‘ideal’. However, that report also emphasised that given the real added value of not-for-profit incubation lies in the quality, relevance and utility of business advisory, not in real estate aspects, the ratio of incubator managers to incubator tenants should ideally not exceed 1:20. They therefore suggest that beyond this number, a business advisor or second manager should be hired.

In technology incubators the performance focus is found to be on technical expertise as well as managerially on innovation, marketing, and financial skills, which are transferred from the incubator manager to the client firm, sometimes with the help of advisory board, technical advisor(s), and/or university faculty (Allen and Bazan, 1990; DiGiovanna, Sean and Lewis 1998). Weinberg et al (1991) note that the board of directors should assist the manager with the development of the facility’s policies, oversee the manager’s functioning and assist with the development of internal and external networks.

2.6.6 External manager performance

Management skills required for successful incubator performance are referred to in the literature as an understanding about human and more specifically entrepreneurial behaviour, specifically when it comes to pro-activeness, interacting with the local and regional business community and the selection of incubatees (Bearse, 1998; Hackett an Dilts, 2004a, 2004b; Peters, Rice and Sundararajan, 2004).
In the few studies found on the external impact of the incubator manager, the primary impact of obtaining finance for tenants and the generating of income for the incubator itself is recognised, with researchers mentioning specific skills and actions required in this area (e.g. Hackett and Dilts, 2004b; Lalkaka, 2002). Good negotiating skills to access VC capital or bank loans for tenants were seen as important, as commercial lenders carefully screen potential loan applicants based on managerial insights (Camp and Sexton, 1992). Evidence of incubator manager success in this area was highlighted by Callegati, Grandi and Napier (2005), finding among twenty eight interviewed incubator managers that sixteen had experienced some kind of collaboration with venture capitalists in connection with their work as incubator managers. It was also shown that the more selective the incubator managers are when selecting new firms, the more positive experiences they have when trying to access funding or venture capital funds (Callegati, Grandi and Napier, 2005). The quality of management support received by the tenant firms in technology incubators in accessing outside financial support, inside and outside business connections was also reported by Mian (1997: 277) as “ranging from moderate to major in value-adding”. Characteristics and skills amongst good incubator managers thus include diverse business and technical skills with good problem solving skills and an ability to prioritize and expedite action (Hayhow, 1999). Other traits related to best practices for managers seem to include an eye for people and business ideas, local knowledge, motivation and trust. In addition, Weinberg et al (1991) suggest that the relationship between the incubator manager and the incubator board is a key component to the development of external contacts. An active incubator board should extend the manager’s reach into the business community and beyond. It is envisaged that this could consist of providing access to external networks, VCs and access other forms of finance including other forms of sponsorship.

However, it is not easy to find incubator managers with appropriate skill sets. As Lalkaka, (2002: 174) reports: “... many incubator sponsors have problems attracting “business-oriented incubator managers who can generate incomes and reduce their dependence on state subsidies”.”
2.7 Other theories used for measuring performance

Despite the lack of theory development in incubator literature as identified by Hackett and Dilts (2004a) and Bergek and Norrman (2008), a variety of theoretical constructs have been used to investigate incubation and the performance of incubators.

2.7.1 Life-cycle theory

One form of benchmarking incubator performance is through lifecycle theory. In general, it is suggested that businesses follow a lifecycle beginning at birth, followed by growth from stage to stage and finally die (Churchill and Lewis, 1983; Euske and Roberts 1987; McMahon 1998). Churchill and Lewis (1983) introduced a five stage model of small business growth for start-ups consisting of: i) existence, ii) survival, iii) success, iv) take-off (a time of rapid growth) and v) resource maturity, a stage after which one can assume a new growth phase ensues or perhaps decline sets in and a new cycle begins. Using this theory, some researchers have attempted to apply lifecycle models to incubators. For example Allen (1988) suggests that incubators are enterprises that are going through their own developmental lifecycles and as such can be measured. Allen (1988) subsequently introduced a three-stage lifecycle model: i) starting when a local community or local council considers establishing an incubator and investigates its feasibility, followed by ii) a development cycle where the incubator is financially running and attention shifts to the management of the tenant firms, finishing with iii) incubator maturation, characterised by a sophisticated enterprise support network and demand for additional user space once the incubator has reached full occupancy.

The concept that the incubator itself can be viewed as an enterprise with its own developmental lifecycle is seen by other researchers as an important advancement (Hackett and Dilts, 2004). While it is true that the measuring of variables at certain points in the lifecycle can provide a very rough framework to identifying the whereabouts of a business in its development, one should be very careful however in using this concept as a way to benchmark incubator performance as it may not work for all incubator models and is dependent on an understanding of the
appropriate time-frame. For example, it may work for a venture capitalist model that is capable of realising a stage of ‘rapid growth’ through some wise investments in some of their incubatees or for a real estate model capable of physically expanding, but the chance of this working for not-for-profit models, particularly in Australia, is doubtful given their broader mandate and likely time-frame. According to Allen (1988) the start-up phase ends around the time when the incubator reaches its financial break-even point, but to fully establish a viable business incubator, i.e. the building of a successful organisation around a new concept, which incubation is, may take as much as ten years (Econtech, 2003; Hackett and Dilts, 2004; Lalkaka, 2001). Given that many incubators are less than 10 years old in Australia, most incubators are by definition still in their start-up phase.

Peters, Rice and Sundararajan (2004) discuss the incubator using a combination of life cycle and entrepreneurship theory in explaining how the entrepreneurial process occurs in stages within incubators. However, entrepreneurship literature has problems with lifecycle and stage models saying that whereas life cycle theory suggests that organisations evolve in a consistent and predictable manner, a number of researchers in entrepreneurship deny these notions and argue that business growth is rarely if ever, systematic, linear or predictable (Bygrave, 1989; Campbell, 2003).

2.7.2 Options-driven theory

Hackett and Dilts (2004b: 48-50) propose another way to measure incubatee success by using the theory of options in describing the underlying dynamics of the incubation process. The theory states that the performance of a business incubator is determined by its ability to create step-wise options through the selection of ‘weak-but-promising’ firms. Their framework is based on:

\[ \text{BIP} = f (\text{SP} + \text{M and BAI} + \text{RM}) \]
Business incubation performance (BIP) is made up of selection performance (SP) plus the monitoring of tenants and business assistance intensity (M and BAI) and resource munificence (RM). Resource munificence stands for the relative abundance of incubator resources and is characterised by dimensions of resource availability, quality and utilisation. The incubator can thus be measured by following how it has invested in the incubatee via levels of monitoring, counselling, and provision of resources. The incubator management can control the cost of failure via ‘stage-gate’ investments and forced exits of non-performing firms. Stage-gates occur when the incubator can identify developmental points at which there are: “…options to switch strategies, to expand or contract incubator resource infusions as market and strategic needs dictate, or to abandon the option altogether” (Hackett and Dilts, 2004b: 50).

2.7.3 Network theory

Network theory has been used to investigate success levels of incubators (e.g. Hansen et al, 2000; Lichtenstein, 1992; O’Neal, 2005) or the success of incubator tenants in various forms (e.g. Bøllingtoft and Ulhøi, 2005; Burnett and McMurray, 2004, 2005; Elfring and Hulsink, 2002, 2003; Rice, 2002; Rothschild and Darr, 2005; van Tilburg et al, 2002; Van der Sijde, Groen and van Bentham, 2004). Rice (2002) used network theory to analyse internal relationships via interdependent co-production modelling, which was based on the premise that:

‘In an economic sense, the relationship between business incubation programs and their entrepreneurial firms can be characterized as interdependent co-production’ (Rice, 2002: 164).

Rice suggests that the more successful business incubator managers invest more hours in co-production, invest more time on average in each co-production episode (i.e. relationship period with the tenant) and engage in a broader range of co-production modalities. This relationship will be further discussed in section 2.8. and 2.16.4.
2.7.4 Business strategy research

Within the sphere of business strategy (Mintzberg, 1998) another concept used in incubator studies is competitive advantage theory (Porter, 1985). Researchers using this concept posit that businesses within an incubator environment struggle less than those not in an incubator as they are provided with training, seminars, access to networks and professionals, and benefit from the personal relationships with the incubator management (Burnett and McMurray, 2004). This leads to the belief that being housed in an incubator gives a competitive advantage (Lumpkin and Ireland, 1988; Plosila and Allen, 1985). This will be further discussed in section 2.12.5.

2.7.5 Entrepreneurship theory

Last, a number of researchers have used entrepreneurship theory to measure incubator performance (e.g. Allen and Rahman, 2001; Brooks, 1986; Campbell et al, 1985; Peters, Rice and Sundararajan, 2004; Rice, 2002). For example, Brooks (1986) came up with a hypothesis regarding new venture survival based on economic development and entrepreneurship. He identified that there are gaps between the idea and the development of a business. The wider the gaps, the less likely entrepreneurship will take place. The width of the gap is influenced by the sphere and elements of support the entrepreneur receives from the surrounding environment and consists of elements such as local business networks, seed capital availability, role models (other successful entrepreneurs) in the community and real estate developments suitable for start-ups.

‘The process of incubation is one through which these elements of support are put in place within the community and through which the entrepreneur is made aware of the level of support available’ (Brooks, 1986: 26).

Incubation performance is thus measured by how much it bridges or closes the gaps, in the hope that more entrepreneurs will be more successful launching and building new businesses. The processes and management involved in start-up business will be further explored in the next section on entrepreneurship which focuses on the operation and management of for-profit and not-for-profit enterprises.
2.8 Entrepreneurship literature

This section reviews literature that defines entrepreneurship and more formally establishes the incubator as both a financial as well as a social enterprise that utilises organisational and managerial entrepreneurship skills to enhance business performance. From an organisational perspective literature will be reviewed relating to the internal configuration and structure of incubators. From a managerial viewpoint literature will be reviewed relating to entrepreneurial orientation (i.e. the management style of businesses) and entrepreneurial traits and characteristics (i.e. the role played by a manager’s personality).

Although barely fifty years old, the increasing body of academic knowledge on the different aspects of entrepreneurship has created but also crossed a number of disciplinary boundaries such as economics (i.e. wealth creation), strategy, politics, sociology and psychology including entrepreneurial characteristics (Aldrich and Baker, 1997; Bygrave, 1989; Campbell, 2003; Low and McMillan, 1988; Shane and Venkataraman, 2000). The interdisciplinary and dynamic nature of entrepreneurship itself has thus led to a situation whereby researchers have adopted many different theoretical viewpoints, units of analysis and methodologies (Aldrich and Baker, 1997; Bygrave, 1989; Low and McMillan, 1988). As Bygrave (1989) notes:

“Entrepreneurship begins with a disjointed, discontinuous, non linear (and usually unique) event that cannot be studied successfully with methods developed for examining smooth, continuous, linear (and often repeatable) processes” (Bygrave, 1989: 7).

Entrepreneurship literature is almost divided into two communities of interests. Especially in the last ten to fifteen years, one group of entrepreneurship researchers has focussed on external forces and investigated situations in which the pursuit, discovery, evaluation and exploitation of profitable opportunities is a central concept, (e.g. Davidsson, 2002; Davidsson and Wiklund, 2001; Kirzner, 1979; Phan, 2004; Schumpeter, 1934; Venkataraman, 1997; Wakkee, 2004). The other group is interested in the individuals involved, viewing entrepreneurship more as a function of core human attributes (e.g. Bygrave, 1989; Bygrave and Hofer, 1991;
Campbell, 2003; Cantillon, 1891; Gartner, 2001; Mitton, 1989). This thesis is focussed on incubation as a new phenomenon, but also on the incubator as a new business that is run by people. The study therefore adopts Shane and Venkataramans’ notion (2000: 218) that: “entrepreneurship involves the nexus of two phenomena: the presence of lucrative opportunities and the presence of enterprising individuals”.

2.9 Entrepreneurship from an economic perspective

A relatively large number of authors view entrepreneurship as the creation of new economic activity or the creation of new wealth-producing resources, with the emphasis on ‘new’ and on opportunity driven processes (Davidsson, 2002; Davidsson and Wikland, 2001; Phan, 2004; Schumpeter, 1934; Shane and Venkataraman, 2000; Venkataraman, 1997). Davidsson’s (2002) opportunity framework for example is based on two dimensions: the newness of the firm and the newness of the market. If both present, the opportunity is truly entrepreneurial. There is some confusion still as to exactly what this act must involve. It could be the creation of a new organisation, the production of an innovation such as a new product, or an act which involves both a new organisation and innovation (Schaper and Volery, 2004). Schumpeter (1934) viewed entrepreneurship as successive cycles of replacement through ever more innovative solutions. Entrepreneurs are central to this process: they identify opportunities and bring new technologies and new concepts into active commercial use, thereby creating economic wealth (Schumpeter, 1934). In the last ten to fifteen years, the pursuit, discovery, evaluating and exploitation of profitable opportunities (the entrepreneurial process) have become a central concept of entrepreneurship theory (Shane & Venkataraman, 2000). A large number of studies acknowledge the elements of opportunity and use it at least as part of their definition (Davidsson, 2002; Eckhardt and Shane, 2003; Kirzner, 1979; Venkataraman, 1997; Schaper and Volery, 2005; Shane & Venkataraman, 2000; Timmons and Spinelli, 2003; Wakkee and van der Veen, 2004; Wiklund, 1998). It should be noted that opportunities are only real opportunities depending on their value proposition. People can have hundreds of
great business ideas, but not many ideas are true value adding business opportunities (Timmons and Spinelli, 2003). If the value proposition of a new opportunity looks promising and is thoroughly researched and evaluated (i.e. external and internal analysis) and it is found that it is a feasible and commercially viable business idea, then it needs to be acted upon (exploited) and commercialised.

Entrepreneurship and economic wealth are thereby very closely and positively linked (Davidsson, 2002; Davidsson and Wiklund, 2001; Shane and Venkataraman, 2000; Venkataraman, 1997). With changing perspectives on capitalism, governments are now publicly acknowledging that entrepreneurship is the vital component in the process of economic growth and wealth development. These changing perspectives can be witnessed especially in Eastern European countries and countries like China and India (Lalkaka, 2001). As the Organisation for Economic Cooperation and Development (OECD) states:

“Entrepreneurship is central to the functioning of market economies. Entrepreneurs are agents of change and growth in a market economy and they can act to accelerate the generation, dissemination and application of innovative ideas. In doing so, they not only ensure that efficient use is made of resources, but also expand the boundaries of economic activity” (OECD, 1998: 12).

Entrepreneurship has thus been accepted from an economic perspective as the creation of new economic activity or the creation of new wealth producing resources or new entry into the market (Aldrich, 1999; Davidsson, 2002; Davidsson and Wiklund, 2001; Phan, 2004; Shane and Venkataraman, 2000; Thornthon, 1999; Venkataraman, 1997). In turn the creation of new economic activity is brought about by the entrepreneur who is defined by Bygrave and Hofer (1991:14) as “someone who perceives an opportunity and creates an organisation to pursue it”. The connection between entrepreneurship, opportunity and new venture creation is thereby well established in the literature.

In accordance with these connections and accepting that the incubator shares all of these aspects, at an economic level it is a financial enterprise (Allen, 1988; Hackett
and Dilts, 2004a, 2004b; Hulsink and Elfring, 2001; Van der Sijde, Groen and van Bentham, 2004). Thus, at its most basic, an incubator can be viewed as a ‘producer’ of business assistance programs with the incubator tenants as ‘consumers’ of those outputs (Rice, 2002). However, many incubators are also imbued with a strong social mission, meaning that a distinction between definitions relating to economic (financial) entrepreneurship and social entrepreneurship has to be recognised. The next section therefore expands on entrepreneurship by providing definitions of social entrepreneurship to address the special status afforded to most government supported incubators through their particular funding arrangements and objectives as not-for-profit enterprises.

2.10 Entrepreneurship from a social perspective

Whereas entrepreneurship has long been focussed on economic wealth creation it has more recently been recognised for its focus towards social wealth creation.

In the past there were three quite distinct sectors: the public sector consisting of government and its various agencies, the private sector with for-profit companies of all sizes and the not-for-profit sector. In recent times however, these boundaries have begun to blur. Not-for-profit organisations are adopting entrepreneurial strategies and starting businesses; for-profit enterprises are invading territory previously occupied only by not-for-profit enterprises and government; and public sector agencies are forming partnerships with the other sectors and developing joint ventures (Bornstein, 2004; Johnson, 2000). Incubators similarly do not seem to fall into one category: many are not-for-profit, struggle to be commercially viable, are not government owned but pursue and guide for-profit entrepreneurship and commonly are imbued with a broader socio-economic development role.

Social entrepreneurship research is new. The first definitions and studies started to appear around 1998 (Dees, 1998a; 1998b). Dees (2001: 4) outlined five factors that define social entrepreneurship:
i) Adopting a mission to create and sustain social value (not just private value)

ii) Recognizing and relentlessly pursuing new opportunities to serve that mission

iii) Engaging in a process of continuous innovation, adaptation, and learning

iv) Acting boldly without being limited by resources currently in hand

v) Exhibiting a heightened sense of accountability to the constituencies served and for the outcomes created

Definitions of social entrepreneurship in the available literature have in common the focus on improving or changing society, including changing people’s mindsets about community. Moreover, there is an underlying desire for social justice that is of a ‘problem-solving nature’ (Bornstein, 2004; Borzaga and Defourny, 2001; Dees, 1998b; 2001; Dees, Emerson, and Economy, 2001a, b; Dart, 2004).

“It’s a process whereby the creation of new business enterprise leads to social wealth enhancement so that both society and the entrepreneur benefit.” (MacMillan, 2003:1).

Here societal well-being is linked directly to the business as one of the modalities by which social wealth is created.

### 2.10.1 Defining not-for-profit enterprise

The concept of a not-for-profit enterprise is that of an organisation that is operated for a benevolent purpose without any financial benefit for its founders or for those who support it (Dees, Emerson and Economy, 2001a; 2001b). Like their for-profit counterparts, they are created and governed by law that prescribes the way these enterprises can enter into legal contracts, sue and be sued (Lasprogala and Cotton, 2003). Not-for-profit (NFP) organisations often have a board of directors and / or board of advisors.

The social enterprise however, differs from the traditional understanding of the not-for-profit organisation in terms of strategy, structure, norms, and values and represents a radical innovation in the not-for-profit sector (Dart, 2004). Whereas
many not-for-profits rely on funding, charity and donations, social enterprises on the other hand, use economic principles and expertise to build potentially profitable businesses and still adhere to a so called ‘double bottom line’: being faithful to a social mission, and building a financially sustainable organisation (Dees, 1998a, 1998b; Emerson and Twersky, 1996). Social enterprises thus can and regularly do earn a profit, even though they are not permitted to distribute these earnings amongst their directors, members or any other stakeholders (Lasprogala and Cotton, 2003). Similar to the USA, in the UK and Australia, social enterprises include community enterprises, credit unions, trading arms of charities, employee owned businesses, co-operatives, social firms and leisure trusts, with scholars reporting that these type of not-for-profits are rising in status (Borzaga and Defourny, 2001; Dees, 1998a, 1998b; Grenier, 2002; Shaw, Shaw, and Wilson, 2002). One should note however, that because of its ‘newness’ there is not a precise or consistent usage of the term in the literature yet (Dart, 2004).

Social Enterprise London (2007), a website portal for social enterprises, identified three common characteristics of social enterprises that are backed up by research studies and other academic literature. These characteristics are:

i. Enterprise orientation. Social enterprises are directly involved in servicing the market by either producing goods or services. They aim to be commercially viable trading organisations, with an operating surplus (Bornstein, 2004; Dart, 2004; Dees, Emerson and Economy, 2001a, 2001b).

ii. Social aims. Social enterprises have explicit social aims such as job creation, training or the provision of local services. They operate under ethical values including a commitment to local capacity building, and they are accountable to their board, clients or members and the wider community for their social, environmental and economic (financial) impact beyond the focus on financial return. This concept is often described as: “Triple bottom line (TBL) performance” or in popular terms: “people, planet and profit” (Alexander and Brown, 2006; Burnett and Flood, 2007; Dees, Emerson and Economy, 2001a, 2001b).
iii. Social ownership. They are autonomous organisations with governance and ownership structures based on participation by stakeholder groups, e.g. users, local community groups or trustees. Profits are distributed as profit sharing to stakeholders (for the use of new not-for-profit causes or ventures) or used for the benefit of the community (Borzaga and Defourny, 2001; Dees, Emerson and Economy, 2001a; 2001b).

Not-for-profit incubators fulfil all the above qualifications and although not specifically named as such in the literature, in this thesis it is argued that many incubators may be classified as social enterprises as well as financial enterprises. Working within this space, both the for-profit and not-for-profit incubators engage in entrepreneurial activity in order to take advantage of business opportunities that will result in economic growth.

Fowler’s (2000) ideas go further, suggesting that the social enterprise in its organisational form may need to occupy a different ‘space’ in society altogether. In support of this, Fowler (2000) introduced a conceptual framework, showing a new paradigm for Non Government Development Organisations (NGDOs) based on the interaction between state, market and civil society. As Fowler explains:

“... their behaviour resembles (1) the state in terms of pursuing public agendas, (2) they are associated with markets in terms of surplus generation and self-financing; but (3) they express a civic identity in terms of roots and value. (Fowler, 2000: 598).

Fowler (2000: 598) refers to this as a ‘fourth position’ in society and it is in this light that not-for-profit incubators can also be seen in that ‘fourth position’ as they pursue public agendas with regards to economic development, operate in the commercial market and have a social mission towards the local community. In order to hold to these aims a strong entrepreneurial incubator team is needed headed by a manager who can provide the entrepreneurial focus and leadership necessary to actively pursue all objectives. A gap in the literature is noted here as
the general lack of recognition given to the social role of the incubator and the pivotal role of the incubator manager.

### 2.11 The structure of the incubator enterprise

The organizational structure of incubators as financial enterprises is well established but as the following shows, the inclusion of the social enterprise role into the organizational structure has barely been captured.

The process from the recognition of a new idea through to the development of a new business organisation is referred as the entrepreneurial process. Baron and Shane (2004) suggest that this process moves through a number of different phases over time from: i) the idea for new product or service, ii) the decision to proceed, iii) accessing resources, iv) the launching of the new venture (i.e. exploitation), and v) the establishing of a successful business and harvesting the rewards. The exploitation phase for an enterprise, in this study an incubator thus takes place when a suitable location is found and a building is established with a manager and team along with an operation system which enables it to function (Allen, 1988; Baron and Shane, 2004; Bhide, 2000; Hulsink and Elfring, 2001; Koh, Koh and Tschang, 2005; Peters, Rice and Sundararajan, 2004; Schaper and Volery, 2004; Timmons and Spinelli, 2003).

There are a number of studies that describe the structure of business incubators as entrepreneurial enterprises by examining the internal incubation process and conceptualising incubator arrangements such as design, layout, facilities and services of the organisation such as Peters, Rice and Sundararajan (2004). They often depict the internal set-up of the management team such as organisational charts, budgets and ‘links’ or networks that the incubator might have (Hackett and Dilts, 2004a; Mian, 1994a, 1994b, 1997). These attributes form the critical success factors of business incubation and entrepreneurial activities taking place (Autio and Klofsten, 1998).
Campbell et al (1985) were one of the first to develop an incubation process framework linking the incubation concept to the development process of the incubator tenants. The framework is based on four criteria creating values: i) the diagnoses of business needs, ii) the cost-effective selection and monitoring, iii) the provision of start-up capital and iv) the access to networks. This is the first real attempt to define an incubator process. The weaknesses of the framework are however the failing to describe how the incubator functions in its own right and how the incubator nurtures the incubatee. In addition, most incubators do not have access to finances and therefore ‘capital investment’ is not necessarily a function of the incubator. This was the first real attempt to define the incubator as an enterprise and also define the incubator process for the incubator tenant.

Smilor (1987) developed a framework that shows the arrangements of the incubator, the affiliations the incubator can have and the effects of the successful incubatees on the local (regional) community. However, he fails to account for the incubation process internally, something Campbell et al (1985) attempted. Smilor’s framework categorises the benefits of incubation and also conceptualises the incubator as a system. His efforts are seen as perhaps the most comprehensive effort at identifying and explaining the various elements of incubation as an enterprise. Figure 2.5 depicts Smilor’s framework.

Figure 2.5 - Smilor’s Incubation Framework

Source: Smilor, 1987: 146
Mian (1997) provides a conceptual framework for assessing and managing the technology incubator (UTBI) as a tool for new venture creation showing a range of stakeholders, goals and objectives. His framework is based on three sets of variables: i) performance outcomes, including tenant firm survival and impact on community, ii) management policies and their effectiveness, which assesses the facility’s management practices and iii) incubator services and their added value, divided into business assistance services and university related services. Mian’s (1997) conceptual framework is the first to detail performance metrics and mention the importance of the incubator manager, even though it does not expand on the process of incubation.

Figure 2.5 shows the configuration adopted in this thesis illustrating how the business segments that combine to form the incubator enterprise link together through a central organisation that is controlled by the incubator management.

![Figure 2.6 - The Incubator Enterprise](image)

There are two important distinct differences about this framework compared to those discussed above. First, it formally incorporates a community perspective
three of the elements: in relationships with local community, in marketing as being open to public and in monitoring incubator performance by including impact on the local business community and larger arenas. Second, it puts the BI manager at the centre of the incubation process highlighting the pivotal function that person performs. The real creation of an incubator therefore starts here and the skills required to achieve it are discussed in the following sections on the entrepreneurial orientation of the management including the entrepreneurial traits and characteristics of the individual managers.

2.12 Entrepreneurial orientation (EO) in incubators

Whereas entrepreneurship was defined as new economic endeavour, be it for-profit or not-for-profit, entrepreneurial orientation (EO) refers to the actions and organisational processes that are put in place by the executive management to promote successful entrepreneurship performance. Entrepreneurial orientation is thus an organisational ‘mindset’. It includes the methods, practices, and decision-making styles that managers use to act entrepreneurially (Lee and Peterson, 2000). Several research studies have shown that the adoption of an entrepreneurial strategic orientation may have a positive influence on the performance, growth and financial success of a business (Junehed and Davidsson, 1998; Namen and Slevin, 1993; Wiklund, 1999; Utsch, Rauch, Rothfuss and Frese, 1999; Zahra and Covin, 1995). Moreover, the evidence based on longitudinal studies suggests that the effect of EO in the long term is even stronger (Wiklund, 1998, 1999; Zahra and Covin, 1995). This notion is important from an incubator performance perspective, suggesting that if incubator managers actively develop and sustain an entrepreneurial orientation within the incubator environment, the performance of the incubator as well as the performance of incubator tenants may be positively influenced.

Entrepreneurial orientation (EO) models are derived from strategic management research that identifies characteristics of successful management behaviour (Miller and Friesen, 1978, Miller, 1983). Miller (1983) identified three particular key
aspects: i) risk-taking, ii) innovativeness and iii) pro-activeness as relating in particular to entrepreneurial behaviour in firms. These were tested further by Miller and Friesen (1983) and Covin and Slevin (1988, 1989, 1991) investigating firm level entrepreneurship until two additional dimensions: i) competitive aggressiveness and ii) autonomy were added and tested by Lumpkin and Dess (1996, 1997). Throughout the years, a number of researchers have experimented with these dimensions in various organisational settings. Wiklund (1998, 1999) for example, identified no fewer than twelve studies based on Miller's (1983) and Covin and Slevin’s (1988, 1989, 1991) instruments alone, signifying that EO dimensions are deemed suitable for capturing firm-level performance and entrepreneurial strength. Wiklund (1999) used EO dimensions to test relationships between EO and company performance, finding that the dimensions specifically contribute to performance in small firms. According to Wiklund (1999) risk-taking, innovativeness and pro-activeness keep small firms ahead of competitors. These findings are important with respect to this study as in Australia most incubators are small businesses employing less than ten employees (ABS, 2001d). The dimensions of entrepreneurial orientation as used by Miller (1983), Covin and Slevin (1988, 1989, 1991), Lumpkin and Dess (1996, 1997) and Wiklund (1998; 1999) will be further investigated.

2.12.1 Autonomy

Autonomy refers to the independent spirit necessary to further the development of new ventures (Lumpkin and Dess, 1996). Research findings of individual characteristics related to the venture creation process include energy level, conformity, and need for autonomy (Sexton and Bowman-Upton, 1986). The need for autonomy entails the desire for personal control and the desire to build something of one's own (Greenberger and Sexton, 1988; Knight, 1987). From an entrepreneur point of view, autonomy thus comes naturally with the taking of personal responsibility and control of the developed venture (Schaper and Volery, 2004, 2007).

“It centres on the independent action of an individual or a team in bringing forth an idea or a vision and carrying it through to completion. In general, it
means the ability and will to be self-directed in the pursuit of opportunities. In an organizational context, it refers to action taken free of stifling organizational constraints” (Lumpkin and Dess, 1996: 140).

Utsch et al (1999) divided autonomy into three psychological constructs. The first is the need for higher order which implies the wish to self-actualize in an area in which one is not constrained by other people's values and commands (Maslow, 1954). The second is the aspiration of control; having autonomy and enough entrepreneurial freedom by which decisions can be made and responsibility can be taken (Utsch et al, 1999). Autonomy thus allows entrepreneurial teams to pursue their mission without encountering internal and external barriers such as hierarchical structures and bureaucracy. The third construct is self-efficacy, defined as:

“people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura, 1986: 391).

Thus, self-efficacy means that one is capable of judging whether a certain course of action can be successful. These three elements, according to Utsch et al (1999) are the vital ingredients for best practice and good management style.

In western countries, management is expected to have autonomy and responsibility, as lack of autonomy makes organisations more reactive and passive in dealing with stakeholder pressures (Ohanyan, 2002). As such, the concept of autonomy is a key dimension of developing an entrepreneurial orientation in the incubator.

2.12.2 Innovativeness

One can find many different statements about the inter-relationship between entrepreneurship, entrepreneurs and innovation. As mentioned at the beginning of this chapter, Schumpeter (1934) established a theoretical foundation for entrepreneurship based on innovation, viewing entrepreneurship as successive cycles of replacement through ever more innovative solutions. Schumpeter refers to this as the process of ‘creative destruction’, the simultaneously destructive and constructive consequences of innovation processes, whereby new technologies are
built on the old. He also suggested that young firms grow through: i) the introduction of new goods into the market, ii) the introduction of new methods of production, iii) the opening up of a new market iv) the opening of new sources of supply of raw materials, and v) through industrial reorganisation, developing new industries or new competing organisations. In order to do this, the people who run these firms need to be creative and innovative.

Robbins et al (2003: 572) define creativity as: “The ability to combine ideas in a unique way or to make unusual associations between ideas” and innovation as “the process of taking a creative idea and turning it into a useful product, service or work methods”, hence the development of innovation practices in the workplace and capacity to be innovative or foster innovativeness, became important characteristics of studies on new firms and start-up entrepreneurs (Axtell et al, 2002; Basadur, 1997; Dalglish and Newton, 2002; Dejardin, 2000; Drucker, 2002; Schaper and Volery, 2004, 2007).

‘Innovativeness’ means having the capability to be innovative and having an interest in innovation (Patchen, 1965). This includes being interested in changing work processes (Frese and Pluddemann, 1993). The term innovativeness thus represents a basic willingness to depart from existing technologies or practices and venture beyond the current state of the art (Kimberly, 1981). There are several ways for new organisations to innovate; including the brainstorming of new ideas, mind mapping, experimentation, prototype development and other procedures that may result in new products, services, or new technologies. Innovation can vary in the degree of "radical-ness" from completely new concepts to small incremental, step-wise improvements (Hindle, 2002).

Drucker (2002) suggests that even though not all start-up entrepreneurs would classify or perceive themselves as innovators, many start-ups become successful because they see innovation as the vehicle to move forward. There have been a number of studies capturing the innovativeness of start-up firms focussed on technological innovation, such as technology transfer and technological entrepreneurship (Abetti, 2004; Campbell, 2003; Dalglish and Newton, 2002;
Yencken, 2003, Zahra and Covin, 1993). In this context, by making breakthroughs or developing new technologies, innovative entrepreneurs are viewed as essential sources of economic development. Moreover, the innovativeness of a firm has been recognised by policy makers as one of the key drivers contributing to key performance indicators (KPIs) of economic growth and community development (OECD, 1997). Innovativeness thus has a central place in the incubator environment where too often, technologically driven Australian start-up businesses lack the confidence or the skills and capability to take a new product to market, even though innovative teams have the technical capability to penetrate the market and sell their wares (Hindle, 2002). Hindle (2002) addresses this problem by making a distinction between two different forms of innovation, small ‘i’ and big ‘I’ innovation. Small ‘i’ innovation is any form of new knowledge that includes generating new ideas and exchanging new knowledge. It forms the basis for ‘Big-‘I’ innovation, which is centred on value-creating commercialisation through applied entrepreneurial competence. Taking this view, BI managers have the opportunity to assist and guide incubatees, preparing them for the transition from small-‘i’ thinking to big ‘I’ practices and thus support the transformation from opportunity recognition and innovation potential to true opportunity exploitation and commercialisation. Hackett and Dilts’ (2004b) characterised this by referring to the incubator as an entrepreneurial firm sourcing and macro-managing the innovation process.

2.12.3 Risk-taking

Even very early entrepreneurship literature emphasised the risks entrepreneurs face during the building of their new ventures. It was realised by Cantillon (1680-1734) who generated the first theory of entrepreneurship and based it on uncertainty. Cantillon (1891) was also the first to distinguish between those who work for a fixed wage and those who do not and described the entrepreneur as the classic undertaker of business ventures, who buys a product for a certain price to resell it at an uncertain price, thereby assuming the risk attached to enterprise (Thornton, 1998). The concept of risk-taking has since become an integral part of strategic management styles and is frequently associated with the practice of
entrepreneurship, which is known for its tolerance to ambiguity. Underpinned by a risk-taking philosophy that cultivates a climate tolerant of failure, entrepreneurs possess a willingness to ‘give things a try’ (Frederick, Kuratko, and Hodgetts, 2007).

Risk has various meanings depending on the context in which it is applied. In the context of entrepreneurial orientation and management strategy, Baird and Thomas (1985: 231-232) identified three types of risk: i) venturing into the unknown, ii) committing a relatively large portion of assets and iii) borrowing heavily. The first conveys a sense of uncertainty about the future, a sense of ‘getting lost’ and may apply to personal (or family) risk or organisational risk. For example, putting family life at risk or not leading the organisation in the direction of the desired results (Gasse, 1982). The second is related to financial analysis, such as risking the return on investment (ROI) of personal sums invested by the entrepreneur or external investors in the enterprise or risking a financial loss. The third is related to negative outcomes when loans are taken from a lender. According to Lumpkin and Dess (1996) these notions of the heavy commitment of resources and high leverage from borrowing are both typically elements of entrepreneurship and risk-taking. Small firms with an entrepreneurial orientation can commonly also be typified by risk-taking behaviour and strategic risk minimisation. The taking of calculated risks and managing them for example, has been recognised as typically part of an incubator manager’s role (Abetti, 2004; Aernoudt, 2004; Callegatti et al, 2005; Hackett and Dilts, 2004a; Lalkaka, 2002).

Risk-taking can also be used as a measure of behaviour in firms. For example, Miller (1983) successfully measured risk-taking by asking managers about the firm’s tendency to take on risky projects and managers' preferences for bold versus cautious acts to achieve firm objectives. Venkatraman (1989) used a similar approach, by asking managers the extent to which they followed tried-and-true paths or tended to support only those projects in which the expected return was certain. Measuring levels of risk-taking in incubators would relate to this as the incubator manager takes a new risk with the recruitment of each new incubator tenant (Hackett and Dilts, 2004b).
2.12.4 Pro-activeness

Pro-activeness refers to a high degree of initiative which Schumpeter (1934) emphasised as the key to innovation and entrepreneurship development. Also Wiklund (1999) emphasised that pro-activeness gives firms an ‘edge’ and ability to introduce new products and services to the market ahead of competitors, thereby gaining a competitive advantage. In addition, studies show that proactive leaders shape their environment rather then react to it (Miller and Friesen, 1978) and that entrepreneurs show higher degrees of initiative than other groups in the population (Frese, Fay, Hilburger, Leng, and Tag, 1997). Pro-active incubator managers can thus provide visionary leadership by engaging in opportunistic activities. Pro-activeness can also be expressed in action styles, including goal orientation, business planning and action orientation. For example, Frese, Stewart, and Hannover (1987) found that entrepreneurs have a stronger goal orientation and take their goals more seriously than other groups. This was related to staying active in spite of setbacks as found by Kuhl (1992). Developing new strategies, new incubator services and new processes are strong aspects of pro-activeness as these suggest forward-looking and goal orientated perspectives. Goal orientation is closely related to opportunity orientation (Frederick, Kuratko, and Hodgetts, 2007) both needed to develop and maintain new venture activity. Pro-activeness is thus closely related to the concept of foresight and the becoming aware of potential future problems, needs and changes (Lumpkin and Dess, 1996).

2.12.5 Competitive aggressiveness

According to Utsch et al (1999: 34) the dimension of competitive aggressiveness includes “a sort of Machiavellian attitude, that is, from a moral point of view, one is reckless and ruthless in the pursuit of one's goals”. This relates directly to Schumpeter's (1934) earlier concept of aggressive dominance through destructive innovation cycles.

Although small firms are often flexible and innovative they commonly have limited competitiveness in other strategic dimensions such as financial resources (Lofsten
and Lindelof, 2003; Porter, 1985; Wiklund, 1999) and thus need to optimise whatever advantage they may have. This is certainly the case for not-for-profit incubators. Being space providers and rent reliant, they need to compete with surrounding commercially serviced office and factory space providers by perhaps offering rent below the market rate (Allen and Rahman, 1985; Hackett and Dilts, 2004a; Lumpkin and Ireland, 1988; Lalkaka, 2002; Soetanto, 2006). Their competitive advantage can also come in terms of business mentoring and advice, with the provision of these services in house (Hansen et al, 2000). There are few studies about incubators using the notion of competitive advantage as they do not seem to compete in many areas. Researchers however, have mentioned the lower rent structures and in-house mentoring programs (Abetti, 2004; Hackett and Dilts, 2004a; Peters, Rice and Sundararajan, 2004; Soetanto and van Geenhuizen, 2007). Researchers have also found that start-ups within an incubator environment struggle less than those not in an incubator, giving the incubator another competitive advantage (Lumpkin and Ireland, 1988; Plosila and Allen, 1985). Furthermore, Harrison and Kelly (2004) show that those who pursue innovative product/market expansion strategies outperform those that do not have innovation strategies and thus take a competitive lead. As a shift has occurred from a resource-based economy to one focused on the management and application of knowledge, competitive aggressiveness in relation to EO in incubators may thus refer to striving to be a leader in the provision of innovative and sheltered small business support.

It is suggested that all five dimensions of entrepreneurial orientation should be present in an organisation when it engages in new entry (Lumpkin and Dess, 1996). The five components may vary based on the environment and context of the organisation or may vary in the degree of strength depending on internal factors (Lumpkin and Dess, 1996). It is also acknowledged however, that success can be achieved without one or more components present (Wiklund, 1999). Overall, those firms that act independently, encourage innovation, are not risk averse but are proactive and compete within their markets with a strong EO are likely to be more successful and perform better than those with a weaker EO, lacking some or all of these dimensions (Lee and Peterson, 2000).
According to Lumpkin and Dess (1996) it is useful to explore levels of EO when assessing the firm’s management perspective. Some researchers however, suggest that the relationship between EO and performance may be more complex than previously assumed and suggest that other variables in addition to EO may have a direct effect on firm performance or may moderate the relationship between EO and performance (Aldrich, 1979; Tsai, MacMillan, and Low, 1991; Wiklund, 1999). For example, in a study based on variables related to autonomy, innovativeness, competitive aggressiveness, and achievement orientation, Utsch et al (1999) found that personality orientations play a role in the emergence of entrepreneurs and entrepreneurial managers. Also Brockhaus and Horwitz (1986) found connections between EO and personality suggesting that the entrepreneurial characteristics of the people making decisions play a role in the management of risk. This connection will be explored further.

2.13 Entrepreneurial traits and characteristics

The entrepreneurial traits and characteristics displayed by individuals are closely related to elements of EO within organisations with research in this area mostly written by socio-psychologists, more orientated towards the particular characteristics of personality and attempts to differentiate entrepreneurial individuals from the average on the basis of their willingness to bear uncertainty, to have tolerance for ambiguity and their ability to innovate (Utsch et al, 1999). The stream of literature on the traits and characteristics of entrepreneurs includes recognition of a high need for achievement, the attraction to challenges, the drive to succeed, acceptance of uncertainty and risk and also elements of innovativeness (Abetti, 2004; Brockhaus and Horwitz 1986; Hisrich, 1990; Khilstrom and Laffont, 1979; Kuratko and Hodgetts, 2004; McClelland, 1961, 1987; Moore, 1986). For example, McClelland (1961) became known for research on “need for achievement” theory based on its connection with the entrepreneurial drive to meet challenges, finding that these differed among individuals and cultures.
The research on entrepreneurial traits and characteristics however is problematic as the use of personal characteristics has been criticised by some and because within the research there are alternate perspectives (Gartner 1988). Some researchers argue that entrepreneurial people are risk takers while others suggest that they are skilled in avoiding or minimising risks (Callegati, Grandi, and Napier, 2005; Reece, 2006; Robbins et al, 2003). There also are different views about the motivations for becoming an entrepreneur (Carland, Hoy, Boulton and Carland, 1984) which have been categorised as either situational-push or -pull factors, such as models derived by Shapero and Sokol (1982) and Vesper (1983). Traits may be unconsciously present and may be stimulated by circumstances. For example, an employee who has retired may suddenly demonstrate entrepreneurial skills and build a successful business. This view is supported by a number of researchers who found that people become entrepreneurs as a result of frustration with present lifestyle or retrenchment, childhood dreams, family business environment, education, work history, entrepreneurial role models or support networks (Hisrich 1990; Krueger, 1993; McMullen, 2001; Mueller and Thomas, 2000).

The main criticism of entrepreneurial traits and characteristics research is that the approach is hard to measure and has not produced enough empirical evidence (e.g. Brockhaus and Horwitz 1986; Gartner 1988; Shaver and Scott, 1991; Sørensen and Chang, 2006). Nevertheless, researchers have continued to focus on why some individuals build successful businesses while others do not (Shane and Venkataraman, 2000; Baron, 2004; Mitchell et al, 2002). Some have tried to explain this by comparing the behaviour of entrepreneurs and middle management.

Carland and Carland (1991) for example, investigated innovation, risk-taking propensities and levels of achievement between managers and entrepreneurs finding significant differences, with entrepreneurs showing stronger personality traits than their management counterparts. Also, Busenitz and Barney (1999) focused on the differences by looking at the decision-making processes used by entrepreneurs and middle managers in large organisations. They found that entrepreneurs trusted their intuition to make quick decisions and used more common sense which was explained by the fact that with entrepreneurial ventures
in particular, the window of opportunity would often be gone by the time all the necessary information became available for more rational decision-making.

More recently however, the focus on the entrepreneur as someone who is ‘somehow’ the critical success factor to the success of a new venture has been explained through the cognitive perspective (Baron, 2002; Mitchell, Busenitz et al, 2002). This approach endeavours to explain the way entrepreneurial people use their minds differently, the reasons why some may be more solution based, ‘see’ less risk or know intuitively how to mitigate risk by the way they use their cognitive mechanisms, such as how they process information in a different way:

“The cognitive perspective emphasizes the fact that everything we think, say, or do is influenced by mental processes--the cognitive mechanisms through which we acquire store, transform, and use information”, (Baron, 2004: 221).

Taking this to be true, looking at entrepreneurial traits and characteristics in isolation may still not be enough. Someone with a wider horizon and business skills is required to operate an incubator and it becomes apparent that a mechanism to bring expertise into the incubator beyond the manager’s own capabilities, such as being part of an efficient network, is a necessity as not only the qualities of the entrepreneur play a large role, but also the social network(s) in which the entrepreneur(s) and the company is operating. The following section therefore looks at research into the importance of what is termed ‘social capital’.

2.14 Social capital literature

This third section examines literature on the sociological concept known as social capital, highlighting the connection of both the economic and community perspectives of social capital to business processes/performance i.e. incubator processes/performance. The review starts by showing how the various forms of capital were developed and relate to the incubator work-place, then furnishes examples of that relationship, examples of attempts to schematise SC relationships and how SC has been explained through network theory. The section finishes with deeper investigations into the two most important elements of interpersonal
relationships; trust and communication, which are the main entrepreneurial characteristics, around which networks in incubators revolve.

2.15 The development of social capital theory

As discussed in section one, incubators have been established in a number of cases with a view to solving the problems and boosting morale in areas of high unemployment and low socio-economic growth (Bhabra-Remedios and Cornelius, 2003; BIIA, 2007; Bøllingtoft and Ulhøi,, 2005; OECD, 1999; Smilor and Gill, 1986). They have even been described as a ‘life’ support system for the business community (Bhabra-Remedios and Cornelius, 2003).

Many decades ago, both Tonnies (1925) and Durkheim, (1964) emphasised the importance of involvement and participation in groups and also the consequences for both the individual and the community when this does not occur. A concern about the decline in community, due to industrialisation and (hectic) modern life styles, is a recurring theme in contemporary sociology (Putnam, 1995, 2000). Moreover, it has been asserted that the birth of sociology occurred because of this (Paxton, 1999). Specifically Durkheim (1964) suggested that community represents a form of organic solidarity based on shared fate. Durkheim developed this notion from the ideas of Ferdinand Tonnies, whose main concern was the disappearance of community spirit. Tonnies (1957) suggested that a shift had taken place from community based relationships between people which he termed ‘Gemeinschaft’ to relationships by association which he termed ‘Gesellschaft’. By Gemeinschaft Tonnies referred to the closeness and holistic principles of interwoven social relationships that were found in pre-industrial communities. These relationships formed the foundation of a community’s moral principles and moral worth:

"The very existence of Gemeinschaft rests in the consciousness of belonging together and the affirmation of the condition of mutual dependence" (Tonnies, 1925: 69).

In contrast to the old community principle of togetherness, Gesellschaft is modern and refers to an objective ‘society’ that is less intimate, where the types of
relationships are by association and are more instrumental and purposeful. Tonnies viewed them as artificial and fragmented rather than holistic or inclusive.

“A unity based on common traits and activities and other external phenomena” (Tonnies, 1925: 67).

Until the 1960s, economists focussed primarily on economic activity, being of the opinion that economic growth was shaped by three basic factors: land, labour and financial capital (e.g. Cantillon, 1891; Schumpeter, 1934) while sociologists focussed on Gemeinschaft – people in community and Gesellschaft – people in society. However, in the mid-1960s, a neo-economist, Becker (1964) building on ideas by Schultz (1961) re-introduced the notion of society into the economic perspective. Emphasising the importance of the workforce, he introduced the term ‘human’ capital in addition to ‘financial’ capital, arguing that economic factors do not stand alone, but depend on the strength of a societies’ educated and trained workforce. Through education and job training, individuals develop the personal ability to facilitate the production of goods and services and thus become an asset to the organisation. Hence, employees can be viewed as one of the economic assets of an organisation.

Not long after, a third capital, that of ‘social’ capital was introduced. Coined by Hanifan, (1916, cited in Woolcock 1998) and popularised by Loury (1977), social capital described the relational links between individuals within the community/society and business. It became systematically analysed as a new form of wealth by Bourdieu, (1983), Coleman, (1988) and Putnam (1993).

Bourdieu (1983) also laid the foundation work for various other ‘capitals’:

i. Economic capital, meaning the control over economic resources, such as land, buildings and other assets.

ii. Cultural capital, which are forms of knowledge, skills, education and any advantages people have that can provide them a higher status in society.

iii. Symbolic Capital: the amount of honor and prestige possessed by a person.
2.16 The notion of capitals in organisations and environment

From a business perspective, people are continuously interacting within the business community, for example as retailers, wholesalers, manufactures or as customers. A number of researchers have drawn upon this interaction, using different forms of capitals to illustrate that organisations do not operate in a vacuum, but influence and are influenced by complex social systems.

Moore’s (1986) framework reproduced in Figure 2.7 for example, depicts how the start-up entrepreneurs encounter, interact with and respond to different sociological and environmental circumstances.

![Figure 2.7 - Moore’s (1986) Framework on the Entrepreneurial Process](source: Bygrave, 1989: 9)

The framework contains many of the vital dimensions of entrepreneurial orientation such as risk taking, innovativeness and internal control or autonomy, but it also shows that the business interacts with its environment made up of local economy and community (Bygrave, 1998a). In addition it shows sociological influences such as networks and interactions with teams, family and friends. Hence, Moore understands the roles capitals play in triggering and supporting entrepreneurial activity.
Another framework, using an embedded social system perspective was developed by Van der Sijde et al (2004, reproduced in Figure 2.8) who used four forms of capital: i) cultural capital, indicated as identity and culture such as values and norms set by the founder and top managers in the organisation, ii) economic capital, identified as the tangible and intangible assets of the company, iii) strategic capital, meaning the position and power the company has in the market place and iv) social capital, meaning the developments and participation in networks.

Figure 2.8 - A Social System Framework for the Entrepreneurial Process

[Diagram showing the interaction between strategic capital, economic capital, cultural capital, and social capital]


In this framework the four capitals are in continuous interaction with the business as it develops itself. This thesis focuses predominantly on the development of social capital, as it is believed that the cultural, economic, strategic and symbolic capital are really established and flourish through the development of and access to social capital and through the access and participation in networks. In the case of incubators and their start-up businesses, this is particularly important in the first years of trading. The notion of ‘capitals’ and particularly social capital thus becomes a central point affecting the functioning of the incubator, the incubator manager and the incubator tenants. Figure 2.9 shows how social capital is seen in relation to this thesis.
The level of social capital developed by the incubator manager in and around the incubator is vital to the incubator’s involvement in society and the form of economic and social development the incubator stimulates as a small community in its own right within the larger community. This is elaborated on through defining social capital further and social capital case-studies.

2.17 The ingredients of social capital

Bourdieu (1983) provided the first succinct definition of social capital.

“Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition - or in other words, to membership in a group.” (Bourdieu, 1983: 248).
Baron and Markman (2000) take a broader look at social capital by suggesting that it consists of social identity such as status and reputation, business and social networks with formal and informal ties, but also of the social skills needed to help interact effectively with others. These notions will be discussed next, starting with two case studies on how individuals, groups as well as whole regions can create a social identity.

2.17.1 Social identity - case studies in business and community settings

Bourdieu (1983) suggests that social capital involves transforming superficial relationships such as those of neighbourhood, the workplace or even kinship, into relationships that are at once necessary, elective and durable and include feelings such as status, respect and friendship (Bourdieu, 1983: 249–50). They create a sense of belonging and solidarity in groups and communities.

“...the profits which accrue from membership in a group are the basis of the solidarity which makes them possible” (Bourdieu, 1983: 249).

Coleman (1988) explains these concepts by showing how being well connected to or within a group can function as a protective layer and resource for the individual members of a group. Using the example of a small Jewish community in Brooklyn, where most individuals are involved with the wholesale diamond market, Coleman (1988) describes the community as extraordinarily close, consisting of individuals who have formed strong ties through family, community, and religious affiliation. These ‘extra personal layers’ provides ‘insurance’ over business transactions implying trustworthiness without question. When one merchant hands over a bag of stones to another merchant for examination, no bond is required. Each merchant is trusted to privately examine them at their leisure. If, however, a merchant would defect and steal or substitute any stones, “he would lose family, community and religious ties as well as his career” (Coleman, 1988: S98). Here, status and reputation is being used to facilitate efficient economic transactions.

The value of this is as an example of the role that social capital can play in the internal and external workings of an incubator, which can be viewed as a similar
economic and social microcosm to that of the Jewish community. For example, the benefit most frequently mentioned by entrepreneurs was moral and psychological support derived from being part of an incubator (Lichtenstein, 1992).

A second study of interest is related to the resources individuals may obtain from knowing others and having far reaching networks (Putnam, 1993). Putnam’s (1993) research took place in two regions in Italy, describing the connectedness of people by measuring differences in social structures, patterns and community behaviour. Despite the fact, that both regions used in the study had a comparable degree of human and financial capital available, significant differences in well being, affluence and economic strength were found. This is of great interest as Putnam (1993) illustrates that the level and strength of social capital directly influences prosperity and success. Social capital constructs can thus provide a means by which differences such as firm performance, innovation and entrepreneurship can be detected and measured (e.g. Dahnli and De Clerq, 2004; Schuurman, 2003).

2.17.2 Formal and informal networks

Lichtenstein (1992) provides empirical evidence that the networking and relationships provided by an incubator manager lead to improved client firm performance in terms of increased sales, lower cost, enhanced capabilities, and reduced risk. Firms also benefited from the opportunity to network with similar firms, as well as from relationships with the incubator manager and other individuals associated with the incubator.

Many definitions of social capital exist, that in one form or other all relate social capital to being a network (Burt, 1992) or being part of networks and having connections (Borgatti and Foster, 2003) or to the resources obtained through networks (Greve and Salaff, 2003). Others conducted studies on social capital focussing on particular interpersonal relationships embedded within social systems and firms (e.g. Adler and Kwon, 2002; Burt, 1992, 1997; Cross, Parker, Prusak and Borgatti, 2001; Nahapiet and Goshal, 1998). As an important element of social capital, much research about the role and importance of networks has been written
from a variety of academic perspectives (Cross and Prusak, 2002). The literature reviewed for this section was therefore restricted to studies that discuss theory relevant to organisational networks in small communities such as incubators.

Granovetter (1973) defined a network as a set of actors or ‘nodes’, that can consist of persons, teams or organisations, who are connected by a set of strong or weak ties. For example, Granovetter focussed on the strength of the ties that people have within networks, stating that dense networks with strong ties among individuals are a necessary condition for the emergence of social capital (Granovetter, 1973; Loury, 1977). Higgins and Kram (2001) built on Granovetter’s (1973; 1992) work developed four different types of networks within organisations:

i) entrepreneurial networks, which they found to be high diversity networks with high development of relationships
ii) opportunistic networks, with high network diversity but low relationship strength
iii) traditional networks, with low network diversity, but strong relationship ties
iv) receptive networks, having both low network diversity and low relationship strength.

These different networks function as the medium for developing shared customs, values, attitudes and standards of behaviour. The researchers argue that an individual with a high number of network ties will also have access to a greater number of resources and a wider variety of influences (Higgins and Kram, 2001).

Also building on Granovetter is the work by Nahapiet and Ghoshal (1997) who suggest treating networks in terms of three separate but interrelated dimensions referred to as the structural, relational and cognitive dimensions.

The structural dimension refers to the structural or organisational configuration of ties within networks. Such ties are used to identify individuals with specific skills or knowledge or who are useful to others in the network, e.g. as an access point to resources Research in this area is focussed on concepts such as: network density, connectivity, and referrals (Baron and Markman, 2000; Cross et al, 2001; Hazleton and Kennan, 2000; Lesser and Cothrel, 2001). Connectivity means the degree to
which actors within a network can interact: many close ties, means being well connected. Other associated structural elements are network proximity, which is characterised by frequent and substantial contact between certain people and network centrality, referring to people with a high number of network contacts spanning disparate groups (Andrews, Basler and Coller, 1999). Proximity assists in the creation of similar identities, perceptions and judgements between members of networks, whereas centrality creates a powerful position that can be used to influence the behaviours and attitudes of others (Andrews et al 1999).

The relational dimension refers to the depth of the various relationships and social dynamics occurring in networks including trust, shared norms, interpersonal obligations and expectations (Pittaway, Robertson, Munir, Denyer, and Neely, 2004). This includes the willingness and capacity to trust, cooperate and coordinate within organisational settings (Holmlund, and Tornroos, 1997; Pittaway, 2004; Shockley-Zalabak, (1999). Coleman’s (1988) study about the trusting relationships between diamond merchants in their community would be a good example, illustrating the relational dimension of social capital and entrepreneurship development.

Nahapiet and Ghoshal (1997) include a third dimension of social capital labelled the ‘cognitive’ dimension, referring to those resources that provide a commonality, a shared knowing or system of learning. Some groups of people speak the same language and or think the same way. The researchers identified this dimension independently, recognising that it was not previously discussed in mainstream literature and was of significance for business strategy.

Networks have been studied using a number of units of analysis. Neergaard and Madsen (2004: 109) proposed three variants: the personal contact network variant, the organisational business network variant and the team network variant.

In order for networks to function at all however, two specific elements of social capital are needed. These are: i) the development of trust and ii) communication skills. These will be discussed further.
2.17.3 Trusting relationships

As mentioned earlier in this section, trust is a complex matter and considered to be one of the important prerequisites to the developing of successful relationships such as partnerships, joint ventures and other forms of social capital.

“Social capital exists in a relationship between two actors if they develop personal bonds, attachment and trust.” Arenius (2002: 64).

Even though some incubation studies refer to the importance of trusting relationships within the incubator environment, (e.g. Bøllingtoft and Ulhøi, 2005; Clarysse et al, 2005) literature on incubation and trust is scarce. However, it has been established through empirical research on incubation and networks that strong ties between people involve the highest levels of trust (Burnett and McMurray, 2004; Krackhardt, 1992). At the heart of ‘trust’ lies “integrity, character and ability” (Robbins et al, 2003: 504). It includes mutual understanding, shared values and ‘trustworthy’ behaviour that not only bind the members of interpersonal networks and communities, but also facilitate cooperative action (Cohen and Prusak (2001; Hulsink, and Elfrink, 2002).

Robbins et al (2003: 504) further outline five key dimensions that trust is based on: i) integrity, which is based on (positive) past performance, ii) competence, which refers to the ability and responsibility a person displays in completing tasks, iii) consistency, which refers to the actions and behaviours that are typically and reliably displayed by a person, iv) loyalty, which refers to the actions and behaviours of a person that show a principled basis for protecting the honour and face of others and the reputation of the organisation and v) openness, which refers to the willingness to suspend judgement about a matter until all the facts are known and to share ideas and information freely with those who have a ‘right to know’ and to not only learn new things but ‘unlearn’ old things that are redundant (Reece, 2004). Only if a person is trusting and trustworthy can that person in turn develop relationships based on trust. Trustworthiness is often described as a virtue. Reece (2006: 4) refers to it as:
“The positive actions carried out by one or more persons towards others which result in a psychological state where one person will rely on the actions and/or word of others because of the previous experience of a series of acts which brought a positive outcome”

To understand how trust works in the business world, the notion of trust needs further exploration into inter-personal and intra-personal experience. Although interactions based on trust are between people (i.e. inter-personal), that which defines an individual's level of trust is an (intra-) personal experience, which is based on personal characteristics and the concept of self (Maslow, 1954). This includes an individual's personal needs, predispositions for behaviour and expectations in life, together with past experiences in different environments where trust played a part.

Maslow’s (1954) model of hierarchy of needs clarifies this by describing what drives us all in life and thus in relationships and networks, whether in the start-up workplace or in the incubator. Maslow’s (1954) argument is as follows: (1) there are the basic physical needs for water, food and shelter, followed by (2) the need for safety and trust building, followed by (3) the need to feel a sense of belonging. This sense of belonging sets off (4) individual awareness which leads to (5) self actualisation. Hence, concepts such as trust, commitment, conflict resolution and benevolence, shape the relationships within inter-organisational networks as found by Perry, Riege and Brown (1999) and Pittaway (2004). This is also in agreement with Lyons (2000) and Bollingtoft and Ulhøi (2005) who proposed that an overall understanding of the social dynamics of the networked incubator need to take into account “both personal and business networks, as well as the organisational and social environment in which the entrepreneurial process takes place” (Bollingtoft and Ulhøi 2005: 9/10). Well formed structural and relational relationships based on trust can lead to the development of joint ventures, collaborative projects and community involvement (Burnett and Yamin, 2005).
2.17.4 Organisational communication

Although obvious, it is worth noting that relationship is a prerequisite to communication. There are many ways of defining the term communication and the literature shows that researchers frequently seem to perceive the essence of communication somewhat differently from one another. Literally, the term communication stems from the Latin root words, communi care, which means to make common (Timm and Stead 1996: 13). When people engage in some way they have communicated by making common, their understanding of something. From here, the accuracy of communication is determined by the degree of commonality shared. Communication is further understood as a two-way process that relates to the encoding and decoding of messages using a selection of verbal and non-verbal channels for message transmission (Goldhaber, 1975; Jablin, Putman, Roberts and Porter, 1987; Timm and Stead, 1996; Shockley-Zalabak, 1999). In this study, communication is understood as part of a transformation process whereby information or knowledge travels from one person to another within the incubator environment. Communication is more than the daily interactions of individuals within organisations 'it is the very process through which organizations are created and in turn create and shape events' (Shockley-Zalabak 1999: 28).

The necessity for good communication skills is thus paramount for the incubator manager, being involved in all of the activities within incubator microcosm where parties may be engaged in business and/or social interaction, using all of the available media such as words and body language, in an attempt to create a shared meaning or a mutual understanding.

A particular aspect of communication required in business and notably by incubation managers is mentoring. “In counseling, both the incubator manager and the entrepreneur must be engaged” (Rice, 2002: 176). Rice’s (2002) study is interesting as his theory of co-production is driven primarily by the nature of the relationship between the incubator manager and the entrepreneur, a relationship that can be characterized as a co-production dyad. When assistance is provided through counseling, the incubator manager acts as a ‘regular producer’, however,
when assistance is provided through networking, the incubator manager acts as the intermediary — “connecting the entrepreneur to other regular producers of business assistance, i.e., the participants in the incubator’s know-how network” (Rice 2002, : 166).

Many distinctions have been made by researchers about what a mentor does and about the mentoring process (Chao, 1998). Mentors are referred to as advisors, counsellors, people who are older, wiser, experienced or who function as a mental sponsor, coach or peer. Mentors commonly occupy specific trust positions but can be friends, family members, or other business professionals (Ogorek, 2003). Good mentoring has both instrumental and psychosocial components (Carsrud, Gaglio and Kenneth, 1987; Gary, 2004; Higgins, 2001; Thomas and Kram, 1988) as it can help develop confidence, a sense of worth and provide clarity to make business decisions (Kram, 1988). “Specifically in a small family business where: ‘success is measured in terms of harmony, unity and the development of individuals with strong and positive self-esteem’” (Barrett and Rajapakse, 2003: 6). Facilitating communication is thus an important part of the network process, facilitating access to different networks and places of networking, such as communal kitchens and boardrooms required to encourage personal interactions with peers where problems and referrals for help can also be discussed (Stevenson and Wetterhall Thomas, 2001).

**Communication perspectives**

Communication perspectives shed light on the behaviour in small business workplaces and will be treated separately below. They were adapted from tables in Krone, Jablin and Putnam (1987) and are summarised in table 2.2 to highlight a number of the concepts and styles of thinking relating to areas of small business communication that the incubator manager would do well to be aware of.
Table 2.2 - Organisational Communication

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Locus of communication</th>
<th>Frequent research foci</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanistic</td>
<td>Channel and message transition</td>
<td>Communication structures.</td>
<td>Message sending is linear, transitive process.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effects and barriers.</td>
<td>Focus on conveying information and accuracy of message, not on people.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Communication breakdowns and gate keeping.</td>
<td>Tendency to over simplify communication process.</td>
</tr>
<tr>
<td>Psychological</td>
<td>Conceptual filters</td>
<td>Individual as information processor.</td>
<td>Emphasis on intentions and human aspects of communication.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Communication climate.</td>
<td>Receiver plays active role as message interpreter.</td>
</tr>
<tr>
<td>Interpretive</td>
<td>Role-taking</td>
<td>Communication 'rules'.</td>
<td>Focus on communicating (action) and cultural context.</td>
</tr>
<tr>
<td>Symbolic</td>
<td></td>
<td>Organisational culture.</td>
<td>Emphasis on shared meaning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power and politics.</td>
<td>Researcher impressions might be biased.</td>
</tr>
<tr>
<td>Systems interaction</td>
<td>Sequences of communication behaviour</td>
<td>Conflict management.</td>
<td>Communication is evolving system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feedback patterns.</td>
<td>Emphasis on sequence, function and behaviour.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Work group development.</td>
<td>Codes of verbal and non-verbal behaviours.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rational communication with decision-making phases.</td>
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</tr>
</tbody>
</table>

Source: Adapted from Krone, Jablin and Putnam 1987: 33.

The mechanistic perspective centres around issues associated with communication channels and message transmission. From a mechanistic point of view, human communication is viewed as a transmission process through which a message travels via a channel from one point to another. An example of research conducted from “this perspective would discuss message frequency and duration” (Krone, Jablin and Putnam 1987: 22) and could be used to explore how often communication takes place between tenants in incubators.

The psychological perspective does not focus on the message itself, but on “how the characteristics of individuals affect their communication” (Krone, Jablin and Putnam 1987: 25). It concentrates on the informational environment in which
individuals operate and suggests that because the stimuli are too numerous to process, people use 'conceptual filters' (attitudes, beliefs, perceptions) to make sense of what is being communicated. This is important when focusing on small businesses, to understand the way that owners, managers and staff as well as customers, use and are influenced by these conceptual filters.

The interpretive-symbolic perspective seeks to explain the role people take on in an organisation. Everyone from the recruit to the senior director has a role in the communication network (David 1995). Viewed as “probably the most humanistic of the four perspectives” by Krone, Jablin and Putnam (1987: 27), it is based on people reaching out to form a mutual understanding by bonding with others”. This perspective is important in a small workplace where interpersonal relationships play a significant part in the building of a small business work environment. Research examples are Brown (1995) on different types of cultures and diagnosing organisational ideology; Schall (1983) on communication rules and how to understand shared realities in the organisation; Senge (1990) on learning organisations and Cox (1999) on group communication and employee turnover. All examined group behaviour as ways of thinking, feeling and acting. In a small business and in an incubator, the 'team' or group frequently share experiences and often build strong bonds to make the business successful.

The systems interaction perspective is the last perspective in the table which “concentrates on the external behaviours as the fundamental unit of analysis” (Krone, Jablin and Putnam 1987: 31). In contrast to the other perspectives, communication is viewed as a system consisting of patterned sequential behaviour. It is neither shared nor individual, but grouped. Communication is tracked through the repetition of behaviour over time and researchers would concentrate on message patterns, or on categories rather than cause and effect. Examples are studies on superior-subordinate communication.
### 2.18 Key findings

**Table 2.3 - Key Findings from Incubation Literature**

<table>
<thead>
<tr>
<th>Research orientation</th>
<th>Citations</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incubator development studies</td>
<td>Allen and Rahman, 1985 Brooks, 1986; Campbell, 1989; Mian, 1997 Temaili and Campbell, 1984</td>
<td>An incubator is a specific environment (the what), often reliant on funding and have advisory boards (the why), where new ventures are recruited by incubator managers (the who), developed and supported (the how) in their first years of operation. The key services of an incubator are: provision of low rent, shared equipment and business assistance. Sometimes shareholding and seed capital provision.</td>
</tr>
<tr>
<td>Incubator definitions</td>
<td>Brooks, 1986 European Commission, 2002 NBIA, 2007; UKBI, 2005</td>
<td>Incubators are classified according to their revenue: for-profit, hybrid and not-for-profit.</td>
</tr>
<tr>
<td>Incubator configuration studies</td>
<td>Abduh et. al., 2007 Allen and McCluskey, 1990 Autio and Kloftsen, 1998 Campbell et al, 1985; Culp, 1996; Kuratko and Lafollette, 1987; Lumpkin and Ireland, 1988; Merrifield, 1987 Mian, 1997; Smilor, 1987</td>
<td>The incubator’s infrastructure and operations are based on the sponsor’s expectations, the characteristics of incubatees and their business needs. The management team need to have business expertise and clear growth (EO) strategies and provide satisfactory business services. The critical success factors within the incubator environment are entrepreneurial networks, innovation, community support and access to ongoing finance.</td>
</tr>
<tr>
<td>Non-profit status of incubators</td>
<td>Abetti, 2004 Allen and McCluskey, 1990 BIIA, 2005; EC, 2002 Hackett and Dilts 2004a,b Lalkaka and Abetti, 1999; Lumpkin and Ireland, 1988; NBIA, 2004</td>
<td>NFP and hybrid incubators must balance themselves between the enterprise and socio-economic development mission and the necessity to run the incubator as a self sustaining business operation. Incubators find themselves involved in political areas that threaten their funding.</td>
</tr>
<tr>
<td>Incubator impact studies</td>
<td>Abduh et. al., 2007 Bearse, 1998 Bollintoft and Ulhoi, 200 Campbell and Allan, 1987 Udell, 1990 Wettingstheel, 2000</td>
<td>Incubators are more cost effective then other programs designed to attract companies to a region. There are many different incubator performance measures. Most are superficial, relating to single deterministic or theoretical aspects of incubation or incubators, with only few having empirical data support. Some influential reports discuss the assessment of profitability.</td>
</tr>
<tr>
<td>Research orientation</td>
<td>Citations</td>
<td>Findings</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Entrepreneurship from an economic perspective taking into account opportunity.</td>
<td>Allen and Rahman, 1985; Cantillon, 1891; Davidsson, 2002; OECD, 1999; Schumpeter, 1934; Shaver and Scott, 1991; Yencken, 2003; Wiklund, 1998.</td>
<td>Entrepreneurship leads to economic growth as can be witnessed through the fast economic growth in China, India and other countries lead by a new wave of entrepreneurs. Entrepreneurship is dynamic, disjointed and holistic as it is associated with uncertainty, risk and innovation cycles.</td>
</tr>
<tr>
<td>Entrepreneurial process.</td>
<td>Brooks, 1986; Davidsson, 2002; Dejardin, 2000; Eckhart and Shane, 2003; Kirzner, 1973, 1979; Moore, 1986; Schaper and Volery, 2005; Shane and Venkataraman, 2000; Shane, 2002; Timmons and Spinelli, 2003; Van der Sijde, 2002; Venkataraman, 1997; Wakkee And van derVeen, 2004; Wiklund, 1998.</td>
<td>The entrepreneurial process is about how opportunities are recognised, evaluated, prepared and exploited in the market. The entrepreneurial process dictates how, by whom and with what effects future goods and services are built and commercialised. It contains a newness of both the organisation and the market.</td>
</tr>
<tr>
<td>Innovation practices in start-ups.</td>
<td>Burnett and Yamin, 2005; Dejardin, 2000; Drucker, 1985, 2002, Harrison and Kelly, 2004, Hindle, 2002; Schumpeter, 1934; Zahra and Covin, 1993; Lee and Peterson, 2003</td>
<td>Innovation is the driver of new technologies, be it radical or incremental. Incubators are the catalyst of the innovation process from innovative thinking to the true commercialisation of new ideas within technically developed start-ups. Innovation may also be a way to take the incubator forwards, for those who innovate are more successful than those who do not.</td>
</tr>
<tr>
<td>Entrepreneurial traits and characteristics</td>
<td>Abetti, 2004; Baron 2002, 2004; Brockhaus and Horwitz, 1986; Hisrich, 1990; Khilstrom and Laffort, 1979; Kurato and Hodge, 2004; McClelland, 1961, 1987; Moore, 1986; Shapero and Sokol, 1982, Vesper, 1983.</td>
<td>Characteristics can best be researched through cognitive studies as an interest remains why certain individuals start and run new ventures and others do not. The cognitive perspective suggests that everything we think, say or do is influenced by mental processes.</td>
</tr>
<tr>
<td>Non-profit status of entrepreneurship, social enterprises and NFP incubators</td>
<td>Abetti, 2004; Bornstein, 2004; Borgzaga and Defouray, 2001; Dart, 2004; Dees, 1998; Emerson, and Twersky, 1996; Fowler, 2000; Grenier, 2002; Johnson, 2001; Lasprgala and Cotton, 2003; Laville and Nyssens, 2001; Utsch et al, 1999.</td>
<td>NFP incubators may be re-evaluated as social enterprises with community development missions. They can be seen in a fourth position functioning between state, civil society and market.</td>
</tr>
<tr>
<td>Research orientation</td>
<td>Citations</td>
<td>Findings</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
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</tr>
<tr>
<td>Social capital from an socio-economic perspective</td>
<td>Durkheim, Tonnie, 1925, 1957</td>
<td>Gesellschaft and gemeinschaft Organic communities. Community and society characteristics. There is a concern of the decline of communities</td>
</tr>
<tr>
<td>Social capital introducing the various concepts of capitals</td>
<td>Becker 1964; Moore, 1986; Schultz, 1961; Van der Sijde, 2004</td>
<td>The introduction of ‘human’ capital as distinct from financial capital. The individual and workforce as a whole = strength of societies depends on educated and trained workforce.</td>
</tr>
<tr>
<td>Social capital from a relational perspective</td>
<td>Loury, 1977</td>
<td>Individuals and groups have relational links between individuals in a community and social organisations.</td>
</tr>
<tr>
<td>Research focussed on society structures and the development of community life.</td>
<td>Bourdieu, 1983; Coleman, 1988 Putman, 1993, 1995</td>
<td>Definitions, group member and community. Structure of a group or firm can function as a protective layer and resource; efficient economic transaction. Regional differences can be based on social capital. Decline of communities.</td>
</tr>
<tr>
<td>Hierarchy of needs and interpersonal</td>
<td>Arenius, 2002; Maslow, 1954; Perry et al, 1999; Pittaway, 2004; Reece, 2006; Robbins et al, 2003</td>
<td>There are basic physical needs, followed by the need for safety and trust building; we have the need to feel a sense of belonging, which leads to self actualization.</td>
</tr>
<tr>
<td>The development and maintenance of networks in small firms</td>
<td>Adler and Kwon, 2002; Aldrich, 1999; Anderson and Jack, 2002; Andrews et al, 1999; Bøllingtoft and Ulløi, 2005; Burt, 1992, 1997; Granovetter, 1973; Guirdham, 1999; Hulink, and Elfrink, 2002; Luo, Griffith, Liu, and Shi, 2005; Neergaard and Madsen, 2004</td>
<td>Ties are used to identify individuals with specific skills or knowledge or who are useful to others in the network. Network formations strong ties and weak ties sets off a level of trust people display for one another. Social relations people have in business networks.</td>
</tr>
<tr>
<td></td>
<td>Nahapiet and Ghoshal, 1998; Tsai and Ghoshal, 1998</td>
<td>Structural, relational and cognitive networks depending on the place in the networks and the types of relationships involved (imbeddedness). Also on the shared meanings and norms.</td>
</tr>
<tr>
<td>Social capital skills</td>
<td>Baron and Markman 2000; Gary, 2004; Higgins, 2001; Thomas and Kram, 1988</td>
<td>Team resources generated communication and social skills. Mentors such as incubator managers commonly occupy specific trust positions.</td>
</tr>
<tr>
<td>Organisational communication</td>
<td>Krone, Jablin and Putnam 1987; Ogorek, 2003; Senge, 1990 Schein; Shockley-Zalabak 1999; Timm and Stead, 1996</td>
<td>Communication is the very process through which organizations are created. Small team and personal relationship development is about developing openness and trust.</td>
</tr>
</tbody>
</table>
2.19 Gaps and challenges in incubation research

Even though young in existence, an already significant body of incubation research has developed in the years since the first incubator was opened in the late fifties. However, notwithstanding the growing amount of incubation literature there remain a number of gaps and challenges.

First, the literature is populated with a confusing nomenclature referring to incubation and incubators, with no concerted attempt to clarify usage of the words. In recognition of this confusion the researcher has defined a nomenclature suitable to clarifying the situation (see 2.0 Introduction).

Second, a variety of definitions and explanations referring to terms, scope, boundaries and the purpose of incubation and incubators exists, again creating a confusing variety of classifications and typologies, with models meaning the same thing called differently. This thesis discusses a high-level distinction that divides the models into three categories based on profit motivation and distribution; for-profit, hybrid and not-for-profit incubators. This is followed by a sub-division based on incubator attributes focussing on market niche or functionality, which is a work-in-progress.

Third, the not-for-profit status of incubators and their associated challenges have not been sufficiently acknowledged, although statements of the problem have been alluded to by workers as long ago as Allen and McCluskey (1990), but no-one appears to have followed it up. This is a great oversight, as the majority of incubators worldwide are not-for-profit and struggle under the continuous pressure of how to become commercially viable, resulting in confusion between motivation for the endeavour and the criteria by which performance is measured. There is an even greater lack of empirical research with more studies needed in this area, even though real data may be difficult to collect. These dilemmas are addressed in this thesis.

Fourth and related to the third, measuring the performance and impacts of incubation is problematic. This problem is multi-layered, not least relating to the range of data required including a non-incubated control group to address questions such as: “Is there any difference between the survival rate of non-incubatees and
incubatees?”. The big-picture socio-economic impact may be subtle and hard to define as well as the complication of the long time-scale required for impact to be discernible. There may be a bias whereby success stories are easy to gather during incubator visits, whereas data on failed businesses within the incubator environment is difficult to collect, with negative data potentially putting incubator funding in danger.

Fifth, incubator management studies are limited, with no clear understanding about the role of incubator management. Researchers have not systematically examined the relationship between incubator design and development, management and economic impacts (Weinberg et al, 1991). There is a gap in the literature with regards to management styles, management roles and management characteristics necessary to successfully develop and run an incubator. Further, with few exceptions, “incubator management studies have been conducted without a conceptual analytic framework” (Weinberg et al, 1991: 149) – a short-coming that this thesis does not have.

Last, incubator research is still a-theoretical (Hackett and Dilts, 2004a; O’Neal, 2005. If incubation research is to advance - which is recommended here given the vast growth of the phenomenon - attention must be paid to the ‘who’ and ‘how’ as well as the ‘why’ and ‘what’ of incubation.

2.20 Specific challenges of Australian incubation

The gaps in literature in the Australian context are the same, only more-so because studies are scarce, with few concept papers, few comparisons between different incubator models and only a small number of independent consultants’ surveys on incubator performance and clients’ satisfaction with business incubator services (Bhabra-Remedios and Cornelius, 2003; Burnett and McMurray, 2004; Burnett and Yamin, 2004, 2005; Walker, 2005; Abduh et. al., 2007).

The gap relating to incubator performance measurement in Australia is seen as perhaps most important because the lack of reliable analysis could retard growth if not threaten the phenomenon of incubation itself as a potentially viable force for
socio-economic development. The gap relating to incubator management perspectives in the Australian literature is nearly as important because to develop and run an incubator, incubator management needs to i) have an understanding of how to develop and build new business organisations and ii) guide and mentor the start-up entrepreneurs who are dealing with their own plethora of teething problems, iii) have the skills to negotiate with all stakeholders including public and private sector fund providers, internal tenant and external businesses and the wider community and iv) perform all of these functions well as they feed directly into the performance of the incubator itself - truly a person/team requiring extraordinary talents.

### 2.21 Summary

The existing literature on incubation was exposed and contrasted, defining research problems and gaps. A useful classification was derived from studies on incubation models with the impact of incubation on the local economy and community highlighted. The literature review was multi-disciplinary in approach since the extant knowledge within the incubation literature alone was considered inadequate to position this work.

Sections two and three identified elements of entrepreneurship and social capital which were considered vital components for the creation of business incubators from an organisational and managerial perspective. Literature on entrepreneurial orientation and characteristics and social entrepreneurship including social enterprise was reviewed. Also, the constructs of social capital, such as community building and networks were included to introduce the broader context elements of the incubation phenomenon. The focus of the next chapter is on the choice of methodology and methods of enquiry adopted.
CHAPTER 3.
RESEARCH METHODOLOGY

3.0 Introduction

Chapter one introduced and discussed the central research problem and chapter two reviewed the literature around it, emphasizing the need for empirical research that explains the split role of the incubator manager. Incubator managers as was found (e.g. Abetti, 2004) faced the challenge of having to support struggling incubator tenants, while at the same time having to build and manage a commercially viable incubators. Chapter one presented a set of research questions addressing this problem, with a conceptual framework to help approach the investigation. The first part of this third chapter discusses the research setting and philosophical base for the research undertaken. The second part describes the research framework and development of the research questions, the research process, instrumentation, case selection, data collection and ethical procedures.

3.1 Philosophically framing the research

The core issue for researchers is not related to choice of methodologies but related to acknowledgement of the research paradigms (Neergaard, 2007). As aspects of research rest upon philosophical theories and on how people develop knowledge, paradigms thus influence the ways in which the data is collected and analysed (Travers, 2001). Methodology is only one of three elements of the paradigm that researchers either explicitly or implicitly work within. The other two elements of a paradigm are ontology and epistemology (Guba and Lincoln, 1994). This chapter reviews the paradigms reflected in the research, in particular holistic and realistic principles. These are introduced in Figure 3.1 as a prelude to explain and justify the use of research methods, case studies, structured and semi-structured interviews and grounded theory as the methodology of analysis using analysis software.
In general, the two central but opposite research paradigms in social sciences and business studies are the positivist and critical interpretive approach (Charmaz, 2006; Tesch, 1990; Ticehurst and Veal, 2000). In Figure 3.1 they are positioned at either end of the scale ranging from ‘inter-subjective meaning’ approaches to ‘objective tests through hypothetical deductions’. By discussing both ends of the scale a balanced platform is provided from which the holistic paradigms used in this thesis can be positioned and visualized.

3.1.1 Positivistic and critical interpretive principles

Quantitative research based on positivist principles has dominated social sciences and business research for a long time. This type of research has the propensity to use experienced and proven facts, rather than subjective ideas and interpretations coming from the mind. It adheres to principles of objectivity, generality and the replication and falsification of competing hypotheses and theories (Charmaz, 2006). Positivists look for operational definitions of concepts from which to logically deduce hypotheses. They then proceed to test these using the scientific method of systematic observation and the conducting of replicable experiments, followed by the use of statistical analysis to obtain results (Cavana et al, 2001; Charmaz, 2006; Davidsson, 2002; Saunders, Lewis and Thornhill, 2000). The data analysis is set out to be unbiased and neutral. In order to promote neutrality, many
studies make use of measuring instruments, predominantly 5 point Likert scales, (e.g. measure opinions and attitudes) and convert these into numbers. The numbers are subsequently plugged into statistical formulas yielding other numbers to examine whether levels of predicted relationships or hypotheses hold true or not in large sets of samples or cases (Snyder, 1988; Tesch, 1990).

On the other end of the scale, the ‘critical interpretive’ paradigm holds that the world is socially constructed and subjective and that there is no reality outside of people’s perspectives. Its very existence is in the eye of the beholder. Seen in this light, researchers are part of the research process uncovering meanings and understandings from a broad range of interrelationships within the researched phenomenon. It also places more reliance on the people being studied. Some other expressions of this perspective are ethnographic, inductive or phenomenological research. The aim is to interpret the actions or opinions of research participants in a personal manner and in the light of richly detailed cultural, social and historical context (Campbell, 2003; Snyder, 1988; Ticehurst and Veal, 2000: 20/21).

### 3.1.2 Holistic research

Holistic principles are positioned closer to the latter than the former paradigm. The term ‘holistic’ refers to a philosophical position offered by Hansen (1995) as: i) wholes cannot be taken apart, ii) every apparent whole can be understood only in the context of the larger whole containing it, and iii) a whole is more than the sum of its parts. Holism can be traced back to the word ‘holos’, meaning total or all and is based on the idea that all the properties of a given system be it biological, chemical, social, economic or mental cannot be determined or explained by its component parts alone (Lawson-Tancred, 1998). Instead, the system as a whole determines in an important way how the parts behave. This general principle of holism was already concisely summarized by Aristotle in the Metaphysics as ‘The whole is more than the sum of its parts’ (Lawson-Tancred, 1998).

Holism is closely linked to ‘systems thinking’ theory (‘systema’ = whole) which views the world as an operational ‘system’ and outlines the human tendency to
include all attributes within the system, thus like holism producing a very rich overall picture (Ackoff, 1994; Von Bertalanffy, 1968; Boulding; 2004). Senge (1990) described systems thinking as:

“...a discipline for seeing wholes... seeing interrelationships rather than things... and seeing patterns of change rather than static snapshots” (Senge, 1990: 68).

Both holism and systems thinking are thereby different from the tendency to see only a narrow one-sided specialisation which can be described as a single viewpoint (i.e. reductionism) and is closely connected with positivism.

In the field of entrepreneurship, holism is a good paradigm to use, as entrepreneurship is often defined as holistic, complex and non-linear, dealing with unstable models, many variables, sudden changes and discontinuities (Bygrave (1989, 2007; Bygrave and Hofer, 1991). This behaviour is often problematic for positivistic scientific methods, which systematically isolate parts from the whole and look for large scale linear repetition. Also, recently and in line with this thesis, it has been argued that like entrepreneurship, incubation research also requires a holistic approach “where the goals of the incubators are taken into account and the performance of different incubators are put in relation to their incubator models” (Bergek and Norrman, 2008: 20).

This thesis thus follows a line of thought that suggests that incubation and entrepreneurship cannot be viewed in isolation, in the sense that one cannot separate incubator managers or entrepreneurs from their actions and their businesses. This view is supported by other researchers who suggest that in a start-up firm, the entrepreneur and the company are often intertwined (Bygrave (1989; Campbell; 2003; Gartner, 1989; Gerber, 1995). Holistic views have been similarly adopted by a number of researchers in the social capital arena, who are of the opinion that people do not operate in a vacuum, but function within complex social systems (Bourdieu, 1983; Coleman, 1988; Van der Sijde et al, 2004). In this study, the incubator tenants, managers and teams are viewed as part of the incubator process and the incubator is viewed as part of the local community which in turn is part of the larger (global) society.
However, to purely conduct research from a holistic perspective can pose a problem. By accepting the incubator manager or entrepreneur as part of the whole, there could be a difficulty in selecting such person as a separate viable or reliable unit of analysis. Some researchers have queried how far - if at all - individuals can be removed from the systems in which they operate (Bygrave, 1989; Campbell, 2003; Hindle, 2004). It is suggested in this study, that they can, as long as the analysis takes into account some of the complexities of a person’s surroundings. One can study one piece of a puzzle by its form, colour or shape, as long as one is also aware of where it fits into the bigger picture and in addition, that without it, the picture is not complete. A research paradigm that takes these views into account is ‘requisite’ holism.

3.1.3 Requisite holism

Where systems theory and holism may be overly focused on the whole, making it difficult to research independent or dependent variables, ‘requisite’ holism posits that there is a middle way. Mulej and Kajzer (1998), elaborated upon by Rebernik and Mulej (2000) introduced this concept as: ‘The Law of Requisite Holism’. By only using some essential reductionist and system thinking notions, the researchers attempt to interpret a whole in sets, and so define the boundaries within and around it.

Rebernik and Mulej’s (2000) argument and the viewpoint adopted by the author is that total holism is an exaggeration and cannot be practically achieved. The absence of limitation in holism precludes a sound basis for action and practical findings, while at the other end of the scale, positivism and reductionism are also rather limited by not considering other viewpoints. As an alternative, Rebernik and Mulej (2000: 1129-1130) introduce a dialectic system that only takes in the essential viewpoints. For example, the entrepreneur is indivisibly part of a system or whole, but on an individual level, able to focus very closely on the human and personal aspects of e.g. the whole entrepreneurial process. Instead of providing one
definition, Rebernik and Mulej (2000) explain their theory in a series of statements, in which requisite holism is a system (not a set) of attributes:

“The systemic attributes cover attributes which the entire whole has, but parts do not. They can be found by examination of the entire whole as a whole”.

“The systematic attributes cover attributes which the individual components of the entire whole have, but not the entire whole. They can be found by examination of the individual parts as separate, smaller wholes”.

“The interdependence between individual parts causes their mutual impacts, relations, sometimes expressed as feedback. It leads to synergetic, emerging attributes. They make the entire whole different from its individual parts as separate, smaller wholes” (Rebernik and Mulej, 2000: 1130).

Overall, the consideration of the whole, its parts, and their relations, as well as their environment (s) provides individual perspectives without losing the big picture. The goal of holistic study is not to look at ‘everything’. Instead it is to make a decision about what is relevant to a study and what is not and helps to know and understand why choices are made. Biases and interests can affect the choice of what is likely to be included and excluded (Wilby, 2005). This does not mean that research undertaken based on holistic principles is less rigorous. On the contrary, being aware of the whole as well as the different parts, while analysing data from different sets of people is demanding as interviews contain thousands of words, expressions and paragraphs for which interpretations and meanings have to be sought. The principles of requisite holism have thus been followed throughout this study, from the choosing of incubators and unit of analysis through to the analysis and the discussion of the research questions in relation to the various findings.

In addition to following the holistic paradigm, other ontological and epistemological considerations needed to be taken into account by the researcher and these are views about the nature of reality. Neergaard (1999) argues, that when conducting research, researchers are confronted by a number of personal questions relating to their own belief systems, and thus they have to ask themselves whether they believe that they are part of a fundamental truth; an existence (ontology), and
also whether they believe that there is an external reality or that the world is merely a social construction (epistemology).

3.1.4 Ontology and epistemology

Ontology can be defined as the theory or study of ‘being’ and as such refers to the basic characteristics of all reality. Though the term was first coined in the 17th century, ontology is synonymous with *metaphysics* or the ‘first philosophy’, defined as such by Aristotle in the 4th century BC (Frolov, 1984). The term ‘ontology’ thus has a long history in philosophy and refers to the ultimate subject; that of existence. It is often confused with epistemology, which is about knowledge and knowing. Epistemology stems from the Greek episteme meaning ‘knowledge’, and logos, meaning ‘theory’; in other words, the theory of knowledge, which is the area of philosophy that deals with the possibility, origins, nature, and extent of human knowledge (Cooper, Mohanty and Sosa, 2001). The two terms thus inform about ‘being in’ and ‘knowing about’ this world. Using these principles, Mulej (2007) combined requisite holism with realism perspectives to first make sense of one’s place in the world and second to acknowledge the knowledge of life ‘out there’ as realism adheres to the notion that there *is* an external world or a system outside of the researcher’s mind. This research follows these views.

3.1.5 Critical realism

In the literature, realism has been divided into empirical realism and critical realism (Neergaard, 1999). Sobh and Perry (2006) explain empirical realism by suggesting that there is an external reality consisting of structures that are themselves sets of interrelated objects, and of mechanisms through which those objects interact. For example, a buyer and a seller are objects that interact in an ‘outside’ environment. Their interaction is not merely the creation of someone’s imagination, but takes place in the market place, dictating prices, demands and needs. This notion is also echoed by Gummesson (2002) who suggests that a company’s external environment is different and at least as if not more important then the internal. In this light the incubator and incubator tenants could also be seen as individual
objects interacting with each other in the incubator environment and interacting externally with the local community.

Bhaskar (1979) took the realism paradigm further and developed a ontological variation known as ‘critical’ realism asserting that there is reality out there, which is waiting to be discovered and that this reality is multi-layered. The world is composed of real objects, but not everything about them can be directly observed and apprehended as they abide by underlying factors that create the events that occur in the actual world (Neergaard, 1999). The central concept of this line of thought is causality, as it is believed that things do not happen of their own volition. Lawson (1994) elaborates on this phenomenon by explaining how the falling of an autumn leaf is governed on a deeper level by real mechanisms such as gravity, aerodynamics and thermal forces. What we observe is the object and the effect on the object, not the mechanisms themselves. Infusing the critical realism paradigm into this study thus leads to the philosophical stance that the external reality is ‘probably’ true, rather than ‘completely’ true as is asserted by positivistic researchers (Perry et al, 1999: 18). The paradigm thereby leaves space for probabilities and for exploring the world through ‘discovering’ its reality.

Whereas ontology is concerned with the study of ‘being’ or reality in its most fundamental and comprehensive forms, epistemology tackles the relationship between the researcher and that which is known (Sobh and Perry, 2006). In terms of qualitative research this means explaining the social world by searching for regularities or irregularities and causal relationships (Neergaard, 1999). The methodology chosen for the research thus reflect the researcher’s ontological and epistemological disposition and it is considered that both the holistic and realist principles make an ideal foundation for this study as they can incorporate structures that include interaction with the real world, without losing site of connections. In addition, the holistic and realist perspectives are both methodologically pluralistic, lending themselves for multiple case studies and triangulation (Neergaard, 1999; Mulej, 2007). In summary, the philosophical framework for this thesis rests on a combination of variants described as the dialectical system of holism/realism.
3.2 Research design – case study

The research design, in line with holistic and critical realism paradigms, makes use of case studies. This choice was based also on the personal nature of the research questions and the absence of rich data addressing the research problem in the literature.

“Case study research is a research strategy which focuses on understanding the dynamics present within (single) settings” (Eisenhart, 1989: 534).

In practical terms, case studies refer to the investigation of a phenomenon within its natural setting, by collecting detailed information about particular issues, frequently including the accounts of subjects (Eisenhart, 1989; Denzin and Lincoln, 2000; Glaser and Strauss, 1965; Yin, 2003). Whereas random surveys and statistical analysis can provide a general insights into incubation, it was believed that research involving case studies would provide a better understanding about internal incubator factors.

Barnes, Christensen and Hansen (1994) define case studies further as studies of situations that are presented in a narrative form, which are essential to an analysis in a specific situation. As a distinctive form of empirical inquiry, case studies are thus widely used in practice-orientated fields such as public policy, economics, management and entrepreneurship, as they provide great insights into the functioning of people in their environments (Hamel, 1992).

3.2.1 Single or multiple cases

Case study research may involve single or multiple cases (Yin, 2003), although multiple cases are generally regarded as more robust, providing observation and analysis of a phenomenon in several settings. However there are successful single case studies that provide general insights. For example, the earlier mentioned Coleman (1988) study by which a small Jewish community operates under a specific trust code, and Whyte’s (1955) classic ‘Street Corner Society’ which covered cultural and sub-cultural behaviour of individuals within the social structure of their neighbourhood. Some researchers consider multiple case studies
to be a different methodology altogether (e.g. Eckstein, 1975). Based on Whyte’s example however, Yin (2003) considers single and multiple case studies to be variants of one methodological case study framework:

“…here, the emphasis is on an all encompassed method covering logic of design, data collection techniques and specific approaches to analysis, making the case study itself a comprehensive research strategy, a system instead of a group of individuals (Yin, 2003: 13).

Similar to other methods, Yin’s (2003) case ‘system’ framework can be used as a template. Each case can be seen as a new experiment, with multiple cases being seen as multiple experiments, which can then be used for ‘analytical generalization’ purposes (Yin, 2003: 32). If two or more cases are shown to support the same theory, replication may be claimed and empirical results may be considered more potent. Yin’s insights were built on in this study by choosing a set of not-for-profit Australian cases and a set of for-profit European cases.

### 3.2.2 Exploratory and descriptive strategies

Research conducted in the realm of realism often consists of two stages. The first stage can be relatively exploratory, with the literature step-by-step enfolding around sequential interview data. The second phase can then move on to be more directive and descriptive (Shavelson and Townes, 2002; Sobh and Perry, 2006). Specifically, Yin (2003) shows how some of the best case studies have been both exploratory and descriptive and puts forward the argument that case studies should have inclusive views. As the aim of this research was to expand on the existing information available and subsequently build new theoretical propositions from the various rich sources of interview data, this thesis thus followed Yin’s (2003) notions. By selecting three case organisations at the very beginning of the research, the study further expanded by adding more cases over the years including a fourth case in Australia and six new cases in Europe as the literature review and the research progressed.

Evidently, case studies are said to be particularly suitable for ‘why’ and ‘how’ questions and embarking upon new research phenomena that concern
contemporary events (Eisenhardt, 1989). Incubation is very contemporary and so is this research, investigating ‘why’ there is a conflict between the input and output parameters of the not-for-profit incubators and the ‘how’ to relieve the pressure under which BI managers seem to live. Given the limited empirical research undertaken in Australia regarding the research objectives and specific problems raised, and the research methodology chosen to address them, this thesis may be classified as an exploratory and descriptive study (Hussey and Hussey, 1997; Sekaran, 2003).

3.2.3 Multi method and mixed method analysis

Although qualitative research has no theory or paradigm that is distinctly its own, it involves interpretive and naturalistic approaches to data collection and analysis and is often multi-method in its focus and analysis (Mâkelâ and Turcan, 2007). Some small business researchers question the value of attempts at such mixed methodologies, for example Curran and Blackburn (2001, p. 123) seem to doubt the usefulness of what they term “pluralism as a solution to the debate between the two paradigms”. By contrast, a growing number of researchers share the conception that qualitative and quantitative methods should be viewed as complementary rather than rival camps and underscore the desirability of mixing methods. They suggest that the use of different research approaches and methods within a single study can overcome the bias and sterility of a single-method approach (e.g. Hussey and Hussey, 1997; Jick, 1979; 2006; Neergaard and Marsden, 2004; Yin, 2003).

Campbell and Fiske (1959) were the first to come up with the idea of ‘multiple operationism’. They argued that more than one method should be used in the whole validation process of empirical research to ensure that the variance would reflect the trait and not the method (Bouchard, 1976). Multi-methods became known under the term ‘triangulation’ (Bazeley, 2004; Denzin, 1978; Jick, 1979; Webb, Campbell, Schwartz and Sechrest, 1966) and were defined as:

“the combination of methodologies in the study of the same phenomenon”

(Denzin 1978: 291).
The term originated in military strategy where multiple geometric or geographic reference points were used to locate an object’s exact position, giving it more accuracy (Smith, 1975). Triangulation can integrate multiple research techniques like surveys combined with observation or interviews, or using documentation and archival materials to compliment primary data. It can also be established by using different samples such as managers versus employees:

“It can be something different than scaling, reliability and convergent validation. It can also capture more complete, holistic and contextual portrayal of the unit (s) under study ..... thus the multiple measures may also uncover some unique variance which otherwise may have been neglected by single method” (Jick, 1979: 603).

Specifically in holistic and realistic research, triangulation provides a family of answers capturing the complex internal and external reality (Pawson and Tilley, 1997). The notion of triangulation has become common in many research studies (e.g. Bryman, 1989; Campbell, 2003; Eisenhardt 1989; Neergaard and Marsden, 2004; Yin, 2003). The usage of it however, is not without challenges, for it requires knowledge of different methods and it also requires the researcher to demonstrate a combination of techniques. Even though multi methods validate and enhance outcomes, researchers complain that few studies in the literature have provided a prescription as to how these combinations are practically performed and accomplished, in other words, how their ‘technique’ works (Jick, 1979; Creswell, 1994, 2002; Curral et al, 1999). Care was therefore taken that the chosen methods in this study complemented each other and not showed the same weaknesses. Some examples of good practice will be discussed briefly.

Ancona and Caldwell (1992) used the findings of qualitative interview data to generate hypotheses for quantitative research, describing internal group processes. Bales (1988) and Currall, Hammer, Bagget and Doniger (1999) also successfully combined qualitative participant observation data with quantitative statistical techniques to empirically evaluate hypotheses. In addition, in Curral et al’s (1999) study quantification was achieved by using content analysis to code the verbal behaviours of the participants. The authors then tested their hypotheses through
conducting uni-variate, bi-variate and multi-variate analyses and concluded that the study’s use of qualitative and quantitative information promoted both ‘discovery’ (theory development) and ‘justification’ (theory evaluation) and facilitated a “discovery-justification-discovery cycle” (Currall et al, 1999: 34).

This thesis follows a similar line, be it in the opposite direction by starting with a number of structured interviews using questionnaires to generate themes and guidelines for more qualitative semi-structured interviews. Semi-quantitative analysis thus forms the base for the gathering of qualitative data. This will be further discussed in the second part of this chapter.

3.3 Method of analysis - grounded theory

Even though this research is of an explorative and descriptive nature, there also is a rigorous commitment to actual theory contribution. This is why grounded theory is used as a method of analysis. This method is based on Glaser and Strauss’ (1967) discovery of grounded theory, which was aimed to provide insights on how to generate new theory from research that was grounded in data rather than through the deduction of hypotheses from existing theories. Glaser (1992) defines grounded theory as:

“...a general methodology of analysis linked with data collection that uses a systematically applied set of methods to generate an inductive theory about a substantive area” (Glaser, 1992: 16).

Grounded theory involves data that are systematically collected from field observations, interviews, meetings and also from secondary documentation found on websites or reports (Douglas, 2003). It seeks to methodically understand the context of that which is being studied; investigating an organisation, its managers or other actors, including their interactions and interrelationships. It thus conveys a conceptual understanding of issues in and around people and their direct environment (van Maanen, 1979).

Following their joint publication of 1967, Glaser (1992) individually went on to emphasise the necessity for the researcher to be more creative and less procedural
in methodology, while Strauss and Corbin (1998) steered slightly towards a more linear method. However, the end result is similar that through the coding and analysis of interview and observational data, theory that is ‘grounded’ in these data, emerges. Due to the large amount of data, this thesis has made use of the more linear method by using computer software for the coding and analysis procedure.

It should be noted here that an important feature of grounded theory is theoretical sensitivity (Glaser, 1978), which refers to the personal qualities of the researcher and relates to understanding the meaning and subtlety of data. It has been described by Glaser (1978) as the process of developing the insight with which a researcher comes to the research situation. Such insight should be conceptual rather than concrete. It is often referred to as a creative aspect of grounded theory and involves the researcher working in the area to obtain experience and expertise. By gaining theoretical sensitivity the researcher will then be able to recognise important data and formulate conceptually dense theory (Glaser, 1978). In this case the researcher did not personally manage a physical incubator but has built and managed a fully funded virtual incubator as well as gained incubator experiences through being physically based in one for three years as discussed in the introductory chapter of this thesis. The researcher thus gained both indirect experience and expertise while not directly experiencing the dilemmas that constitute the research questions, assuring the theoretical sensitivity required to code, process and analyse the data as well as a fundamental understanding about the workings of an incubator. The implementation of grounded theory as methodology of analysis will be discussed in detail in the next chapter covering the data analysis process.

Summary

In summary, the chosen research methods conform to the previous methodological discussions and the ontological and epistemological reflections in that it allows the analysis of interactions between smaller wholes occurring in an external reality to reveal insights into the underlying nature of those interactions. This is believed to be necessary, as the research took place in an interconnected but also dynamic environment that is interacting with ‘inside’ and ‘outside’ worlds.
3.4 The research framework

Figure 3.2 - The Research Framework

Figure 3.2 shows the overall research framework as it was developed and implemented. It shows the initial and major research phase and illustrates the position of cross-validation to enhance reliability and validity in the analysis and interpretation. Following the initial literature review phase (top green section of the
framework), during the first year of the research (the blue section) face to face structured interviews were conducted using an opinion-seeking questionnaire which explored incubator experiences from a tenant point of view. In addition, during that year, the first orientation semi-structured interviews with the three Melbourne incubator managers took place. The obtaining of general information from the incubator managers and the incubator tenants on the incubation experience led to recognition of the existence of EO dimensions and elements of social capital, which in turn led to further investigation of the literature.

From the insights gained in the first phase and insights provided by additional readings, deeper meaning was sought through the undertaking of a series of face to face semi-structured interviews, during the second and third year of the research (pink section of the framework) with the incubator managers providing detailed information about levels of EO, their business relationships with tenants and incubator board and revealing how they managed relations with their sponsors. In the third year interviews were also conducted in Portugal, England and the Netherlands to make up for the lack of for-profit incubators in Australia. The aim of these visits was to investigate for-profit incubator models and gain an insight into the role of private sector investment and shareholding and the perspective of the BI managers. Being explorative research, the field research also led to viewing business incubation in a broader light, observing and learning how incubation played a role in the development of dynamic entrepreneurial communities. This moved the study to a sociologically ‘involved’ and holistic perspective. Mintzberg explains this beautifully:

“...while systemic (quantitative) data create the foundation for our theories, it is the anecdotal (qualitative) data that enable us to do the building. Theory building seems to require rich description, the richness that comes from anecdote. We uncover all kinds of relationships in our 'hard' data, but it is only through the use of this 'soft' data, that we are able to explain them and explanation is of course the purpose of research” (Mintzberg, 1979: 587).

It is important to note while discussing the research framework, that even though the literature review has been collated into one chapter (chapter two) for ease of
reading, the research process itself followed the cyclical nature of grounded theory perspectives (Glaser and Strauss, 1967; Strauss and Corbin, 1998): “as an iterative process of considering and comparing earlier literature, its data and the emerging theory” (Mâkelâ and Turcan, 2007: 123). This method allowed the literature review to grow as the research progressed. The research cycle is illustrated in Figure 3.3.

As per the grounded theory method, the research process started with the reviewing of the predominantly incubation literature and a number of related entrepreneurship and social capital studies. These were used to define the research question(s) and potential research constructs. The research then proceeded to sampling (Mâkelâ and Turcan, 2007). Once the first set of cycles was finished, a second cycle began with the reviewing of more literature on entrepreneurial orientation, social ventures, and social capital on a broader scale. These then became the major focus of the research and the second round of sampling. This cross-validation method thus encompassed the building of consecutive cycles, from theory to practice and from practice back to theory. The final grounded theory cycle took place during and after the analysis stage in which the most current studies in the literature on the
topic were ‘checked’ for new insights. The analysis cycle then moved between the three elements to compare i) existing theory, ii) research data and iii) the emerging theory in the analysis, in order to create new theory.

3.5 The development of the research questions

Before discussing the structured and semi-structured interviews this is an opportune moment to restate and reflect on the research questions that guided them. As mentioned in the introduction of this thesis, motivation for the study grew while the researcher was housed in a business incubator for 1999, 2000 and 2001, managing a virtual incubator program. The real-life challenges of the tenants and incubator managers were inspirational to witness and prompted much thought on how to resolve them. The initial focus of the literature review was therefore on incubation only and the phase one surveys were primarily focussed on the tenants’ perspective on incubators and incubation. It seemed logical that they were most able to judge the strengths and weaknesses of the endeavour. During these interviews and with further reading however, bigger questions arose around the interactions of the higher level stakeholders as the words of Allen and McCluskey (1990), Rice and Abetti (1996) and Abetti (2004) on the difficult and split role of the incubator manager resonated with the researchers’ own experiences. Although direct research on these issues appeared to constitute a gap in the literature on incubation and its impact, these researchers made passing comments that capture some of the apparently inherent dilemmas that seemed to be wrought by the very nature of the incubation phenomenon.

They also acknowledged two characteristics of most business incubation attempts that are fundamental to this thesis; that the majority of business incubators are non-profit (not-for-profit) and that they have social as well as financial objectives. These insights embedded in the literature led to a switch in focus of this research and to higher level stakeholders. Building on the Abetti (2004) formulated research problem, two main research questions worded to suit the Australian circumstance were termed:
- What are the parameters for optimum sponsorship and funding of Australian not-for-profit incubators?

- What are the main challenges faced by BI managers in Australian not-for-profit incubators?

Through the literature on entrepreneurial orientation and through holistically viewing the incubator as a social enterprise within society however, it soon became apparent that the answer to the second question lay to a large extent in developing a greater understanding of the first. That is, only by determining the actual circumstances involved in and surrounding the entrepreneurial (incubation) process in not-for-profit incubators can an attempt be made to determine an optimum model for funding. The next phase of interviews was therefore targeted to the incubator managers. They, like their tenants were required to have the skills to survive and grow a business and provide all that was necessary to optimise the survival and growth of their tenants, simultaneously dealing with the sponsors above them and the community around them. The sub research questions became thus as follows:

A.1 What are the financial challenges faced by not-for-profit incubator managers?

A.2 What are the social challenges faced by not-for-profit incubator managers?

A.3 What is the optimum balance between financial and social objectives of not-for-profit incubators?

A.4 How can the not-for-profit incubator manager achieve the balance between financial and social objectives?

With this understanding, the second part of the research problem could be addressed:
B. What are the parameters for optimum sponsorship and funding of Australian not-for-profit incubators?

3.6 Structured interview model

Within the structured interviews, the researcher opted for the raising of questions rather than the testing of hypotheses. Hypotheses require only a negative or affirmative response, whereas research questions, are of a more complex and deeper nature. Questions are often influenced by context and have more than one answer depending on perspective. They thereby probe deeper into the real causes and effects of situations, rather finding an agreement or disagreement with an already taken position. The structured interviews (phase one) were guided by direct questions in the form of a short questionnaire, and the semi-structured interviews (phase two) were guided by questions representing loose themes in relation to financial and social objectives and challenges.

3.6.1 The development of the questionnaire

It is worthwhile to note that ‘qualitative research’ has come to mean many kinds of inquiry, including efforts that may include statistical data analysis. For instance, a grounded theory analysis can employ analysis of cases and it can also be based on data collected using a questionnaire and spreadsheets to generate findings (Mâkelä and Turcan, 2007).

The design of questionnaires is covered widely in methodology literature and important elements identified are: careful wording, the use of categorisation, the methods of scaling and coding of the responses and the overall quality of appearance (Cavana, Delahaye and Sekaran, 2001; deVaus 1996; Dillman, 1978; Saunders et al, 2000; Silverman 2000; Ticehurst and Veal, 2000). This was taken into account along with the purpose of each question in the questionnaire needing to consider an element of the incubator experience and/or to cover some entrepreneurial or social capital aspects such as innovation, risk taking or the quality of the relationship with the incubator manager.
The questions needed to be clear and unambiguous, endeavouring to give the clearest answer possible. A mix of open and closed questions was used. Closed ones, because they are beneficial for the researcher to code and open-ended ones to offer some depth of discussion, such as asking the respondents what they liked about the incubator they were housed in and what they disliked.

It was recognized during the first phase of the literature review that for businesses to operate successfully there needs to be some form of entrepreneurial orientation to help the organisation build social capital and perform. Hence, in order to identify the fundamental nature of the incubator experience and address these potentially important sociological elements and their impact on the incubator process and incubator performance the questionnaire consisted of the following parts;

**Part A**: Demographics - Following an extensive international review of the incubation of start-up firms conducted by the European Commission Enterprise Directorate-General (2002), the demographic items were generated to address tenant structure, age of firm, industry, age of owner, how long the owner had been based in the incubator, the owner’s gender and number of staff. These items were pre-tested on three tenants to determine whether the items were appropriate and whether there were any additional items that required inclusion. The pre-test generated minor ‘language’ modifications however the item content remained unchanged.

**Part B**: The incubator experience (Hackett and Dilts, 2004 and others). This part was focused on exploring attitudes towards the impact of the incubator on the success of the tenant business. Questionnaire items were directly related to the incubator experience by asking:

1. Why did you choose to move into a business incubator?
2. What do you think are the advantages for your business being based in a business incubator?
3. What do you think are the disadvantages for your business being based in a business incubator?
4. What types of services are offered in the incubator?
5. Are you happy with these services?

Part C: Management styles in the incubator
During the first stage of the research cycle, questions on management style were incorporated and later recognised as comprising the main components of entrepreneurial orientation; innovativeness, in the form of entrepreneurial and innovation practices in the workplace, risk-taking at the beginning of new ventures and autonomy by making the decision to start and run a business.

Risk-taking (Frese and Pluddemann, 1993; Lumpkin and Dess, 1996)
This area was explored focusing on risk management, uncertainty and change. Questions related to the willingness to take risks, the minimization of risks and the acceptance of change.
1. Do you have shareholders? If so, what is their role and how much are they involved in your business?
2. Are you a risk taker? Yes/ No. If so, when and how do you take risks?
3. Do you welcome uncertainty in your business?
4. How do you handle loans and risks in your business?

Innovation practices (Patchen, 1965; Robbins et al, 2003).
This section was explored focussing on the willingness and importance to innovate. Questions explored levels and ways of innovativeness, motivation, creativity and new business opportunities.
1. Do you see yourself as innovative? Yes / No. If so, how do you feel you are innovative in your business?
2. Does the incubator environment trigger creative thinking?
3. Are there opportunities created in the incubator to learn and innovate? How?
Autonomy in starting and running a business (Greenberger and Sexton, 1988)
This area was explored focusing on being in control of one’s destiny.
Questions related to decision making, pursuing business goals and taking responsibility.
1. Why do you want to run your own business?
2. How do you keep control of your business?

Part D: Social capital development in the incubator
The social capital part of the questionnaire was aimed at obtaining information about the strength of social capital existing in the incubator. They were divided as follows:

Organisational communication (Krone, Jablin and Putnam 1987; Timm and Steed, 1996).
1. What type of communication channels do you use in your business?
2. How do you share information with others in the incubator?
3. Where do you share information with other businesses?

Networks (Higgins and Kram, 2001).
1. How often do you network?
2. Who do you network with?
3. What topics do you discuss during networking meetings?
4. How important is networking for the success of your business?
5. How has networking helped your business?

Relationship manager-tenant (Higgins and Kram, 2001)
1. How well do you know other tenants?
2. How often do you speak to the incubator manager about your business?
3. How important is their advice to you with regards to your business?

The interview data was thus intended to provide dialogue, rather than information on the usage of scales or closed questions. This format allowed in research phase two for insights about levels of EO and SC existent in the three Melbourne
incubators from a tenant perspective (see appendix 1 for the questionnaire example).

3.6.2 Interview technique

The questionnaire was an interviewer-respondent completion, where the researcher wrote down short answers to the open questions dictated by the respondent during the interview. Whereas Ticehurst and Veal (2000) note that this method takes a lot more time on the part of the interviewer, surveying on-site had the advantage that there was an opportunity to observe the working business within the specific incubator environment as well as obtaining an immediate response more likely to be spontaneous and untailored. The primary reason for this questionnaire technique was the accessibility to participants with a view to being able to conduct semi-structured interviews at a later stage. A disadvantage or limitation was that the respondent was not in an anonymous position at the time of the questionnaire, making it necessary to discuss trust; privacy and confidentiality with every participant before research took place in order for the participant not to feel intimidated by the researcher’s presence in the workplace (see section 3.10). On the other hand, face-to-face interviews have the potential to enhance the richness of the data. Whether a research participant fills in a questionnaire anonymously or not, under both circumstances:

'Questionnaire surveys rely on information given by respondents and what participants say, depends on their own powers of recall, their honesty and of course on the type of questions developed by the researcher' (Ticehurst and Veal 2000: 136).

Semi-structured interviews are by their nature quite different from structured interviews. During structured interviews, questions are steered and answers written down or ticked off by the researcher. In semi-structured interviews the aim is to collect were aimed at collecting interview data that specifically rely on the interviewees’ own emergent interpretations and meanings, with minimal researcher intervention.
3.7 Semi-structured interview model

Whereas the structured interviews laid the foundation for the research, the semi-structured interviews have provided the dominant source of data for this study. During the last decades, semi-structured interviews have been popularised by German and later UK researchers (Hopf, 2002; Smith, 1995). Widely used as qualitative collection methods, they have been over the years divided into a number of different models. The characteristics that semi-structured methods have in common are that they are all loosely guided or pre-mediated and that they all consist of open questions that are posed in a conversational manner. It helps the researcher to make small encouraging noises during the ‘conversation’ of the interview, and observation also helps the researcher to recognise when something important has been said, although the interviewee should not be biased towards comments that please the interviewer but do not reflect their own perceptions of reality. In these ways, rapport and interview dynamics are assisted through a sharing of concerns. The researcher thereby hopes that questions are answered freely by the interviewee (Flick, 2002). Informational questioning also establishes chronology of the interviewee and: “...subsequent events within that person’s reflections” (Charmaz, 1990: 1167). The phenomenologist could argue here that pre-mediated questions could be seen as restrictive, but not using any boundaries poses the problem that the interviewer continuously must decide which questions need to arise during the interview for the research to be useful and meaningful. This may take the research way of track.

The semi-structured method was thus decided upon as a useful way for the researcher to keep within the boundaries of the research questions. Flick (2002: 74-95) describes a variety of semi-structured interviews from which table 3.1 has been developed to provide an overview.
### Table 3.1 - Overview of Semi-Structured Interview Models

<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Formula</th>
<th>Limitations</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focused interview</td>
<td>Basis for interpreting statistically significant findings</td>
<td>Questions Non-directional (unstructured) Specificity Range Depth</td>
<td>Depth and range depend on researcher’s skills. Subjective views on concrete material such as films in media research</td>
<td>Merton and Kendall, 1946 Oeuter, Agostiani, Kim, and Wibowo, 1996</td>
</tr>
<tr>
<td>Semi-standardised interview</td>
<td>Reconstructing different theories. Theory and hypnotically driven questions During interview theory is reconstructed as per topical area.</td>
<td>Open questions followed by confrontational questions Structure laying technique (SLT) in second interview respondent can restructure answers</td>
<td>Rigid and fastidious with regards to questions. Rules as per theory. Changing of data.</td>
<td>Flick, 1989 Groeben, 1990</td>
</tr>
<tr>
<td>Problem Centred interview</td>
<td>Discussion interview. A guide or short questionnaire together with interviews to support narrative string developed by interviewee. Problem focussed questions</td>
<td>Conversation entry General and specific prompting Ad hoc questions</td>
<td>Problem centring on group discussions, too many problems without focus. Dilemmas between depth and range.</td>
<td>Witzel (1985, 2000) Ruff, 1998</td>
</tr>
<tr>
<td>Expert interview</td>
<td>Content, looking for expert opinion. Range of topics is small.</td>
<td>Researcher tries to involve interviewee as expert, so change of roles. Expert gives a lecture type story on topic</td>
<td>Interviewee is less important as whole person. Exclusion of ‘unproductive’ topics. Researcher needs to have good understanding of topic as well.</td>
<td>Meuser and Nagel, 1991</td>
</tr>
<tr>
<td>Ethnographic interview</td>
<td>Participant observation leading to interview. Friendly conversation, but with request for interview and ethnographic explanation.</td>
<td>Ethnographic, i.e. descriptive modes, structural focus, And contrast questions</td>
<td>Difficult to shape conversations. Less clearly delimited than other interviews.</td>
<td>Spradley, 1979</td>
</tr>
</tbody>
</table>

Source: Developed from concepts discussed by Flick, 2002: 74-95.

### 3.7.1 The problem centred interview (PCI)

Given there was a research problem identified in the literature, the problem centred interview was chosen for the study. The concepts of reliability and validity of any measurement instrument, including an interview schedule, are two fundamental
aspects of the quality and rigor of the measurements (Hinkin, 1995). However, developing a sound research instrument in the form of an interview schedule is a difficult and time-consuming process (Schmitt and Klimoski, 1991). It is essential that instruments utilised in qualitative research approaches be derived through deductive item generation from the literature so that the findings contribute to organisational theory, research and application (Axtell et al, 2002). The second and major phase of the research thus made use of the problem centred interview model as described by Witzel (2000). These interviews are characterised by a problem-centred orientation towards socially relevant problems (in this case the dilemmas of the BI manager) whereby the interviewer makes use of the formerly noted objective conditions in order to understand the interviewees' explanations. Witzel (2000) specifically describes the problem-centred interview (PCI) as a theory-generating method that aims to:

“neutralize the alleged contradiction between being directed by theory or being open-minded so that the interplay of inductive and deductive thinking contributes to increasing the user's knowledge” (Witzel, 2000: 1).

Witzel also emphasises that the problem based interview is methodologically closely connected to the theory-generating procedure of the grounded theory of Strauss and Corbin (1998), hence he suggests using grounded theory for analysis. This interview method therefore fitted the research for several reasons. First, the literature had revealed a number of social issues (e.g. the motivation of the fund supplier) around the research question, causing the research to become ‘problem centred’. Second, the questionnaires had identified additional issues that needed clarification. Third, the easy access to the Melbourne incubators provided an ideal research setting in which the interviewees operated on a daily basis as is suggested for the use of this model. Last, the coding and analysis procedures of the PCI fitted in with the software coding and analysing principles, which in turn closely mimic grounded theory. According to Witzel (1985) the PCI works well:

1. when starting the research off with a quick questionnaire to familiarise with the situation (this had been done during the first phase of the research)
2. when developing a communication situation focused on the individual respondent, whereby the interviewer can more frequently use a combination of methods including narration or recurrent questioning in dialogue procedure.

3. when focusing on the reconstruction of orientations and actions, so that the interviewees respond with trust and open up; they feel that they are being taken seriously.

4. when the respondent unfolds his or her view of a problem, still being anonymous and in cooperation with the interviewer, so that in the course of the conversation new results are produced by means of cooperation.

5. when the interview leads to alternative aspects of the same topic.

3.7.2 The interview guides

It was decided that each interview conducted with the Australian incubator managers should follow a different set of guidelines and questions, moving the interview process from an introductory phase to the centre of the research problem; the identification and discussion of dilemmas and challenges and from there to a concluding phase where possible solutions could be discussed and proposed by the managers. The interviews were thus divided into: i) introduction and building rapport, ii) assessment of current situation, iii) identification of problems and challenges and iv) finding solutions.

The first interview was designed with the intention to build rapport and gain general insights into the job description and specifications of the incubator manager. The second interview was aimed at gaining in insight about the current situation in the incubator and the current job situation of the manager with regards to incubator management, EO levels and social capital. From interview two onwards the guidelines probed deeper into the problem-based structure to be able to generate enough raw data to shed light on the research problems. The third interview tried to get to the heart of matters, using the rapport built over time with each incubator manager. As an example, table 3.2 shows the interview guide
developed for the third interview. Interview guides I, II, and IV can be found in appendix 2.

**Table 3.2 - Semi-Structured Interview Guide Example**

<table>
<thead>
<tr>
<th>Interview Guide</th>
<th>Semi-structured interview</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>General discussion about managing problems</td>
<td>Hackett and Dilts, 2004 and others</td>
<td>Unstructured</td>
</tr>
<tr>
<td>Areas investigated</td>
<td>Inspired by</td>
<td>Topics to discuss</td>
</tr>
</tbody>
</table>

**EO Dimensions - Managing the organisation (financial)**

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Frese et al, 1997; Lumpkin and Hess, 1996</th>
<th>What types of revenue come into the incubator?</th>
<th>Examples/solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td>Miller &amp; Friesen, 1978; Ohanyan, 2002</td>
<td>Do you feel you have autonomy?</td>
<td>Examples /solutions</td>
</tr>
<tr>
<td>C- Aggressiveness</td>
<td>Porter, 1985; Schumpeter, 1934</td>
<td>How do you stay ahead of the competition?</td>
<td>Strategies/ actions</td>
</tr>
</tbody>
</table>

**Social Capital - Developing goodwill (social)**

<table>
<thead>
<tr>
<th>Network skills</th>
<th>Bollingtoft and Ulhøi, 2005; Nahapiet and Ghoshal,1997; Neergaard and Madsen, 2004</th>
<th>How do you build your networks and what are the challenges?</th>
<th>Strategies/actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationships and Communication</td>
<td>Baron and Markman, 2000; Maslow, 1954; Reece, 2007; Shockley-Zalabak, 1999; Timm and Stead, 1996;</td>
<td>How do you manage your relationships with sponsors and board?</td>
<td>Strategies/ actions</td>
</tr>
</tbody>
</table>
3.8 Unit of analysis

Typically studies on incubator performance focus either on the incubator as an entity, (e.g. configuration and impact studies) or the incubator tenants or the incubator manager as units of analysis. As the central aim of this study was to examine the dichotomy between the motivations and objectives of the sponsors of incubators in relation to the entrepreneurial incubatees and the split role of the incubator manager who has to be a commercial entrepreneur as well as a social entrepreneur, the unit of analysis is therefore in the first instance the incubator manager. However, this is also a story about the incubator and its environment, to allow the study to be viewed from holistic perspectives. Even so, Yin (1994: 39) suggests that the representative, in this case the incubator manager, remains the: “…embedded unit of analysis”. With regards to research participation: “…a willingness to cooperate” has to be mobilised, with assurance of confidentiality in the information they provide (Lalkaka, 2002: 175).

3.9 Validity and reliability in quantitative research

One of the most recurring features in critical discussions of 'validity' is the confusing combination of 'validity' with the term 'reliability' (Campbell and Fisk, 1959). The use of validity and reliability are both rooted in quantitative research and: “…are tools of an essentially positivist epistemology.” (Watling, as cited in Golafshani, 2003: 598). In quantitative studies validity is a requirement (Pedhazur and Schmelkin, 1991). Pedhazur and Schmelkin (1991) mention the following classification: i) content validity, referring to the specific domain of the content (Cavana et al, 2001; Hutje and Van Buuren, 1996), ii) criterion validity, which refers to some outcome, e.g. the criteria needed to graduate from an incubator and iii) construct validity which refers to the extent to which a particular measure relates to the theoretical construct as it was intended.

Wainer and Braun (1998) describe the term validity in quantitative research as ‘construct validity’. The construct is the initial concept, question or hypothesis that determines which data is to be gathered and how it is to be gathered. Validity refers
to the appropriateness, meaningfulness, and usefulness of the specific measurements used and inferences made from the scores of the respondents in relation to the initial concept. According to Pedhazur and Schmelkin (1991) the term reliability refers to the degree to which test scores are free from errors of measurement. In quantitative studies researchers often test for reliability with formula’s such as Cronbach Alpha (α), a test to measure the reliability of scales used in questionnaires. The issues surrounding the use and nature of the term validity in qualitative research however are controversial and many.

While the credibility in quantitative research depends on instrument construction, in qualitative research: “…the researcher is the instrument” (Patton, 2002: 14). Thus, qualitative research depends on the ability and effort of the researcher. Although reliability and validity are treated separately in quantitative studies, these terms are not viewed separately in qualitative research (Golafshani, 2003). Instead, terminology that encompasses both, such as credibility, transferability, and trustworthiness is used. Validity is not a single, fixed or universal concept, but is grounded in the processes and intentions of particular research methodologies and projects (Winter, 2000).

Yin’s (2003) method for qualitative study development is useful in showing how and when to adhere to the validity and reliability conditions.

Construct validity needs to ensure that the main research constructs are clearly and unambiguously defined and that it ensures their consistency throughout the research. This is first taken into account when explaining and outlining the research and research terms. Yin (2003) notes that it can be done then and can also be done during data collection and is achieved through the use of multiple sources of evidence, by establishing a chain of evidence or by having key informants review the case study design for consistency.

Convergent validity can then be obtained when evidence gathered from different sources or gathered in different ways indicate the same or similar meaning of the
construct; this can be adhered to by using a multi method approach with questionnaire and interviews, visiting a number of locations.

Internal validity checks within the literature review and data analysis, concerns the extent to which alternative explanations can be eliminated. According to Eisenhardt (1989) the ‘why’ question helps to establish the internal validity of research and Yin (2003) suggests having clear counter views and rival explanations are also helpful for the building of logic models and pattern matching.

External validity, to be checked as part of research design, establishes the domain to which the study’s findings can be generalised.

3.10 Validity and reliability in this research

Based on Yin’s (2003) method it can be said that the three conditions were adhered to. First, the construct validity condition was adhered to when explaining the research and research terms (this thesis) and most certainly during data collection as attested to by the credentials of this researcher (experience as a virtual incubator manager) and the multiple sources of evidence utilised in the analysis. The convergent validity condition was adhered to by the multi-method approach using questionnaires and interviews at multiple locations from numerous incubator tenants and managers. The internal validity condition is difficult to demonstrate as the research is new with no apparent counter views or rival explanations. The external validity condition is easily established given the extent to which this project exceeds the normal number of cases, this assists also in generalisation, since evidence is replicated and triangulated from a wide range of informants.

In qualitative research, the terms credibility and rigour are often used instead of the quantitative research terms reliability and validity (Winter, 2000) and may be more applicable. It should further be observed that grounded theory, which is used in this study, is based on a systematic and formal process of data collection, analysis and theory generation. Inaccuracies and misleading interpretations are guarded against by various means including comparative analysis, investigation of different slices
of data, and integration of theoretical concepts (Glaser and Strauss, 1967; Douglas, 2003). This is specifically so when utilising software. This means that the researcher does not validate a test, but the interpretation of the data that arises from specific procedures. Pedhazur and Schmelkin (1991) make two useful remarks in this regard. Firstly, they believe that the degree of validity of inferences depends on the purpose of the research, on the respondents themselves, and on the circumstances under which they are made. And secondly, they believe that in order to minimise ambiguity, it is essential to specify, at the very least, for what or for whom and under what circumstances the inferences from the scores are being made. In this study both remarks were taken into account by clearly identifying the research areas from the existing literature and by stating the purpose and objectives of the questions.

This being a predominantly qualitative study however, the reliability is mainly achieved by describing carefully which qualitative procedures have been used, using a specially designed case study database and using all original data from interviews as suggested by Yin (2003). Reliability in qualitative studies needs to demonstrate that the operations of a study, such as the data collection and coding procedures can be repeated with the same results (Glaser and Strauss, 1967), which was achieved through NVivo®7.

### 3.11 Ethics and research procedures

Ethics is defined by Minichiello, Aroni, Timewell and Loris (1990) as the standards of conduct and moral judgement. They point to three elements being considered when examining research: i) the morality and practices used, ii) the personal and professional integrity of the researcher and iii) to social justice in relation to the community. Further to the first point, Ticehurst and Veal (2000) maintain that the most important principles usually invoked in codes of research ethics are that no harm is caused to the research subjects and that subjects take part freely, based on informed consent. Further to the second and third point, it is noted that by utilising a survey, the researcher must neither affect respondents nor be
affected (Pedazur and Schmelkin, 1999). On the other hand however, it is also noted that interviews are subjective activities. In qualitative research, the researcher as discussed earlier is involved and immersed in the data. It is therefore important to note, that despite the variety of qualitative and quantitative methods used, the interpretations of data have been undertaken with care and integrity. The researcher has fully explained the paradigms and philosophical stance taken in this study and also how the incubator models were observed. As Lewis (1994: 42) comments: “the way one views an organisation will determine how one studies it”.

### 3.11.1 Ethics approval

It is a Commonwealth legislative requirement in Australia that all projects involving human subjects are subjected to the requirements of the “National Statements on Ethical Conduct in Research involving Humans” and have written approval from accredited ethics committees. In this case, the Swinburne University Human Research Ethics Committee (HREC) or delegated sub-committee has the responsibility for ensuring that research within the university meets ethical standards. The researcher thus obtained ethics approval in writing before commencing with the data collection process. As part of the ethics approval a ‘disclosure and informed consent’ was required in the form of a written statement to be sent or given to each person who agreed to participate, outlining the purpose and nature of the research (see appendix 3). The letter explained that participation was voluntary and that at any stage during the questionnaire or interview, the respondent could withdraw from participation. If this was the case, the questionnaire would be destroyed or interview deleted with participant present. In addition, the letter included a grievance mechanism providing the respondents with details of the researcher, supervisor and chair of the Human Research Ethics Committee if there were any problems. Even though some interviews showed some sensitive information and were in some cases rich in emotion, no interviewee retracted any wording or had any objections during or by the end of the research and agreed for the data to be used for this thesis. This adds to the study’s validity.
3.12 Case selection

One of the most striking differences between the qualitative and quantitative research method is found in the approach to sampling. Yin (2003) suggests that sample choices should be made in a way that they either produce: literal replication, (i.e. similar results for predictable reasons), or theoretical replication (i.e. contrary results for predictable reasons). In qualitative work, there is no necessity to ensure the sample is random, on the contrary, samples are sometimes specifically chosen to show they are mutually supportive. In qualitative research, the purpose of sampling is to discover categories and properties and subsequently place these categories in relationship to one another to form a coherent theory (Glaser and Strauss (1967). As Yin (2003) notes, there is a difference between a ‘sampling logic’ used for statistical studies and ‘replication logic’ in multiple case study research to provide triangulation. Selecting specific samples from each category for instance may not suit the task and exploratory nature of qualitative research. In addition, all the categories may not be known until the interview process is finished as was the case with this study.

It should be noted also, that according to Yin (2003) and Eisenhardt (1989) who reiterate the views of Strauss and Corbin (1998) in using case studies there is no requirement to select cases in a random manner, as there is when dealing with quantitative data and statistical techniques, where statistical randomness in fact determines validity.

3.12.1 Choosing a suitable number of cases

The case study examples that Yin quotes (2003) range from about 5 to 15 cases, while Eisenhardt (1989) suggests a minimum of 4 with a maximum of 10 as the level beyond which the process becomes unmanageable. Glaser and Strauss (1967) and Strauss and Corbin (1998) focus on reaching a state of ‘saturation’, when additional cases are no longer add any new information. If new data, which contains a repetition of a relationship already observed in the data no longer adds any new aspect to the theory being developed, the research indicates that the
resulting theory is empirically grounded in the research data (Glaser and Strauss 1967; Strauss and Corbin 1998). This study allows the number of cases to exceed the requirements suggested by Eisenhardt (1989) or Yin (2003).

This research investigated and visited twelve different incubators of which ten participated in the study. There were three main case studies and with incubation as a phenomenon still considered in the explorative phase of academic research, it was important to interview tenants as well as managers. Even though this number entailed a heavier workload, this was reduced by using analysis software. As mentioned before, over-replication can lead to over saturation, but not to less reliability. It is quite evident that this study surpasses the requirements normally used in qualitative studies; the extra effort was rewarded with rich data.

3.12.2 Case selection protocol

Before proceeding with the chronology of the data collection process, there needs to be some clear sense of how the cases were selected. As discussed in chapter two, Australian incubator studies have predominantly consisted of performance reports and general surveys conducted by independent consultancies. This study is the first to investigate EO levels and SC development and set out to look for a variety in model, size and location of incubators rather than similar models and circumstances. In this instance it is not the replication of models but a diversity of models which could provide new theory towards developing new understanding and benchmarking measures. In deciding which incubators to target, the following requirements were established:

1. Structure. To provide diversity, different types of incubators should participate in the study, namely:
   
i) not-for-profit government models
ii) university / technology models
iii) for-profit models and
iv) virtual models.
2. Incubator enterprises. In order to gain insights about the challenges of incubator managers in the establishing and running an incubator, the incubators should be fairly ‘start-up’ themselves; still in the phase of establishing themselves with a maximum of 10 years old.

3. Size. Different size incubators should be involved, to facilitate interaction with managers of large size incubators as well as small incubators to compare issues.

4. Success. Even though interesting, this is not a study about investigating struggling incubators or reasons for incubator failure. Also the research was going to take three years, therefore the case organisations involved should be performing at acceptable levels as was measured initially by independent consultancies (ACG, 2003).

5. Location. It was important for the research to start off with local Melbourne incubators, to facilitate regular visits over a period of three years. In addition, location variety was sought, to explore the differences between inner city, urban, or being part of a university environment.

The incubator ‘pool’ in Melbourne was very small and only three incubators fitted all criteria. In addition, participation was voluntary, so it was very fortunate that the incubator managers approached for the study were willing to personally participate and also willing to allow regular visits and independent research to take place within their incubator environment. Three Melbourne incubators (the Brunswick Business Incubator, the Monash Enterprise Centre and the La Trobe Technology Enterprise Centre became thereby the first and major case study organisations involved in the research. Initially, there was a fourth candidate fulfilling the requirements as well: the incubator in which the researcher had worked for three years previously. Because of this work experience and the personal friendly relationship with the incubator manager, it was decided that this could be perceived as a bias by the other incubator managers and thus this incubator was not selected for the research.
The four interviews with each of the Melbourne managers were held over two years, which enabled the researcher to clarify certain points or ask for more details, for example after returning from the overseas case visits and interviews. In addition to the interviews held with Australian managers, interviews were held in organisations in The Netherlands, one in Portugal, two in the UK and four independent interviews were held with other stakeholders. These were: an incubator shareholder, an ex-incubator shareholder in the USA now living in Australia, an academic professor, manager and researcher of incubator models in the Netherlands and a retired incubator manager in France. In addition ten semi-structured interviews were held with incubator tenants. The ten incubator tenants had randomly indicated that they would be willing to participate further in the study after the questionnaires (four in the Brunswick Business Incubator, three in the Monash Enterprise Centre and three tenants in the La Trobe Technology Enterprise Centre.

3.12.3 Melbourne cases selected

1. The Brunswick Business Incubator (BBI), Melbourne
   - Large stand alone incubator
   - Converted old secondary school
   - Not-for-profit government funded structure
   - Mixed model with offices and light-manufacturing space
   - Inner-city incubator in low socio economic area (1.5km from CBD)
   - Benchmarked Australia’s most successful Small Business Incubator in 2005

2. The Monash Enterprise Centre (MEC), Melbourne
   - Small stand alone purpose-built incubator
   - Not-for-profit Government funded structure
   - Mixed model, professional and technical services, all office facilities
   - Suburban location in industrial precinct, approximately 25km from CBD
   - Has won numerous innovation and tenant of the year awards
3. La Trobe Technology Enterprise Centre (TEC), Melbourne

- Middle size purpose-built stand alone incubator within University industry park
- Not-for-profit University funded structure
- University – technology model
- Commercialisation of university research and other local new technology (ICT, Bio tech)
- Mainly office and lab facilities
- Suburban location in industry park of university (approx. 12km from CBD)

For detailed information on each incubator (manager) please refer to appendix 4.

3.13 Summary

This chapter philosophically framed the research, explained the methodology, the procedures of both types of interviews, the case samples and validity and reliability issues. It also briefly discussed the suitability of the structured interviews and removing those questions that may have produced unreliable content or irrelevant data. The last section dealt with the case selection and discussed the case selection protocol. How the data was gathered, transcribed and stored and NVivo®7 software was chosen to implement grounded theory and analyse the data will now be discussed in detail in Chapter Four.
CHAPTER 4. 
DATA ANALYSIS PROCESS

4.0 Introduction

That which most clearly differentiates qualitative research from quantitative research is the data analysis methodology. It is also the least understood aspect of qualitative research, particularly for researchers familiar with traditional quantitative methods (Maxwell, 1996). Analysing data gathered by qualitative means, such as audio taped interviews, reports, and field notes can be an overwhelming task. The challenge of the process is to make sense of these massive quantities of data, which involves sifting through the data, filtering out the significant information, identifying patterns, and constructing a framework for communicating the essence of what is revealed. However, while the goal of qualitative analysis is the transformation of data into findings, no formulae to guide that transformation exist (Patton, 2001). To enhance scientific rigour and increase the viability and reliability of this qualitative research, the researcher approached the analysis systematically in three different stages in the thesis. The first stage analysis consist of the data coding and data storing and the second stage presents the analysis outputs in a number of tables and three major NVivo®7 analysis models generating a tenant, manager (FP and NFP) and stakeholder point of view to provide and support findings and answers to the research questions. The third and last stage is covered in chapter five which unravels the analysis outputs further by integrating them in a discussion on the findings and research questions.
PART 1 – THE ANALYSIS PROCESS

Figure 4.1 shows the data analysis process as outlined and discussed in this chapter.

Figure 4.1 - Data Analysis Process
4.1 Phase one - questionnaire assessment

The questionnaire provided guidance for the structured interviews and was intended as a first step into the three incubator environments. It was aimed at creating rapport and exploring general incubation experiences from a tenant point of view. The interviewees provided answers from an incubator tenant’s experience perspective, with sections covering three EO dimensions and the levels of social capital existing within the incubator. The questionnaire was designed to provide an initial identification of issues about and patterns of managerial and entrepreneurial activity. It was important to have this information as it provided the research’ first data on incubator environments and was later used to support the results of the semi-structured interviews a year later by means of triangulation.

4.1.1 Response rate

The response rate of the respondents in the structured interviews was as follows: Brunswick Business Incubator (BBI): 23 of 39 (59 %) businesses present at the time of research. Monash Enterprise Centre (MEC): 11 out of 15 (73 %) businesses present at the time of research and La Trobe University Technology Enterprise Centre (TEC): 12 of 26 (44 %) of businesses present at the time of research. Each interview took between 1 to 1.5 hours. Participation was random in that it was voluntary after letters were sent to all tenants explaining the research focus. The respondent numbers were affected by the following circumstances.

BBI: of the 45 business housed in the incubator at the time of research, 6 founders were not present during the interview days and 16 did not want to participate due to time restrictions or other reasons. MEC: of the 15 tenants housed in the incubator, all were present during the week of the interviews, but 4 did not want to participate due to time restrictions. TEC: of the 30 business housed in the incubator at the time of research, 4 were not present and 14 did not want to participate in research due to time restrictions or other reasons. As the interviews were conducted on a face-to-face basis, all questionnaires were filled in, signed off and therefore usable.
4.1.2 Coding process

As all the questionnaires were filled in by hand by the researcher, there were no unticked boxes or unanswered questions. The filled in sheets were prepared for analysis by undergoing a cleaning and coding process. Cleaning involved examining the data for any signs of errors in grammar, spelling or numbering prior to coding. A separate 7 page excel spreadsheet file was used for the data coding process of each of the three case incubators in Melbourne covering: one for demographics, one for experiences, three for dimensions of EO and two sheets dedicated to SC. An identifier was assigned to each participant within the case organisation which facilitated the identification of each individual business, thus creating consistency and confidentiality. Table 4.1 shows an example of the demographic section of the MEC.

Table 4.1 - Sample of the MEC Demographic Section

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S |
| gro | btyp | bname | binc | bage | btitle | temp | temp | comp | name | crtry | func | gender | 1986 | 2005 | 2006 | 2007 | behav | tomb |
| 1   | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 1.10 | 1.11 |

The aim of coding was to arrive at systematically derived core categories. These would become the focal concepts contributing to the development of guidelines, structure and themes for the later round of semi-structured interviews. The identifiers were listed vertically in a column on the left hand side of the spreadsheet and each of the questions was listed as Q1, Q2, etc. horizontally across the top. A numerical score was given to each item reflecting the strength of the interviewees’ response to a particular research area. For example, table 4.2 shows items relating to innovativeness, autonomy and risk-taking in the TEC. This was written up similarly for the two other incubators.
Table 4.2 - Sample of the TEC Innovation Section

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W |
| 1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 3 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 4 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 5 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 6 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 7 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 8 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 9 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 10 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 11 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 12 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 13 | 1.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |

From these data diagrams and means were generated to identify interview themes and issues as highlighted by tenants. Analysis outcomes will be discussed in part two of this chapter.

4.2 Phase two - semi-structured interview data assessment

The central focus in this research however, is on the investigation of dilemmas relating to the experiences of the incubator manager not that of the incubator tenants. This is what makes the operation and performance of incubators interesting, although perhaps somewhat perplexing for the onlooker. Even though both the incubator manager and tenants are small start-ups that face similar challenges to keep the business going, this makes up for only the first part of the research dilemma. The second part relates to how the incubator manager handles the expectations set by the tenants, sponsors and business community and this can only be answered by the incubator managers themselves. The intricacies that surround these challenges were thus revealed through the semi-structured interview data obtained from ten incubator managers.

Even though the interviews started off as ‘semi-structured’ with a number of pre-selected themes and open-ended introductory questions, they quickly moved into personal conversations offering opinions by the participants on the research areas
and about different incubator issues. Problems were mentioned and anecdotal stories offered without there being many specific questions asked. Once an initial level of trust was established between the researcher and interviewee, the subsequent interviews seemed to move to a level of friendly and sometimes emotional conversation even though the interviewee was aware that all interviews were being digitally recorded. For this reason, the interviewees will be referred to as respondent numbers rather by name throughout the analysis and discussion chapter.

It is considered important to establish how the researcher approached the processing of this data, as the analysis of this research and discussion of the results will frequently require understanding of one or more of the functions of the software application used. Also to counter a claim made by Mäkelä and Turcan (2007: 139) who argue after reviewing forty-two research papers, that they: “...rarely encountered authors claiming a careful, detailed analysis process”. As one of the aims of this thesis is to contribute to and expand existing research, the workings of the software are fully integrated in the detailed discussion on the analysis process that follows. It should be noted however, that even though discussed in-depth, this is not a resource manual per se. Each researcher working with qualitative methods needs to personally customize the software to suit their particular research. Even though powerful and sophisticated, software remains only a tool. It is up to the researcher as to which way, or in how many different ways, this tool is used. One of the interesting aspects of undertaking a doctoral dissertation is the discovery aspect. New research is not just about the filling of a gap in academic literature and the finding of new theory or meaning for a particular phenomenon, but is also very much about the journey itself and how to get to this point. The data analysis process itself is critical to this and becomes a research endeavour in it’s own right; not just a means to an end. The analysis procedures outlined in the next sections thus accurately reflect the treatment of data and protocol proposed by Yin (2003) and Strauss and Corbin (1998) to ensure scientific rigour.
4.3 Introduction of the company and their software product

In order to guide the coding and analysis process and sift through the large amount of information, NVivo®7 was chosen as the coding and analysis software tool of choice. The software has been around for about eight years and is known and used by a growing number of researchers around the world (QSR, 2007). It has been developed and marketed by QSR International, a small company based in Melbourne, Australia. Their first qualitative research tool, the ‘Non-Numerical Unstructured Data Indexing Searching and Theorizing’ program, better known among researchers by the name ‘NUD*IST’ had been used in research for about twenty five years (QSR, 2007). It was specifically created for a university based research project and from there further developed to change the way in which qualitative data could be searched, highlighted and coded into themes. As a point of interest, QSR is an incubator graduate formerly based in the Technology Enterprise Centre (TEC), one of the three Melbourne incubators used as a case study organisation in this research. The newly developed NVivo software processes complex projects and has the array of search possibilities and coding mechanisms needed to label, categorise and store large interview case studies in an efficient and reliable way thereby extending other software and methods available, both in type and flexibility.

Apart from these advantages, there are other reasons why the researcher made use of the software package. The software is regarded as one that closely mimics the coding and analysis methodology embodied in grounded theory (Punch, 1998). It is an aid to unlocking the richness of the spoken word and the deeper meanings behind the interviewees’ actions and attitudes (Campbell, 2003). Further, the application is user friendly and reduces the workload. As the study involved weeks of detailed searching and coding through large quantities of transcribed text and the cyclic visiting and revisiting of raw data throughout the analysis process, this was very important. Another technical advantage was that data produced and stored midway through the study in 2005 and 2006 in an earlier version (NVivo2) could be imported and integrated without any problem. Finally, the whole research project including collected interview transcriptions was stored in customised case
files linked to a large array of secondary data, categorised and coded accordingly. The software thus provided a complete research ‘system’ for validity and reliability in line with Yin’s (2003) suggestions by i) following repeatable research protocols, ii) following systematic coding procedures, iii) using multiple sources of evidence and iv) stored in a distinct research database. This system thereby helped create the building blocks, pathways and models by which incubator management styles or social and financial incubator challenges could emerge from the data. The following paragraphs outline the features of the application’s capabilities and how these were used for this thesis in more detail.

4.4 NVivo®7 features

The workspace within the application was customised to provide easy access to all elements of the research. This included the stored interviews, the coded text, and models for each of the major areas of research, financial and social challenges and also management styles such as entrepreneurial orientation and social capital development. Figure 4.2 shows the set up of the workspace as used for this research project. It pictures the navigation panel in the left pane showing all the components of the project such as sources, nodes, sets, queries, models and links. These will be subsequently discussed. The major panes list the case files with one example interview underneath in the lower pane.

Figure 4.2 - The Application Workspace
4.4.1 Organising sources

‘Sources’ is the collective term NVivo®7 uses for research materials. The label represents the main storage area for transcripts (highlighted in yellow in Figure 4.2). It stores anything from interview transcripts to photos or video clips of research settings and locations. The main documents that were stored under sources were:

i) research interviews – all the interviews from every case study organisation. Interviews were stored in case files in sets of incubator managers, tenants and other stakeholders. ‘Sources’ also contained files such as the whole literature review document and uncut literature sections which could provide immediate access to passages and text containing findings from earlier research studies or other information mentioned by referenced researchers. This proved useful, as the system could track any coded text and so establish links between the emerging theory and existing theory in order help with the analysis or alternative explanations.

ii) external files – these were ‘linked’ files that connected to proxy sources representing material that could not be imported into the software application. These files consisted of all the raw data, such as the mp3 digital audio tapes of the interviews, photos, formatted newspaper clips, scanned book passages, some video footage and links to around fifty academic key journal articles. The externals also included useful links for quick access to websites and all other applicable research files that were kept and stored in a specifically created Ph.D ‘source’ folder in the computer ‘C’ drive.

iii) memos – memos were records containing the researcher’s own thoughts and observations. For each record or filed note relating to a particular case, the researcher created a ‘memo link’ to connect the two. Most memos were linked to one of the three Melbournian incubators, as they contained recollections of particular phone calls, conversations with incubator team members and the incubator managers who had sought contact to provide additional information or answer more specific queries. Other memos consisted of personal filed notes on
why specific research decisions had been made or to explain meanings ascribed to codes. They were useful to reflect on at different levels of the research (Douglas, 2003).

Altogether, thirty-four digitally recorded interviews were transcribed into Microsoft Word documents. The Australian interview files consisted of four interviews per each of the three Melbourne incubator managers and in addition, two interviews with the Perth BITS model incubator manager, adding up to a total of fourteen interview documents. The European interview documents were derived from seven interviews with overseas incubator managers. In addition, there were three interview documents with third party stakeholders. There also were ten interviews with incubator tenants from the three Melbourne incubators to shed further light on the relationships between an incubator tenant and an incubator manager. Added to this data, and again for triangulation purposes secondary data documents were used in the form of eighteen dossiers with general information about each case study organisation such as progress and annual incubator reports, website articles, newspaper and other media clippings. In total this provided fifty-two small and large documents relating directly to the cases.

4.4.2 Organising case files

Case files store knowledge about each research case in the form of coded text. Operating from the case file mode, one can perform searches, link text with comments, memos, annotations and multimedia files. All collected and coded interview transcriptions, linked and stored in individual case files could further be stored in sets (e.g. Australian managers). Each case file had a particular set of attributes attached to its organisation and the people related to it. For example, each incubator case carried the attributes of incubator type, location: city or urban, incubator revenue structure; non-profit or for-profit, incubator stake holding, age and number of incubator tenants and number of employees. The managers were filed as participants within the case organisation and labelled as unit of analysis. They also independently carried their own set of attributes consisting of gender, age, qualifications, business expertise, how long they had worked in the incubator,
their previous professions, important relationships and other useful information. Each interviewee was thus seen as a case within a case.

4.5 The coding paradigm

Rich primary data benefits greatly from using a grounded theory approach during the coding process. This is because in grounded theory: “...data are broken down, conceptualised, and put back together in new ways” (Strauss and Corbin, 1990: 57). Strauss and Corbin (1990) refer to this process as the ‘coding paradigm’ in which the storing of data and the providing of provisional answers leads to the development of categories and their relations. In this study, the ‘coding paradigm’ has been applied through the use of software and by following the principles of open coding, axial coding and selective coding (Glaser and Strauss, 1967).

Open coding is a method of conceptualising on the first level of abstraction (Glaser and Straus, 1967; Douglas, 2003). Written data from field notes or interviews are conceptualised line by line though the highlighting and coding of words in order to find out about the problem and how it is being resolved.

The second level of coding is the axial coding stage, where meanings are compared, before more data is coded. The next step is that data is then merged into new concepts and eventually renamed and modified. In other words, the researcher goes back and forth between bits of data constantly modifying and comparing their meanings to sharpen a growing theory and discovering the participants’ main concerns and challenges how they try to resolve them.

Finally, the third level, selective coding, is the establishment of core variable (s) or what is thought to be at the heart of the research problem. The core variable (s) often also include ways of resolving the main concern. According to Strauss and Corbin (1990), the core needs to centrally fit within the gathered data. After finding and establishing the core variable (main challenges for the BI manager), the
researcher selectively codes data with the core as a guide. This leads to concepts with related importance appearing as sub cores.

In order to follow these proceedings, similar to word processing, the software provides text browsing, alteration and text marking. Text files are displayed unaltered in one half of the workspace window, so that passages, paragraphs or words from transcribed interviews can be examined, highlighted and referenced into newly coded files and stored. The coding of examined and highlighted text can be done by either using the common drag and drop process within the windows environment or by using the specific coding and de-coding buttons within the application.

4.6 The meaning of nodes

The labelled container of the references to specific coded text is called a ‘node’. The ‘node was the main building block used in this analysis (QSR, 2007). Nodes are created when the researcher codes text with a particular ‘meaning’ by theme and stores this bit of information under a label. In defining the open coding process (Strauss and Corbin, 1990) grounded theory integrates with empirical phenomenology and the concept of ‘meaning units’ Giorgi (1985). A node can thus be compared to a ‘meaning unit’ in the sense that it represents a ‘unit’ which represents or is labelled with a specific conceptual value or significance. It can be likened to the conventional thematic unit described by Budd, Thorp and Donohue (1967: 34) as: “...a single thought unit or idea unit that conveys a single item of information extracted from a segment of content”. Meaning units become essential when research is trying to extract coherent meaning from a range of inputs on a single phenomenon (Campbell, 2003). In this research, the meaning units referred to the specific words that an interviewee used to describe a particular issue or problem. For example words referring to financial challenges or social challenges or innovative or pro-active behaviour. The word ‘meaning unit’ is used in this thesis interchangeably with the word ‘node’.
4.6.1 Creating free nodes

Once all the data were downloaded into the source section, the coding process began. All interviews were completely coded. The general documents were used as support documentation and underwent text searchers where applicable or meaningful to expand on emerging themes. ‘Free’ nodes are elementary ‘stand-alone’ or ‘floating’ nodes that have no clear logical connection with other nodes. The creation of large numbers of free nodes is the equivalent to Strauss and Corbin’s (1990) initial or ‘open’ coding phase. It involved the close scrutiny of research every document. For example, all interview transcripts were studied and analysed word for word, line-by-line and paragraph-by-paragraph. In line with the grounded theory process, the bits of text were carefully examined through a continuous and cyclical process of familiarizing, coding, conceptualizing, cataloguing, re-coding and evaluating of the data, until all text from all interviews had a coding reference.

Once interview transcripts were imported into the application, the open coding began by highlighting segments of text and breaking sentences down into ‘messages’, subsequently assigning a representational and conceptual code (meaning) to every significant highlighted message within the data. The highlighted bits of text were labelled and stored as ‘free’ nodes linked to particular meanings evident in the text for later use. An excerpt from one of the incubator tenant interviews is used to illustrate this process. This interview example highlights how the founding entrepreneur of a software company started the business:

“...because there was a leading interest from one of the main service providers in that industry we went for it and designed some new tools (meaning software)”.

This bit of text was labelled: ‘Opportunity Recognition’ and stored as:<Documents\Interviews\Incubator tenants\rapid map\opportunity recognition>

From here specific words could be stored in relation to other themes e.g. software tools can refer to ‘new technologies’ or ‘innovative practices’.
But not all passages are simple. For example the following excerpt from an incubator manager:

“...we’ve got 4 graphic designers (meaning different incubator tenants). Three of them work very well together, but the fourth one won’t, he thinks the three others are competition and will steal all his ideas...”

This passage was originally stored as: ‘working relationships’.

However, the incubator manager could also be referring here to ‘trust issues’ or ‘relationship challenges’. This means a dilemma in labelling. The researcher now had the option to code the segments of the passage under different labels (nodes) or simply determine which label was most applicable. In this case the first option was chosen, because there were important points being made: i) half the quote told the researcher that three graphic designers in the incubator worked together. This would have been less likely without the functioning of the incubator network, relying simply on an opportunity to meet. Therefore, this part of the sentence was stored under social capital / tenant to tenant. ii) the whole sentence could also be stored under ‘trust issues’, because this was also what the manager had noticed and had brought up in the context of partnering and working together or not.

Another way of building a meaning unit or free node was by specific searches. The software provides a number of tools to search by frequency and variety of words or groups of words and these searches were undertaken to help identify labels. It is important to label the node first, so the researcher can guard against a ‘drift’ from its meaning during a search through hundreds of passages and select only those that ‘fit’ the meaning unit. For example, the meaning of ‘pro-activeness’ in relation to the BI manager. The first challenge was which words to include in relation to the meaning of the concept in order to cause the search engine to couple these meanings to a particular node. The way to make pro-activeness into a ‘node’ is thus by seeking words that have been used by the interviewee to refer directly to the meaning identified. The researcher pieced together lists with words such as: plans, planning (ahead), next, looking ahead, see it coming, foreseeing, tomorrow, having in place, (our) future, working towards, etc. in the hope to get a ‘hit’ and a ‘fit’ and
thus find applicable passages or paragraphs. The search was then directed to find passages that contained these words by browsing through all of the transcribed interviews. The search engine could also be directed to retrieve portions of text representing the number of passages that incorporated specific wording that might refer to a labelled parent or core node such as ‘management styles’. Figure 4.3 shows an example of a result from a text search query.

![Figure 4.3 - The Result of a Text Query](image)

On the left side, the text brought back by the search engine with the ‘hit’ words highlighted and in the right, a dialogue box, from which the researcher could see from which interviewee and incubator case the text came and also, under which case file the document was stored. Once the search engine produced a list of possible passages, the task was then to read each one in context to determine the meaning. During this procedure the researcher decided to either store the highlighted text in that node or create a new and more applicable node for it, such as another label that reflected the meaning better. An other alternative was to dismiss the text altogether.

The advantage of this open coding process was that it allowed similar events and phenomena to be compared and contrasted with each other, which initiated the
tentative process of developing conceptual categories. As the open coding process moved forward and began to be monotonous, a second level of research reliability set in as new data became systematised (Campbell, 2003). Monotony in this stage is good as with more and more nodes created, it allows for less involvement and more neutrality (Douglas, 2003). However, after the creation of nearly 200 free nodes, the research project became almost unnerving and felt chaotic. Yet slowly, again through repetition and perseverance, time after time, passages and text started to find ‘homes’ amongst the meaning units and the research became a continuous process, of text ‘falling into place’ as patterns emerged and the first obvious connections started to emerge. Throughout this process and in order to keep neutrality, no connections were made or models built until no further nodes needed to be created. This indicated that no new information had come up in the data, and thus a research saturation level had been established (Glaser and Strauss, 1967; Yin, 2003).

As the coding of all data had progressed to this saturation level, a detailed inspection revealed that interrelated connections between nodes had emerged and overlapping had also occurred to the extent that some nodes needed merging with others. This process closely mimics Yin’s (1994: 106-119) notion of pattern matching. Interestingly, at the end of the open coding process, despite the researcher’s knowledge on the subject and nearly four years of research, trips, interviews, relationships and being familiar with the raw data, the picture emerging from the research was still too vague. Patterns had emerged but there was not enough clear evidence to be able to meaningfully discuss the main research problems; there were only a large number of nodes which in a next stage needed to be sorted by frequency and significance into hierarchical relationships.

4.6.2 Creating tree nodes

Whereas free nodes are elementary meaning units with no specific relationship to other nodes, so called ‘tree’ nodes form the building blocks for the analysis, representing all the identified variables in and around the study’s research problem. Once the initial open coding was finished, all the coded data was re-grouped during
the axial coding process into a second level of conceptualisation (Straus and Corbin, 1990). During the axial stage, meanings were compared, sometimes re-coded and merged into new concepts to sharpen a growing theory and reveal the participants’ main concerns (Mäkelä and Turcan, 2007). Coding now occurred around the axis of one category at a time, for example, linking nodes and their properties to do with ‘revenue streams’ or ‘networks’ in the incubator. Most of the ‘free’ nodes were thus merged and modified into a much smaller number of ‘tree’ nodes by continuously evaluating, integrating and adjusting them into new categories.

Not all free nodes became tree nodes; only those nodes carrying significant support from the meaning unit coding survived. If the meaning boundaries were weak or there was not enough evidence of connection to other nodes, the examined node was rejected as part of the research and remained a ‘free’ node. Even though these nodes stayed outside the research, they were not deleted. Nodes may hold information that may prove of value to future research, which is another advantage of the customisation of a software program and the building of a research database.

As the relationships between tree nodes were established, they were checked against the literature and where the literature had identified a number of core elements, issues or gaps in the incubator phenomenon, some of these now slowly started to emerge in one form or other. For example, there was a large amount of data on internal incubator relationships and social capital skills of the incubator manager, and a much smaller amount of data on financial performance, reflecting the observed reality. Figure 4.4 illustrates the creation of tree nodes.
The tree nodes were now connected to other tree nodes to form branches representing relationships. Some relationships were difficult to determine and needed reflection or re-definition after discussions with the supervisor and colleagues and the checking of academic studies in the literature. Most of the tree node relationships however were relatively easy to establish. For example, highlighted text from interviews saying ‘looking out for one another’ or a line like: ‘...I spend a lot of time personally mentoring my tenants’ or: ‘...I was helped out by the incubator manager’ could be labelled under the development of social capital with labels like ‘relationships’ and ‘trust’. The researcher had by now identified several other forms of social capital in the data such as internal and external relationships, internal and external networks and these were now grouped together, developing conceptual categories with new properties and new emerging theory. The extent to which the new categories fit the data was also re-checked, as “…the researcher now looked for answers to questions such as why, when, where and how, helping to contextualise phenomena” (Mâkelâ, and Turcan, 2007: 137).

At this stage, cumulative knowledge was produced, separating the focal categories from the rest, or in NVivo terms, nodes were established that shed light on particular challenges. These nodes were labelled ‘parent’ node. Parent nodes were
of specific significance, because they related directly to the research question. It is noteworthy during this discussion that it is the theorisation of the data and their phenomena that create grounded theory, not the data themselves (Douglas, 2003; Strauss, 1987; Strauss and Corbin, 1990). The research at this stage thus relies greatly on the evolving insights of the researcher using the existing literature as well as the software.

4.6.3 Creating trees

As the main indicators to the research questions had been established and labelled ‘parent’ nodes, the other remaining nodes represented that which surrounded the issues such as the context, conditions, causes, interplay, actions and outcomes. During the last coding phase, termed selective coding, the selection of the central issues of the research or in this case ‘core’ nodes were extracted from the still large number of tree nodes. Selective coding is the process of searching for the main research problem in the data, by systematically coding for those core categories that hold all others together (Mâkelâ and Turcan, 2007) The essential idea of grounded theory is to develop one storyline around which everything else wraps and there is a belief that such a core concept always exists (Strauss and Corbin, 1990). Thus eventually, the labelled tree nodes catalogued in more or less hierarchical branch-like structures are headed by a core node representing one main issue. This concept - even though not as static as shown - is portrayed in Figure 4.5.

Figure 4.5 - Node Trees
It stands to reason, that parent nodes are of greater value when they consist of references from a number of different sources (participants) bringing up the same concept or issue, frequently. The more frequently nodes are referenced (particular words, sentences or passages mentioned by interviewees) the more important the issue or topic. Some parents have more branches attached. For example one part of the central research question, the ‘challenges of the incubator manager’ is a tree in its own right with a number of ‘sibling’ nodes (i.e. a variable of equal or perhaps lesser value = less mentioned by participants) and a number of smaller branches or ‘children’ attached to it. These will be shown further in this chapter.

4.7 Organising nodes in sets, queries, models and reports.

As the trees were established and the research progressed it became important to organise the data further and prepare for more independent case analysis and discussion, making use of the software sets, queries and modelling features.

The ‘sets’ feature provided a flexible way of grouping nodes of various types together, creating a mechanism for triangulation to be established. The researcher developed a number of ‘sets’ to allow for comparisons when nodes did not need hierarchical relations but did share related meanings. For example one data set contained all the nodes collected from the interviews held with Australian incubator managers and a different data set was created with all the nodes from overseas incubator managers to allow comparisons to be made on a number of issues. Another set contained coded text from incubator tenants from the three case study incubators in Melbourne to compare views between the managers and tenants and between tenants from different incubators and so forth.

The ‘queries’ feature enabled the researcher to see the literature, while scanning response data for associations. Queries were saved and re-run through adding new data or by tracking the evolution of results. The following are example queries performed for this research.

- list all sources that contain specified text and code them if required.
• Search for specific coding information on content, according to how it was coded. For example Q: show me all content where the interviewees talked about relationships with tenants and sponsors.

• Query to create a matrix of nodes based on search criteria. For example Q: show me the different social capital dimensions (structural, relational and cognitive) existing in each incubator or Q: identify what types of networks are occurring in each incubator (based on Higgins and Kram’s (2001) different network types).

• Perform text searches by word frequency or by a specific word, passages or lists of words and the number of times they occur in selected items or seeing which words appears most frequently. These searches helped identify themes and concepts. For example, show me which incubator managers talked about their own background (education, business expertise) and count how often these words were mentioned throughout the interview or entire study.

Once the whole three stage coding process had finished, flow chart models were build showing pathways, patterns and connections between various themes and concepts such as social and financial challenges. These were used to discuss the outcomes of the analysis.

Throughout the analysis process, a number of progress reports were developed and stored. The software has tools to provide coding, project and node reports that enables the researcher to check the progress of the study. Reports used for the study were:

i) **Project summary**, which provided information of the overall project status in terms of the items it contained. This was useful for communicating and recording the overall progress.

ii) **Node summary**. This report lists all the nodes used in the project including the number of sources coded at each node. Node summaries were used to gain an understanding about what had been coded and
referred and how the node trees had been built up, i.e. how and which themes were emerging. Each report was on average 50-60 pages long, however, a two page example of the node summary report of this research can be found in appendix 5.

iii) **Attribute summary.** This report shows a list with attributes (demographics) belonging to each incubator case and belonging to each manager or interviewed tenant representing a case organisation. This report was a useful way of checking for a consistency in research samples. For example, it provided a quick list of the locations of the cases, the structure of each incubator, background of each manager and other internal information.

iv) **Coding comparison summary.** This report provides information about the similarities and differences in coding between each participant. This report thus assisted in the establishing of reliability and consistency in the coding process. For example it compared coding consistency between Australian incubator managers and overseas incubator managers. The full coding report is around 160 pages, however, a two page example can be found in appendix 6.

The coding comparison reports, worked well because they identified that there were no great differences in referenced numbers of text between e.g. Australian and overseas or between male and female incubator managers. It was also possible to check for patterns in coding: how much (by %) each document had been coded and to which node the information had gone. The researcher could then establish whether a particular issue (e.g. networking) had been mentioned more by males or females or understood differently by Australians compared to Europeans. During this phase in the process, it was established that every interview document had been coded for a minimum of 85%, which further enhanced validity and reliability. The process of coding, through the grouping of text passages into hierarchical tree nodes could now be finalised into outcomes.
PART 2 ANALYSIS OUTCOMES AND THEME DEFINITION

4.8 Excel spread sheet analysis of the structured interviews

The first outcomes to be discussed are the results of the interviews with the incubator tenants, which provided useful insights and good leads into the major phase of the research. The closed questions provided negative or positive support of the literature and the open questions allowed for ad hoc conversation and spontaneous remarks furthering the research. Table 4.3 shows the demographics of the incubator tenants participating in the interviews.

Table 4.3 - Demographics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>BBI</th>
<th>MEC</th>
<th>TEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Government</td>
<td>Government</td>
<td>University</td>
</tr>
<tr>
<td>Location</td>
<td>Inner City</td>
<td>Industrial</td>
<td>Science Park</td>
</tr>
<tr>
<td>Funding model</td>
<td>Non-profit</td>
<td>Non-profit</td>
<td>Minor shareholding</td>
</tr>
<tr>
<td>Trading of tenant business (average)</td>
<td>7.39 years</td>
<td>3.36 years</td>
<td>4.44 years</td>
</tr>
<tr>
<td>Number of incubator tenants</td>
<td>45</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>(grouping)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of respondents</td>
<td>25</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Industry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal services</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Business services</td>
<td>6</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Building industry</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>IT</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Bio Technology</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The table illustrates that the mix of businesses differed in each incubator, with the TEC housing predominantly IT and Bio technology start-ups, the MEC housing a mix of personal/business services, mainly consultancies and the BBI housing the greatest diversity of tenants with personal and business services. The BBI provided a variety of office and factory sites. There was art, fashion, HR recruitment, a variety of ICT start-ups, and a mix of small businesses relating to the building industry, such as landscaping, architecture, bricklaying and engineering. In addition there was some small scale manufacturing. The demographics table also shows that the average business in the TEC is older than those housed in the other two incubators. Given that the TEC is a university technology incubator, this indicated that either there were a number of anchor tenants (businesses that were steady and
older to keep the incubator revenue going) or that it takes longer to develop and commercialise new technologies (Hindle, 2002).

4.8.1 Motivators for moving into an incubator

Part B of the interviews was structured to gain an understanding about the main reasons for moving into a business incubator, data gathering thus centred on the advantages and disadvantages of business incubation and the reasons why new entrepreneurs moved into the incubator environment. Table 4.4 shows the findings in relation to these questions.

<table>
<thead>
<tr>
<th>Theme</th>
<th>No of Respondents</th>
<th>BBI 23</th>
<th>MEC 11</th>
<th>TEC 12</th>
<th>100 %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time in incubator</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 6 months</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td></td>
<td>23.9</td>
</tr>
<tr>
<td>&gt; 6 - 1 year</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td></td>
<td>30.4</td>
</tr>
<tr>
<td>1 - 2 years</td>
<td>10</td>
<td>6</td>
<td>5</td>
<td></td>
<td>45.6</td>
</tr>
<tr>
<td><strong>Reasons why incubator</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolation @ home</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td></td>
<td>30.4</td>
</tr>
<tr>
<td>Isolation @ previous location</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Outgrown home base/growth</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td></td>
<td>21.7</td>
</tr>
<tr>
<td>Family &amp; Biz circumstances</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td>15.2</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td></td>
<td>19.5</td>
</tr>
<tr>
<td><strong>Advantages of incubator</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheaper rent</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td></td>
<td>21.7</td>
</tr>
<tr>
<td>Flexible lease</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td>8.6</td>
</tr>
<tr>
<td>Location</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td></td>
<td>21.7</td>
</tr>
<tr>
<td>Time Management</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td>8.6</td>
</tr>
<tr>
<td>Networking</td>
<td>14</td>
<td>9</td>
<td>5</td>
<td></td>
<td>60.8</td>
</tr>
<tr>
<td>Cross trading</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Expandable Space</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td></td>
<td>19.5</td>
</tr>
<tr>
<td><strong>Disadvantages of incubator</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less professional</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td></td>
<td>15.2</td>
</tr>
<tr>
<td>Computer viruses</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
<td>4.3</td>
</tr>
<tr>
<td>Less Privacy</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td></td>
<td>8.6</td>
</tr>
<tr>
<td>Closed community</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td></td>
<td>4.3</td>
</tr>
<tr>
<td>Group politics</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td><strong>Rating incubator importance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to success of tenant business</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td></td>
<td>4.3</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td></td>
<td>6.5</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td></td>
<td>21.7</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td></td>
<td>23.9</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td></td>
<td>15.2</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>3</td>
<td>0</td>
<td></td>
<td>28.2</td>
</tr>
</tbody>
</table>

Whereas only four research participants (9 %) started their business from scratch in the incubator, the other forty-two respondents (which is over 90 %) were already
trading before entering the incubator environment. However, all participants were start-ups in their first years of operation. Of these, over half had been small home-based start-ups moving directly from a house into an incubator environment.

There were several reasons stated for moving into an incubator environment of which the first important reason was networking (> 60%). The second reason was perceived to be isolation or work/life balance. The data showed that at the start-up level, 20 respondents moved into an incubator because they felt isolated; 14 respondents of those moving into an incubator did so because they felt isolated working from home with an additional 6 respondents moving into the incubator from a previous workplace. Overcoming the feelings of isolation seemed coupled to the social expectation of networking provided by the incubator. Lack of space and family circumstances were also mentioned as reasons for moving into an incubator. Other findings of lesser importance were the shared use of equipment, the particular advantages of the location (e.g. close to home) and proximity to major exit roads, airport or target market. Being in the inner city was appreciated by some in the BBI, while others in the MEC and TEC preferred being away from the hustle and bustle of town.

Few participants verbalised disadvantages to the incubator model. Four participants indicated that they felt they had less ‘privacy’, two mentioned that an incubator could become somewhat of a ‘closed community’ and six used the term ‘groups politics’, pointing to other small business owners whom they found to be in a dominant position regarding ‘knowing’ what was happening in and around the incubator (findings in line with Cross et al. 2001).

4.8.2 Tenant management practices

Part C of the interviews covered management styles and practices of the tenant. Even though entrepreneurial orientation was not yet covered by the research at this stage, there was some data referring to innovation practices, risk-taking and autonomy. Table 4.5 shows the outcomes.
### Table 4.5 – Tenant Management Practices

<table>
<thead>
<tr>
<th>Dimension (low/med/high)</th>
<th>Incubator</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation practices</td>
<td>Med</td>
<td>High</td>
</tr>
<tr>
<td>Importance of innovation</td>
<td>Med</td>
<td>High</td>
</tr>
<tr>
<td>New products</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>New processes</td>
<td>Med</td>
<td>Low</td>
</tr>
<tr>
<td>Financial control</td>
<td>High</td>
<td>Med</td>
</tr>
<tr>
<td>Autonomy</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Financial risk-taking</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Business risk-taking</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

In the BBI and MEC model, innovation took place on process matters and at an incremental level rather than in radical form. In the TEC the focus was predominantly on product innovation with some radical new technologies being tested. Besides the type of innovation, both the BBI and the MEC differed from the TEC in the process of idea generation, they used social networking and business networking. In the TEC however, respondents indicated that new ideas were generated mainly from within their own organisation or through interaction with a major client. Another difference was that the TEC tenants had less control over their business with 5 out of 12 were struggling with the development of new technologies which took more time (IT and Bio-tech). Some of the tenants in the TEC had a second job and most relied on their partner to provide cash flow for their business. Some indicated that they were struggling with their rent.

#### 4.8.3 Social capital development

The last area covered with the tenants was the development of and access to social capital. This part of the questionnaire was divided into networking inside and outside the incubator and the development of different kinds of relationships including mentoring. The outcomes in both areas were diverse. The ‘power’ of networking was referred to frequently and a number of tenants expressed the importance of networking to their business success. Table 4.6 shows these outcomes.
Table 4.6 - Networking

<table>
<thead>
<tr>
<th>Theme</th>
<th>BBI (23)</th>
<th>MEC (11)</th>
<th>TEC (12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Networking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>High aver. &gt; 3 x week</td>
<td>Med (aver 1 x week)</td>
<td>Low (aver.&lt; 1 x week)</td>
</tr>
<tr>
<td>Topics discussed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business</td>
<td>50%</td>
<td>60%</td>
<td>75%</td>
</tr>
<tr>
<td>Social</td>
<td>50%</td>
<td>40%</td>
<td>25%</td>
</tr>
<tr>
<td>Importance of Networking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very important</td>
<td>16</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Important</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Somewhat</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Neither</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Not important</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Rating networking importance</td>
<td>BBI</td>
<td>MEC</td>
<td>TEC</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Networking

Both the BBI and MEC scored very highly on the importance of networking. Findings on frequency of meeting indicated a high level of interaction taking place in both the BBI and the MEC with a slightly lower score for the TEC, which is consistent with the higher scores on the importance of individually based innovation at TEC.

Data on topics discussed, indicated that the building of inter-personal relationships was based on the ‘personal need’, as well as ‘business need’, so much so that tenants did not seem to differentiate between formal and social networking. This is in line with Bøllingtoft and Ulhøi (2005), Granovetter, (1973) and Higgins and Kram (2001), as demonstrated by the significant level of relationship development consisting of both strong and weak ties. A further outcome was that the importance of the internal and external networking to the survival of the businesses scored equally highly. One tenant remarked:

“The BI manager set up a teleconference meeting recently with 4 key scientists from the largest pharmaceuticals in the world and so I said ‘don’t underestimate the importance of that meeting’. They came back to us a few days later with what is a hopeful potential opportunity”.

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The respondents recognised the incubator as a place of social interaction to both internal and external businesses and stated this as important to their growing business. This was corroborated by the interviews in the BBI which established that there was a strong internal social network operating through weekly network lunches, but also a diverse business network with fortnightly small business events visited by locals.

Many of the incubator tenants (18) indicated that they also socialised after work hours. It was further found that in the BBI, networking and interpersonal relationships had led to a number of joint ventures, group projects and internal trading, which will be further elaborated upon in Chapter Five.

**Joint Ventures**

The tenants, particularly those housed in the BBI, came close to the ‘networked model’ Hansen et al (2000) discussed, by actively developing internal and external business relationships and internal and external cross-trading. Table 4.7 shows that this probably played a vital role in the growth and success of start-ups, particularly in the BBI.

<table>
<thead>
<tr>
<th></th>
<th>BBI</th>
<th>MEC</th>
<th>TEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>23</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Joint Projects</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Cross Trading</td>
<td>13</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Buy Products</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Use Services</td>
<td>6</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Bartering</td>
<td>6</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

These results confirmed other findings indicating that some of the key elements of the financial focus of the BBI reached much further than rent, employment growth and the number of businesses graduated. Indeed, internal trading, developing joint ventures, using local suppliers and creating relationships and networks outside the incubator with the local community seemed another clear parameter of success.
This is discussed in Chapter Five under the social context of incubation from a manager point of view.

Tenant assistance and mentoring

The types of business mentoring used and business training desired, according to the respondents in the three Melbourne incubators are illustrated in table 4.8.

<table>
<thead>
<tr>
<th>Use Mentor</th>
<th>No: 46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professionals in the industry</td>
<td>8</td>
</tr>
<tr>
<td>NEIS mentor</td>
<td>2</td>
</tr>
<tr>
<td>Accountant</td>
<td>12</td>
</tr>
<tr>
<td>Professional Business adviser</td>
<td>5</td>
</tr>
<tr>
<td>BI Manager</td>
<td>24</td>
</tr>
<tr>
<td>Family member</td>
<td>12</td>
</tr>
<tr>
<td>Peers</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BI Mentoring frequency</th>
<th>No:46</th>
<th>in %</th>
<th>Mentoring outside BI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 / week</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>&gt; 3 / week</td>
<td>12</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1 / month</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>&lt;1/ month</td>
<td>4</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Importance</th>
<th>No: 46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very important</td>
<td>23</td>
</tr>
<tr>
<td>Important</td>
<td>13</td>
</tr>
<tr>
<td>Neither</td>
<td>2</td>
</tr>
<tr>
<td>Not important</td>
<td>8</td>
</tr>
</tbody>
</table>

There were a variety of supporting services offered by all participating incubators. The BBI tenant questionnaire revealed that many respondents saw their manager regularly; sometimes one or more times a week on average (16 tenants out of 23 in the BBI) and many frequently asked their BI manager for business and financial advice.

The Melbourne MEC BI manager also provided business advice on a daily basis to individual tenants however, the incubator had also outsourced their mentoring to a small business mentoring service consisting of retired business people who for a small fee came out once a month to the incubator to talk to the individual tenants. These findings seem to be in contrast with Allen and Bazan (1990) who state in their study that even though a number of tenants rated business assistance highly,
over half never used the services. Table 4.9 shows the types of business advice tenants were seeking.

### Table 4.9 - Advice Sought by Tenants

<table>
<thead>
<tr>
<th>Type of advice tenants want</th>
<th>No: 46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to financial resources</td>
<td>14</td>
</tr>
<tr>
<td>Bookkeeping &amp; Financial records</td>
<td>9</td>
</tr>
<tr>
<td>Legal advice (IP, Biz structure, contracts)</td>
<td>11</td>
</tr>
<tr>
<td>Personal coaching of entrepreneur</td>
<td>9</td>
</tr>
<tr>
<td>Clustering/ networking referrals</td>
<td>14</td>
</tr>
<tr>
<td>Leadership skills</td>
<td>9</td>
</tr>
<tr>
<td>Pitching and presentation skills</td>
<td>6</td>
</tr>
<tr>
<td>Team building</td>
<td>4</td>
</tr>
<tr>
<td>Marketing and building competitive advantage</td>
<td>4</td>
</tr>
<tr>
<td>Making difficult decisions</td>
<td>13</td>
</tr>
<tr>
<td>Problem solving</td>
<td>7</td>
</tr>
<tr>
<td>Balance work/life</td>
<td>10</td>
</tr>
<tr>
<td>HR issues</td>
<td>12</td>
</tr>
</tbody>
</table>

Other incubator services identified in the questionnaire were the physical space provision, business assistance such as shared equipment, IP protection and search and business training.

### 4.9 Summary of findings

The above tables, derived from the tenant questionnaire have highlighted the views held in the three Melbourne case incubators. More specific quotes from tenants themselves on the areas discussed can be found in appendix 7. Table 4.10 shows the summary of the discussed findings. Some of the outcomes of this data will be elaborated on when discussing the research questions in Chapter Five.
Table 4.10 - Summary of Findings of the Tenant Questionnaire

<table>
<thead>
<tr>
<th>Theme 1</th>
<th>Moving into the incubator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding 1</td>
<td>Tenants feel isolated working from home or other location</td>
</tr>
<tr>
<td>Finding 2</td>
<td>Tenants move into an incubator because they have outgrown home or other location</td>
</tr>
<tr>
<td>Finding 3</td>
<td>Tenants move into incubator looking for networks</td>
</tr>
<tr>
<td>Finding 4</td>
<td>Most respondents rated the importance of the incubator to the success of their business 8/10 or higher</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 2</th>
<th>Tenant management practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding 5</td>
<td>Innovation was rated important to very important in all three Melbourne incubators</td>
</tr>
<tr>
<td>Finding 6</td>
<td>Tenants were working on new technologies (TEC, BBI)</td>
</tr>
<tr>
<td>Finding 7</td>
<td>Tenants were working on new processes (MEC, BBI)</td>
</tr>
<tr>
<td>Finding 8</td>
<td>Autonomy was seen as most important entrepreneurial quality among tenants</td>
</tr>
<tr>
<td>Finding 9</td>
<td>Financial control was seen as very important by most respondents</td>
</tr>
<tr>
<td>Finding 10</td>
<td>Control of the business was seen as equally important</td>
</tr>
<tr>
<td>Finding 11</td>
<td>Risk-taking was seen as part of the start-up process and the running of a business</td>
</tr>
<tr>
<td>Finding 12</td>
<td>Tenants took financial risks and personal risks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theme 3</th>
<th>Social capital development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding 13</td>
<td>Nearly half of the respondents used the BI manager as their business mentor</td>
</tr>
<tr>
<td>Finding 14</td>
<td>A quarter of the respondents met with the BI manager more than once a week</td>
</tr>
<tr>
<td>Finding 15</td>
<td>Most respondents rated the importance of networking to the success of their business 7/10 or higher</td>
</tr>
<tr>
<td>Finding 16</td>
<td>Most tenants met on average with the BI manager or other tenants 1-2 times per week</td>
</tr>
<tr>
<td>Finding 17</td>
<td>The incubator facilitated joint ventures, partnerships and alliances (especially BBI and MEC)</td>
</tr>
<tr>
<td>Finding 18</td>
<td>The incubator manager played a vital role in providing networks and references</td>
</tr>
<tr>
<td>Finding 19</td>
<td>Tenants build relationships with other businesses in the local community</td>
</tr>
</tbody>
</table>
4.10 NVivo®7 analysis outcomes

The outcomes of the semi-structured interviews formed the heart and focus of this research, which along with large numbers of references from different sources provided insights into the main research problems. The analysis method adopted the more ‘systematic’ case analysis approach of Makela and Turcan, (2007) and Yin, (2003). Table 4.11 shows a demographics summary of the participants in the study. Detailed information on each incubator is presented in appendix 4, introducing each case by its own history, structure, local setting, industrial base and size. Appendix 4 also includes information about each incubator manager and contains interview excerpts to provide a true sense of the research. However, to do justice to grounded theory analysis, which centres on the richness of the raw data (Chanail, 1995; Glaser and Strauss, 1967) specific quotes from BI managers have been selected in this particular part of the analysis to ‘let the data speak for itself’.

<table>
<thead>
<tr>
<th>BI</th>
<th>Location</th>
<th>NFP or FP</th>
<th>Model</th>
<th>Structure</th>
<th>Gender BI manager</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBI</td>
<td>Inner City</td>
<td>NFP</td>
<td>Mixed public</td>
<td>large</td>
<td>M</td>
<td>Interviews, visits, annual reports, questionnaire, observations, emails, phone conversations, events</td>
</tr>
<tr>
<td>MEC</td>
<td>Suburban</td>
<td>NFP</td>
<td>Mixed public</td>
<td>small</td>
<td>F</td>
<td>Interviews, visits, questionnaire, observations, emails, phone conversations, reports, events</td>
</tr>
<tr>
<td>TEC</td>
<td>Suburban</td>
<td>NFP</td>
<td>University medium</td>
<td>F</td>
<td>Interviews, visits, questionnaire, observations, emails, phone conversations, research papers.</td>
<td></td>
</tr>
<tr>
<td>EiR</td>
<td>Suburban</td>
<td>FP</td>
<td>Public/ private</td>
<td>Small virtual</td>
<td>M/F</td>
<td>Interviews, visits, phone conversation</td>
</tr>
<tr>
<td>Tagus</td>
<td>Regional</td>
<td>FP</td>
<td>Public /Private</td>
<td>large</td>
<td>M</td>
<td>Interview, visit, emails.</td>
</tr>
<tr>
<td>MBSI</td>
<td>Inner city</td>
<td>FP</td>
<td>Private</td>
<td>Small virtual</td>
<td>M/F</td>
<td>Interviews, visit, emails.</td>
</tr>
<tr>
<td>UMIC</td>
<td>Inner city</td>
<td>FP</td>
<td>University med</td>
<td>M</td>
<td>Interview, visit.</td>
<td></td>
</tr>
<tr>
<td>BTF</td>
<td>Suburban</td>
<td>FP</td>
<td>University /Private</td>
<td>med</td>
<td>M</td>
<td>Interview, visit.</td>
</tr>
<tr>
<td>Zernike</td>
<td>Suburban</td>
<td>FP</td>
<td>Private small</td>
<td>M</td>
<td>Interviews, visits, observations, emails, phone conversations.</td>
<td></td>
</tr>
<tr>
<td>NIKOS</td>
<td>suburban</td>
<td>NFP</td>
<td>University Virtual virtual</td>
<td>M</td>
<td>Interviews, visits, observations, emails, phone.</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.11 shows the ten participants by location, size, incubator model and data sources used for the study. The large number of nodes produced from the data sources were subsequently merged into themes by frequency. This is shown in table 4.12, illustrating the total of the NVivo parent nodes coded from the interviews by theme, words, paragraphs, coding and data source.

<table>
<thead>
<tr>
<th>Parent node</th>
<th>Words coded</th>
<th>Paragraphs coded</th>
<th>Coding references</th>
<th>Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incubator models</td>
<td>8,171</td>
<td>211</td>
<td>118</td>
<td>10 Managers</td>
</tr>
<tr>
<td>Specific challenges BI manager</td>
<td>7,548</td>
<td>162</td>
<td>136</td>
<td>10 Managers</td>
</tr>
<tr>
<td>Impact on economic development</td>
<td>6,108</td>
<td>170</td>
<td>119</td>
<td>14 Managers/stakeholders</td>
</tr>
<tr>
<td>Innovativeness</td>
<td>5,595</td>
<td>172</td>
<td>132</td>
<td>18 Managers and tenants</td>
</tr>
<tr>
<td>Relationships</td>
<td>5,353</td>
<td>178</td>
<td>99</td>
<td>20 Managers and tenants</td>
</tr>
<tr>
<td>Social behaviour</td>
<td>4,742</td>
<td>103</td>
<td>88</td>
<td>17 Managers and tenants</td>
</tr>
<tr>
<td>Risk-taking</td>
<td>3,578</td>
<td>98</td>
<td>34</td>
<td>16 Managers and tenants</td>
</tr>
<tr>
<td>Management in general</td>
<td>3,576</td>
<td>105</td>
<td>86</td>
<td>10 Managers</td>
</tr>
<tr>
<td>Commercial Issues</td>
<td>3,312</td>
<td>47</td>
<td>46</td>
<td>9 Managers</td>
</tr>
<tr>
<td>Incubator services</td>
<td>3,200</td>
<td>81</td>
<td>59</td>
<td>20 Managers and tenants</td>
</tr>
<tr>
<td>Networks</td>
<td>2,810</td>
<td>97</td>
<td>76</td>
<td>14 Managers, stakeholders</td>
</tr>
<tr>
<td>Social capital dimensions</td>
<td>2,383</td>
<td>73</td>
<td>63</td>
<td>10 Managers</td>
</tr>
<tr>
<td>Aggressive Competitiveness</td>
<td>1,226</td>
<td>56</td>
<td>44</td>
<td>16 Managers/stakeholders</td>
</tr>
<tr>
<td>Incubator priorities</td>
<td>1,943</td>
<td>55</td>
<td>42</td>
<td>10 Managers/stakeholders</td>
</tr>
<tr>
<td>Pro-activeness</td>
<td>1,543</td>
<td>58</td>
<td>44</td>
<td>14 Managers/stakeholders</td>
</tr>
<tr>
<td>Autonomy</td>
<td>1,527</td>
<td>34</td>
<td>24</td>
<td>20 Managers and tenants</td>
</tr>
<tr>
<td>Benchmarking issues</td>
<td>1,475</td>
<td>32</td>
<td>23</td>
<td>8 Managers and stakeholders</td>
</tr>
<tr>
<td>Trust</td>
<td>1,120</td>
<td>38</td>
<td>36</td>
<td>11 Managers and tenants</td>
</tr>
<tr>
<td>Total</td>
<td>64,316</td>
<td>19,429</td>
<td>1274</td>
<td>24</td>
</tr>
</tbody>
</table>
Rated highly and referred to most frequently were the BI manager’s challenges, the impact of incubation on economic development, but also innovativeness, BI relationships and social behaviour. The table is clear on the priorities of the BI manager, for it shows that the social issues were referred to more often than the commercial issues – whether the interviewee was a not-for-profit or for-profit BI manager. It should also be noted that table 4.12 only shows the main limbs of the analysis trees, as each of the parent nodes consisted in turn of a minimum of one branch, each made up of a number of ‘child’ or ‘sibling nodes’ providing different insights and deeper meaning in relation to that particular parent node. Whereas the main task of the research method was to collect data, the main task of analysis was to map and discover connections; not just between two parts; but to map and understand the complex web between the large number of emerging parts (Jick, 1979; Rebernik and Mulej, 2000; Tesch, 1990; Yin, 2003). To provide clarity to the analysis and capture the various themes and richness of qualitative research, the outcomes of this process are depicted in three core analysis models.

4.10.1 Core analysis model I – the internal incubator environment

Figure 4.6, Analysis Model I: The Incubator Enterprise shows the internal entrepreneurial incubator system as it was found in the research study. The model centres on four core nodes. Three in which incubator managers, tenants and other stakeholders have discussed and referred to incubator revenue, services and priorities and a fourth parent node; ‘entrepreneurial characteristics’ representing the characteristics of the participants themselves. Nodes most relevant to the research questions will be further discussed.
Incubator Revenue

Delving into the financial challenges of BI managers, Figure 4.7 is a tree-node section derived from Figure 4.6, depicting response rates involving incubator revenue.

Figure 4.7 - Incubator Revenue
The various nodes contain the findings with regards to financial objectives of the not-for-profit BI managers as well as the for-profit BI managers. The two red sub nodes contained findings of predominantly not-for-profit responses while the white nodes contained predominantly for-profit responses. Frequency and significance is represented by ‘r’ and ‘s’. For example, the rent node shows 8 referenced paragraphs from 6 different sources.

At the beginning of the research, the extant literature revealed not-for-profit income streams with researchers discussing lower rent and government or other sponsor funds as main revenue channels (e.g. Allen and Rahman, 1985; Barrow, 2001; Hackett and Dilts, 2004a, 2004b; NBIA, 2007; OECD, 1997; Pacholski, 1988; Rice and Matthews, 1995). In this study, the contents of the NVivo revenue node revealed similar findings with the two main sources of income for the Melbourne not-for-profit BI managers being lower than market rent and government grants, i.e. funding. For example, the MEC manager remarked:

“Besides paying much lower rent than anywhere else around here, the tenants pay for everything in one lump sum, from business development and rent, right down to their tea and coffee which does not happen in other places. They really have no additional expenses other than their user-pays (photocopies, phone, etc). …..their mentoring, business development, most of their training courses, they get here for $5 instead of maybe $55 or $220. We charge the $5 as a nominal fee to ensure they come”.

Source: <Documents\Interviews\Incubator Managers>I reference coded

In addition to the lower rent, however, this study found that other means of income were sought. The revenue nodes contained information on cost control and expenditure, on outsourcing equipment, business consulting and the renting out of conference rooms. Other ‘shoe-string’ options for the three not-for-profit managers were keeping costs down by minimising staff numbers, buying second-hand materials and organising and being personally involved in working bees to keep the cost of employing tradesmen as low as possible.
On the other hand, the node ‘shareholding in tenants’ filled predominantly with for-profit views, revealed findings about the capacity and entrepreneurial interest of for-profit incubator managers to take up shareholding in start-up companies. In line with the existing literature (e.g. Barrow, 2001; Callegati, Grandi, and Napier, 2005; Nash-Hoff, 1998) and confirmed by the FP incubator managers interviewed, the primary focus for for-profit incubator managers was ROI. However, this research also highlights the enormous advantage that for the FP manager there was a clear line of sight between the necessity to create and manage revenue to run the incubator and the drive and motivation to create additional profit from their own endeavours as an entrepreneur. The Zernike Manager remarks:

“We would like to take stake holding in more other companies in Australia, that’s what we’d like to do. Some of the start-ups are very innovative and can be highly profitable and this is exciting. We have done this already in Holland and in Perth we’re preparing to do more this year in Brisbane. We’re working in with a building development company to establish a new incubator for high-tech start-ups and we’re negotiating a deal at the moment. Unfortunately, we have to find the funds for it in Europe, because Australian investors do not seem to jump in as easily”.

Source: <Documents\Interviews\Incubator Managers\Zernike\A reference coded>

The findings contained in these nodes led to further findings and connections that shed light on the managing of incubators, especially those in relation to entrepreneurial characteristics, traits and styles.

**Entrepreneurial Orientation**

Evidence based on longitudinal EO studies elsewhere in the world, suggested that high levels of entrepreneurial orientation in small organisations increased performance and success (e.g. Wiklund, 1998, 1999; Zahra and Covin, 1995). This notion was important from an incubator performance perspective, suggesting that if incubator managers actively developed and sustained high levels of entrepreneurial orientation within the incubator environment, the performance of the incubator as well as the performance of incubator tenants was positively influenced. Figure 4.8
emerged from the (Fig. 4.6) node ‘entrepreneurial characteristics’ in which BI management styles were revealed that matched the dimensions of entrepreneurial orientation, according to the five dimensions of Lumpkin and Dess (1996).

Figure 4.8 - Entrepreneurial Orientation

Using Lumpkin and Dess’ (1996) approach greatly helped to clarify for-profit and not-for-profit BI management differences as various EO styles emerged as the primary link between incubator management and successful performance of the incubator. The EO factor in this study revealed that the different levels to which the not-for-profit and for-profit managers displayed EO styles was situational, for example major differences were dictated by their profit-making status. This is summarised in the following table 4.13 and subsequently discussed.

Table 4.13 - EO in NFP and FP Management

<table>
<thead>
<tr>
<th>EO Dimensions</th>
<th>Not-for-profit</th>
<th>For-profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Innovativeness</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Pro-Activeness</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Risk-Taking</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Competitive Aggressiveness</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>
Autonomy: Levels of autonomy were found in this research to be low in not-for-profit incubators, with the three not-for-profit managers feeling constrained by the lack of freedom to pursue their mission without encountering internal and external barriers such as hierarchical structures and bureaucracy. In the case of a not-for-profit incubator this mission consisted of controlling the successful building of the incubator enterprise through being able to make decisions about the implementation of business services, the recruitment and selection of tenants and the development and maintenance of key customer relationships with government and local industry. Hence, autonomy and social capital were linked. However, two of the three not-for-profit managers felt that they needed more autonomy to be able to really make a difference. The BBI manager remarks:

“I came here to start and build this incubator and manage it to the best of my ability, but in the last few years I feel more and more treated as an employee having to report more and more details to the board and government. I am writing one report after the other. The other problem is that some people on my board don’t really understand what it takes to run a commercial business… that is so frustrating. Especially because they have a vote in the selection of my tenants… they all want to do good, but forget that I carry the responsibility to make this a success… I feel more stressed now at times, than when I was running my own business.....”.

This response implies that the expectation of the manager was to manage the incubator as an entrepreneur runs a small enterprise. However, this seemed not to be understood by the sponsor and the board. They seemed to view the BI manager as an employee, expecting justification for decisions made. The other challenge noted was the make up and authority of the incubator board members. As the three Melbourne managers remarked, the incubator boards were made up of either government or university representatives (model depending) and a number of local volunteers consisting of local business owners and or community leaders. In the opinion of the BBI manager, but also the MEC and TEC manager this was not always helpful to run the incubator. On the other hand, higher levels of autonomy were found in for-profit incubators where the managers referred to being in control.
of the business, and feeling that they were given considerable responsibility to apply the most appropriate strategies to their situation. They also felt there was a mutual respect between the manager and the board. This will be further discussed under internal BI manager relationships.

**Innovativeness:** The entrepreneurial orientation dimension of innovativeness was found to offer both the not-for-profit as well as for-profit managers most room to move. In line with Hackett and Dilts (2004b) and O’Neal (2005) it was found that specifically the BI managers in the participating technology incubators (TEC, BTC, Zernike, EiR, UMIC) played an active role in the innovation process and fostered an atmosphere of innovativeness. BI managers had built trusting relationships with tenants, supporting creativity and encouraging internal networks. Hence, this study identified a close connection between innovativeness and the development of social capital. The manager of TEC (not-for-profit) remarked:

"When I first became involved with high-tech start-ups here in the incubator, I knew nothing about bio-tech, so the first thing I did was join the Bio Melbourne Network. I was at the launch and I thought 'ok, it's about building an innovative atmosphere', you learn the jargon, who's who, who's doing what without being a scientist. The flow-on effect is that I'm also known in bio-tech circles now".

In addition, both for-profit and not-for-profit managers provided practical business planning advice with regards to the commercialisation of new technologies or referrals to other professionals such as patent attorneys. The manager of Zernike (for-profit) remarked:

"We provide seed and early stage capital, at the real innovation and innovative stage. Helping companies get ready for commercialization is exiting. That's the main business of Zernike. An incubator is a beautiful means to spend your money wisely and to have more control over the innovation process of the companies you are involved with. I use my own knowledge and background of developing and taking new products to market and also the board’s expertise to get them going. Innovation team work really".
Pro-activeness; The level of pro-activeness in the not-for-profit incubators was rated as moderate. However this did not mean that the NFP managers were not staying informed and focussed on the future. When asked during an interview how, despite financial restrictions, the manager planned ahead and whether planning ahead was something the manager did, the BBI manager remarked:

“Every day of my working life, I am building this incubator and guiding new businesses to make it into the future, so I keep fully informed what is happening in the news, stock market, what industries will do well and basically where small business is heading...this gives me an idea what type of tenants to expect ... if that is not keeping in touch or having foresight what is.....”

Source: <Documents\Interviews\Incubator Managers\G§ 1 reference coded.

The meanings of pro-activeness behind the NVivo node also showed that some managers could not wait for or did not receive much planning assistance. They were focussed on the renting out of space and keeping the incubator occupied here and now. However, although unable to implement them, some were found to have foresight and proactive ideas about finding ways around the not-for-profit status limitations to achieve long term objectives. For example, the MEC manager remarked:

“I think what we need to do is offering some lower interest loans with help from the government. You would have to meet strict eligibility criteria for those loans and there would be a repayment schedule, but it could cut a lot of the hassles of going to the banks and paying high interest. When you’ve just started out in business you haven’t got the credit ratings and you have to put your house up. I’m not talking about loans of $500K necessarily, but loans of anywhere from $20-100K perhaps escalating over the time of successful business operation where you could be proved to be able to repay them”

Source: <Documents\Interviews\Incubator Managers\J§ 1 reference coded.

The provision of small loans was also remarked on by three other incubators (not-for-profit and for-profit). Other ideas were also mentioned, such as expansion and replicating working incubator models. The MEC manager remarked also:
“...I believe we have such a workable model that if government would give us more money, we could keep the incubator as it is, but we also could build on the land beside us or nearby a specialty incubator where we only take in businesses that have export markets and then also on the land behind we may be able to build a serviced office complex that allows us to move businesses out of the incubator...we need forward thinking that would take my role as an individual and as the CEO of a small incubator into a much broader perspective.....”.

Source: <Documents\Interviews\Incubator Managers\JS 1 reference coded

Risk taking; the level of risk taking displayed by not-for-profit managers was rated low, mostly because the managers remarked that they effectively had little opportunity to take risks and some remarked if they did, that the results could have led to loss of rent, loss of funding and even loss of management position. NVivo Nodes indicated that the nature of the for-profit environment however, required a higher level of risk taking. For-profit managers remarked that they took risks on an almost daily basis by assessing new business opportunities and the likely success of their tenants; whether to take on high-risk, high-reward opportunities or stick with more conventional ideas. They also took on risk in their choice of tenant entrepreneur and team and with regards to the development of the new venture, deciding how much money they were prepared to risk to back an inexperienced team of start-up entrepreneurs. The UMIC manager remarked:

“You take a financial risk with people...you learn to get a good idea if a tenant can make it or not”.

Source: <Documents\Interviews\Incubator Managers\UMIC\M1 reference coded

Some also followed the investor market. The MBSI manager remarked:

“I think we’re just coming out of that period now where we took too many risks with tenants, investors are again looking around at bio-tech in a bit more detail. We are following who are prepared to take a risk with these start-ups and when they are, so can we. Its not just about taking risks, but about understanding it”.

Source: <Documents\Interviews\Incubator Managers\Leigh\MBSI1 reference coded
Competitiveness aggressiveness; the level of competitiveness aggressiveness displayed by not-for-profit managers was also rated as low and was considered to be the level that best suited the not-for-profit endeavours researched. Little research is available on competitive aggressiveness in the incubator industry apart from suggestions that some incubator models seem more successful than others by being better networked or having economies of scale (e.g. Hansen et al, 2000). In this study two managers remarked how competitive strategies of not-for-profit incubators can lead to an increase in power in the local community. For example, the manager of the MEC (see earlier quote) stated that they provided services that other incubators or substitutes such as serviced offices do not and the manager of the TEC discussed how they attracted high potential new technology firms because of the lab facilities and location. Other competitive strategies that were developed by the management of the not-for-profit incubators consisted of making use of free publicity through community papers, recruitment campaigns offering cheaper rents and free equipment use and through the promotion of well known entrepreneurs in the community.

In general, the competitive philosophy of the not-for-profit incubators seemed to be focussed on an environment of cooperation rather than aggression in line with Brooks (1986) definition of incubators having a social mission and Johnson’s (2000) views of the building of social wealth through social ventures. The BBI manager remarked:

“I try to help generate a vibrant and robust local economy with the creation of new business opportunities and become a local business hub. In addition, the vision for the incubator itself is to become nationally competitive and commercially sustainable”.

Source: <Documents\Interviews\Incubator Managers>BBI, G1 reference coded

On the other hand, findings indicate that the for-profit incubator models were more aggressive as they competed with venture capitalist firms and commercial real estate models in trying to reach high potential start-ups. The financial drivers for real estate and other for-profit models were property development, property management, shareholding and business development (Barrow, 2001; Callegati,
Grandi, and Napier, 2005; Nash-Hoff, 1998). This was emphasised by the manager of EiR, MBSI, UMIC and Tagus, focussing on start-up companies from the tertiary sector such as ICT, Electronics, Bio technology and other high tech areas. Responses from the manager of Tagus park showed that these start-up entrepreneurs could enhance the development of a new industry base or revitalise an area where industry was in decline. By building a competitive advantage geared towards innovation, for-profit incubator managers could thus also compete. The Manager of EiR remarked:

“One of the biggest differences between us and a venture capitalist is the amount of funds we can offer, plus we are more hands on. We are dealing with the ventures at a much earlier stage in their life cycle, providing them all their infrastructure. The advantage of this is that you can stay close enough to watch their performance”.

Source: <Documents\Interviews\Incubator Managers\EiR\A reference coded>

Education and background of the BI Manager

A last area emerging from Core Model I, was a connection between management styles and the education and back ground of the incubator manager. Both the BBI and MEC manager had previously been entrepreneurs. The manager of the BBI had twenty years experience in founding and running several small businesses: three successful retail shops and a successful bed and breakfast business in the Victorian country side. He was hired eight months before the opening of the incubator. The manager of the MEC had also been a serial entrepreneur who had bought, operated and sold a number of businesses including management and storage facility companies. This manager was hired one month before the opening of the incubator. The manager of the TEC was the only participant in the study who had previous BI management experience and who had ‘come up through the ranks’ having run a small university linked incubator and an industrial mixed incubator in two different towns in the region. Sponsors seemed to target experience as a major qualification.

Whereas the strength of not-for-profit managers was business experience, for-profit incubator managers were generally more highly educated. with five of seven
managers interviewed holding MBAs and or other master degrees in business, economics or finance. The result of this seemed to be that for-profit managers were earning higher wages, were thought of as ‘executives’ and were selected by their sponsors from other professionals and professions to work in this industry. Conversely the not-for-profit incubator managers were not given the status of educated professionals, but as one BI manager remarked “the pay and status of a supervisor or mid-level manager”. The NFP managers in this study received lower wages although performing many of the same tasks and seemed chosen by their sponsors because they were business savvy and more hands-on. The assumption that the job does not require specific qualifications was backed by the fact that there are no training programs for incubator managers in Australia. An ex-incubator manager remarked:

“It’s not just about education. You need managers that are champions. We knew in terms of my succession there was a risk, but it’s very hard to manage that risk if it’s identity driven. I lobbied for funding from industry and government to help build the business, but the person who replaced me was a Harvard MBA who lasted a year...had never run a small and struggling business and was not paid enough...”.

Source: <Documents[Interviews\stakeholder\F US model, ex-manager>]

This suggested that successful incubator management requires business ‘know-how’ and knowledge, but also motivation and an understanding about what makes a specific incubator model ‘tick’ or as the Zernike manager remarked:

“As an incubator manager and also a manager of technology parks, you need a mix of entrepreneurial skills, education and business background. But most of all, you need to be able to run the business, the way you see it, taking into account all the situational factors”.

Source: <Documents[Interviews\Incubator Managers\Zernike\L reference coded]>

The manager stated clearly here that ‘entrepreneurial skills’ (management style) are required in addition to education and/or experience. This was consistent with the finding that managers did not rely necessarily on either education or experience but
responded to their particular situations by developing and applying appropriate levels of the EO dimensions to optimise their opportunities.

**Incubator staff**

Findings showed that there was an obvious lack of staff in the participating Australian not-for-profit incubators and, according to the interviewees, in Australian incubators at large. This is contrary to European statistics: the European Commission, (2002:15) stated that the number of managerial staff to tenants ratio: “...is at least two managers on an average of 20-30 tenants which allows sufficient flexibility to cover absence (training and professional development, conferences, holidays, sickness etc”). In addition, there would be adequate numbers of administrative staff to look after the running of the incubator including the bookkeeping and monitoring of the tenants, reception and event planning. This would seem to indicate a lack of appreciation by the sponsors and board of Australian incubators of the value and difficulty of the NFP incubator managers task.

At the time of research, the BBI manager (48 tenants) was assisted by only one full time administrative officer and one part time receptionist and the MEC manager (15 tenants) had to rely on one full time staff member; an administrative officer, responsible for administration and reception, who also replaced the manager during holidays, conferences or sickness. Only the TEC (30 tenants) employed a second (operations) manager. In addition, the TEC had two administrative staff members. Conversely in the for-profit incubators, the number of staff members were found to be higher. For example, BTC had six staff members, the UMCI had six staff members, and Tagus park had a team with over ten staff members, which seemed to indicate that their sponsors recognised the need for an adequately resourced management team.
4.10.2 Core analysis model II – social capital

Analysis model II, Figure 4.9 shows outcomes with regards to social capital and social challenges within the environment of the incubators researched, using the structural, relational and cognitive dimensions as per Nahapiet and Ghoshal (1997).

The model highlights the close connection found between incubator managers having the ability to build relationships and networks (the structural dimension) and incubator managers being able to control the quality of these relationships and networks (the relational dimension). In particular it was found that the not-for-profit incubator managers faced relationship challenges with regards to their funding bodies and their boards and some struggled with tenants.
Networking

To take advantage of the close proximity between new businesses inside the incubator walls, internal networks were actively cultivated by the three Melbourne managers, in particular the BBI and MEC. Both the structural and relational dimension nodes showed a high referencing frequency to the development and maintenance of relationships and networks inside and outside the incubator. This is a significant finding in its own right, as it suggests that from the start, the building of business relationships and the behaviour in networks play a major role in the developing and maintaining incubator performance.

The structural dimension of social capital such as high network density, proximity and referrals was existent in each incubator researched. In the BBI and MEC the networks were well established, aided by the communal kitchens, the layout of the buildings and the internal café within the main building. The interviews with the tenants in phase one established that there was a strong social network through monthly BBQs, weekly network lunches, a diverse business network with fortnightly small business events and frequent communication between the majority of tenants visiting each other’s workplace.

The interviews with the managers established the existence of extended networks involving stakeholders such as local government representatives, federal politicians, well known entrepreneurs and members of the local business association. In line with other studies (e.g. Becker and Gassmann, 2006; Birley, 1985; Bøllingtoft and Ulhøi, 2005; Hansen et al, 2000; O’Neal, 2005) it became clear that networking was experienced as one of the core elements of successful incubation.

Tenants and BI managers, whether for-profit or not-for-profit seemed of the opinion that the building of social capital formed the glue that held together the socio-economic systems revolving around the incubator. The BBI manager (not-for-profit) remarked:
“I invited ‘Crazy John’ (well known Australian entrepreneur) as a guest speaker and the place was packed. He was so inspirational. Half the local business community came out here to hear him. We also invited Janine Ellis, the woman who started the Boost Juice chain. Both were passionate and generous personalities. The tenants thought they were fantastic. They shared their success, but also their failures with the people here…and that gave them motivation to go on, it also boosted the image of the incubator…”

Source: <Documents\Interviews\Incubator Managers\BBI/G§ 1 reference coded

Another example comes from the Dutch BTC manager (for-profit). This BI manager recognised the strength of networking as an economic and social tool making new tenants feel at home and settled in:

“When new companies come into the incubator they often feel shy, so we set up a get together for them and also drinks with the other tenants so they get to know every one. You need to do this to create a climate. Coffee meetings work well and some tenants also have breakfast together…it’s the best tool for innovation and developing business”.

Source: <Documents\Interviews\Incubator Managers\BTC\R§ 1 reference coded

The power of networking was also recognised with regards to the building of partnerships and alliances in technology incubators. The manager of Tagus park (for-profit) remarked:

“We have a place that we call the Contact Centre. Within that activity we have here in the park a network of contacts with 135 different corporations in all sizes. We try to detect business opportunities between these and by that we look inside the park and say ok maybe this small company can meet and build a relationship with this business”.

Source: <Documents\Interviews\Incubator Managers\Tagus\C§ 1 reference coded

The relationships of the BI manager with sponsors

The findings of this research showed that incubator managers developed relationships with two particular sets of incubator stakeholders: the sponsors who set out to establish them and the tenants who use them. Figure 4.10 shows the
relationships BI managers form with stakeholders such as board and funding body be it private, government or university.

Figure 4.10 - BI Manager Relationships with Stakeholders

As discussed in the earlier section, the relationships with the incubator board and funding bodies were referred to as being a particular challenge for the not-for-profit BI managers. The lack of access to potential financial backers and lack of start-up business experience on incubator boards was perceived to be a problem as well as the bureaucracy and red tape. The for-profit managers however, reported less challenges with their board and shareholders. When asked about the make up of an incubator board, the (for-profit) MBSI manager remarked:

“Board members should not be made up by the sponsor or small local businesses alone, but by lending institutions and really successful entrepreneurs who bring in sponsorship, business expertise and networks. This is what you need from your board as a manager. We have a range of shareholders. We are in fact effectively, a spinout of the university - they have 51% of the shares. There are 100 shares, not all issued. Our 3 commercial partners are NM Rothschild, the investment bank, Royal Bank of Scotland, the retail bank and Addleshaw Goddard a large law firm, solicitors. They always trust our judgment whether to financially help a start-up or not and works great for all parties”.

Source: <Documents\Interviews\Incubator Managers\Tagus\C>§ 1 reference coded
Also, Taguspark was a private company and had sixteen shareholders, coming from the banking sector, university and R&D institutions, enterprise sector, local authorities, central government agencies and others. All shareholders were active partners of the Park as they were interested in reinforcing the regional innovation strategy in the Lisbon Region. Here, relationship building was strong and networks diverse, bringing together financial resources, academic knowledge, industry partnerships and government policy development. Through the diversity and interest of its shareholders, Taguspark was also rich in financial, economic and social capital. The interview with the manager revealed strongly connected networks amongst the board directors, resulting in a high profile database of business advisors and international companies. The network proximity was close with university, large organisations such as IBM, Eriksson and the Banco Portugal all established within the grounds.

Also the management of the Dutch BTC had built close relationships with their university partners and board members, who were represented by the ABN AMRO Bank, a venture capitalist, a private company, Twente University and Saxion Institute for higher Education.

The relationships of the BI manager with tenants
Figure 4.11 is a tree-node section derived from Analysis Model II depicting the content of interview statements describing the relationships fostered between the managers and tenants. The parent node split off into five siblings indicating the most referenced challenges to be mentoring issues, tenant shareholding problems (FP managers only) and rent collection, leading to trust issues and other business challenges.
For example, if a tenant was not doing well, the manager had to choose to forgo the rent or see a start-up business fail. This choice was made more difficult because of the social capital already invested by both parties. For example the level of trust or friendship resulting from being part of a network formed an important aspect of doing business, participating in joint ventures and in developing a sense of community. This was also noted by Maslow (1954) Putnam (1993), Nahapiet and Ghoshal (1997) and others. This study revealed other challenges that not-for-profit BI managers seemed to go through managing tenant relationships. For example, the TEC manager remarked:

“"There is a problem between being a manager and being a mentor. We have to be both. You have a situation where I have to sign an agreement with you and I have to chase you for the rent, but at the same time I have to be there when your revenues are not coming in and nurture that part and help you get through that, so it’s a definite conflict”"

Source: "Documents\Interviews\Incubator Managers\Tagus\C>§ 1 reference coded"

This remark clearly signifies the financial as well as relational dilemmas the NFP incubator manager may face on a regular basis.

4.10.3 Core analysis model III – the external incubator environment

The third and last core analysis process model Figure 4.12, portrays the social and economic impacts of incubation. The data relating to these nodes was obtained from discussions held with the BI managers about how they believed their
incubator made a difference to society. From the raw data, it became evident that managers believed that incubators provided a myriad of benefits to their environment. Many impacts of incubators on economic development were verbalised, such as the incubator tenants spending money in the local community, joint venture development with local businesses, the expansion of incubator tenants into the local area taking on new employees, the fact that incubators had attracted other and larger businesses to the region with the added benefit of a rise of business rates and taxes.

The social benefits referred to in Australia included that some not-for-profit incubators such as the BBI, MEC and TEC had become the local centre for business ‘know-how’, and a hub for small business training. They provided new networks and organised events and some of their tenants moved into the surrounding neighbourhood with their families. But first and foremost, the incubator itself had developed a community and social base internally.
The manager of the MEC remarked:

“In the type of incubator that Monash is we have that small community feel, the whole networking and relationship thing and the looking out for one another. And I know that’s it’s really esoteric and probably cannot be proved in a dollar value thing, but I just saw it so many times, the business to business relationships help turn dreams into money and success. The relationships within the incubator were special and they spilled out into the industry park and local business community. E.g. one of my tenants won a national innovation award and was heralded by the local council…..”

Source: <Documents\Interviews\Incubator Managers\MEC/Jl>1 reference coded

This statement revealed the need to be part of a small business community where people work towards economic wealth but also towards a sense of ‘belonging’.

Besides a number of responses identifying and describing the internal relationships, between tenants and between the BBI manager and tenants, there were a number of other responses towards a greater concept of community with phrases like ‘local community care’ used to express the involvement of the incubator manager and tenants towards local business environment. Relationships were expressed in terms of popularity and recognition. For example, the BBI manager remarked:

“We’ve always been in the newspapers, because we sing the praises of our businesses and we’re always showing businesses and others how we invite others in and deal and shop locally. I walk down the street and people blow their horns and wave to me from shop windows, so people in the community like us. When the council gives us some funding for something, the ratepayers know that they’re getting value for money, because we’re putting something back into the community. We make sure that we involve and notify the community that we’re doing that and I think that’s important. Ratepayers want to see something happening for their rates”.

Source: <Documents\Interviews\Incubator Managers\BBI/Gi>1 reference coded
This statement seems to refer to the value proposition of the incubator, trying to strike the balance between the creation of economic wealth on one hand and social wellbeing on the other.

On a grander scale, incubation has helped change or build a region. The manager of Tagus remarked:

"The town of Oeiras was a small town. It had problems; it is between Lisbon and Tagus river. Not much to live on.. bit of tourism along the river, no income. Used to be like a municipality in the middle of 2 areas, people would say that its in the middle of nowhere... so starting to build this enormous incubation project... it takes vision, but it brings in totally new infrastructure, in terms of the type and background of the people, industry and innovations...you have a lot of people here with university level and up, its all new industry, scientific backgrounds, new technologies...big change for the infrastructure of the community here"

Source: <Documents\Interviews\Incubator Managers\Tagus\C>1 reference coded

In Tagus park, incubatees mixed in with many medium and larger sized businesses arriving as part of the development of new industries. Also the attraction of large organisations in the form of anchor tenants, was one of the primary aims of the park. Here, the region itself formed the base of social capital and entrepreneurial activity, thereby changing and rebuilding the culture and identity of its very surroundings. When entrepreneurs create new business, they also generate new job opportunities and produce population growth in the region; hence entrepreneurial activity allowed for the development of entrepreneurial communities. This very notion can enable one region to win over another, as found in Putnam’s (1993) research study in Italy.

4.11 The NVivo®7 summary of findings

The financial and social challenges facing incubator managers have been demonstrated to be many and varied and it was acknowledged that the function of the incubator manager was both complex (made up of various interconnected parts)
and complicated (difficult to analyse). Table 4.14 summarises some of the more relevant findings from the NVivo®7 analysis. They will be discussed further in the light of the research questions in Chapter five.

**Table 4.14 - Summary of NVivo®7 Findings**

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**Findings for-profit incubators**

| Finding A2.8 | Social objectives of for-profit managers were secondary to financial objectives |
| Finding A2.9 | Managers saw similar benefits to the social activities engaged in by the not-for-profit managers |
| Finding A2.10 | Managers cared about and sought similar benefits to the socio-economic well-being of the local community |

**Summary Finding**

The NFP BI manager faced many more social challenges than expected

**Findings on optimum balance between financial and social objectives**

| Finding A3.1 | Not-for-profit Managers were found to be performing an integral role in the financial and social health of the incubator |
| Finding A3.2 | Discussions concerning social well-being were difficult to separate from notions of ‘financial’ or ‘economic’ well-being = source of struggle |
| Finding A3.3 | All managers had a profoundly personal view of the socio-economic well-being of the local community |
| Finding A3.4 | The stakeholders in the financial and social objectives were the same |

**Summary Finding**

The balance of financial and social objectives was fit-for-context and fit-for-purpose.

**Findings on how to achieve the balance between financial and social objectives**

| Finding A4.1 | Successful incubator managers were identified as requiring and having a wide range of styles, skills and talents |
| Finding A4.2 | The managers applied their styles, skills and talents as best they could to manage their priorities and be successful |
| Finding A4.3 | The incubator managers’ skills identified in the research were very similar to those identified in the literature as those possessed by entrepreneurs, discussion point only |
| Finding A4.4 | Not-for-profit and for-profit managers displayed all of the same EO styles although to different degrees |
| Finding A4.5 | Not-for-profit incubator managers seem to have lower levels of educational qualifications than for-profit managers but more practical business experience |

**Summary Finding**

The incubator manager achieved the balance between financial and social objectives by applying entrepreneurial skills to prioritise them and management styles to act on them.
4.12 Summary

This chapter began with an outline of the questionnaire and interview analysis process, an explanation of the NVivo®7 software and provided a detailed description of the various elements of the coding paradigm based on grounded theory. The coding process was explained step by step through the creation of free nodes, which after being analysed for significance were merged, evaluated and converted into tree nodes. The tree nodes, significant in depth and meaning, indicated that within their units were embedded a large number of interview remarks related to the various research problems identified in the literature. Once all nodes were placed in key relationships with one another and parent nodes, they were used to generate data analysis models based on frequency of references and significance of data sources. The second part of this chapter presented the findings of both phase one and two of the research in the form of excel spread sheet analysis and NVivo®7 output models along with detailed discussions of each, supported by quotes. The findings were summarised in table 4.14 and will now be discussed in the light of the research questions.
CHAPTER 5.
INTEGRATING RESEARCH QUESTIONS &
ANALYSIS

5.0 Introduction

This chapter is dedicated to the discussion of the research questions in the light of the
findings. It also incorporates the research journey and evolution from the original
conceptual framework to the emerging and establishing of new theory and a new
conceptual framework. Elements of the answer to each question are presented as
headings that introduce the discussion immediately underneath. The discussion
incorporates extant literature where applicable along with the researcher’s own
observations and insights gained. After a discussion of each research problem, the
findings and conclusions are drawn into the model upon which to base
recommendations to further evolve the practical implications of this research.

5.0.1 The journey from research problem A to B

The first main research problem is restated here as:

A. What are the challenges of the not-for-profit incubator manager, torn
between the need to run the incubator as a self-sustaining entrepreneurial
business-oriented organisation and the social objectives of the sponsors?

First, it was realised that the incubator manager’s split role needed to be identified
through analysing the financial (enterprise) and social (stakeholder objective)
objectives. This can be formulated as follows:

Split Role \[\rightarrow\] Self-sustaining entrepreneurial business = financial \[\rightarrow\] Social objectives of the sponsor = social \[\rightarrow\] Challenges
Although the research was focussed on the challenges facing not-for-profit incubator managers, it was realised that the integration of options available to for-profit managers could yield significant insights into possible solutions for the not-for-profit incubator managers and help establish the parameters for funding. The questions were thus divided as follows:

A.1 What are the financial challenges faced by not-for-profit and for-profit incubator managers?

A.2 What are the social challenges faced by not-for-profit and for-profit incubator managers?

Having generated and analysed knowledge of the problems facing the not-for-profit incubator manager, the researcher then looked for patterns in the analysis establishing what could constitute the balance and how this balance could be achieved.

A.3 What is the optimum balance between financial and social objectives of not-for-profit incubators?

A.4 How can the not-for-profit incubator manager achieve the balance between financial and social challenges?

This can be formulated as:

Success = balance \[\iff\] Financial \[\iff\] Social \[\iff\] How = approach

As the observation in the extant literature had been that ‘no pattern of sponsorship and funding had emerged worldwide as preferred, let alone as optimum’ (Abetti, 2002: 20), the last stage of this study was to extract parameters which could lead to new theory including a new optimum sponsorship and funding concept model based on the synthesis of the research and analysis, thereby tackling research problem B.
B. What are the parameters for optimum sponsorship and funding for Australian not-for-profit incubators?

5.0.2 The journey from old to new conceptual framework

The original conceptual framework shown below in Figure 5.1 (a repeat of Figure 1.3) is a simplistic representation of the way that the research problem was viewed at the start of this study. The main variables describing not-for-profit incubators were the profit status, the type of incubator model and the dual objectives, with the incubator manager centrally placed to deal with the situation. The impact on the framework from insights gained as each research question is tackled is charted and explained sequentially.

Figure 5.1 - Original Conceptual Framework

5.1 Research question A.1 – financial challenges

A.1 “What are the financial challenges faced by NFP and FP BI managers?”

This first sub question into finding an answer for research problem ‘A’, prompts the development of a clear image of the major financial challenges confronting all incubator managers. The extant literature identifies that with regards to financial
challenges, the generating of income for the incubator and obtaining of finance for incubator tenants were the main challenges (e.g. Hackett and Dilts, 2004b; Lalkaka, 2002; Mian, 1997). This was found in the literature to be only partially researched, mainly through the analysis of incubation models, with researchers highlighting the need for more research. The interview data were thus queried to establish what further financial challenges were identified in this research. Contrary to an early expectation that not-for-profit incubator managers had a small number of well-defined financial objectives (e.g. Albert and Gaynor, 2001; Allen and McCluskey, 1990; Lumpkin and Ireland, 1988; Rice and Matthews, 1995) it was found that a large amount of effort was spent on quite a variety of financial challenges. Findings from the for-profit managers are used to compare and contrast with those from the not-for-profit managers, highlighting options and flexibility, which if available to the not-for-profit manager could considerably enhanced their capacity to operate and produce a profit.

5.1.1 Generating income and resources for NFP incubators and tenants

Four major challenges relating to the maximisation of income sources and financial resources were found in not-for-profit incubators. These were:

1. Insufficient reliable sources of primary income
2. Reliance on a multitude of secondary sources of income
3. Insufficient options for generating primary income
4. Insufficient options for generating financial resources for tenants

1. Insufficient reliable sources of primary income

As commented on in the literature (e.g. Hackett and Dilts, 2004a; Peters, Rice and Sundararajan, 2004) this research confirmed that the three not-for-profit participants derived most of their income stream from only two sources; funding from their sponsorship bodies and rent. Policy restrictions precluding charging competitive rent severely limited their focus on sanctioned financial objectives. As well as adhering to the policy however, the findings showed that low rent was offered willingly. This was done to maintain maximum occupancy, partly as a
criterion for continued funding, but also and perhaps more importantly to offer the incubator tenants the greatest opportunity to keep costs down. The findings also revealed that partly because of this, all three managers accepted long-term tenancy from some of their slowest growing clients and those least able to manage higher rents. Cash-flow problems were a common result.

2. Reliance on secondary income sources and resources

To combat cash flow problems the Melbourne managers had to be resourceful in finding other means of income. The extent therefore to which the NFP BI managers did focus on other financial objectives was of necessity greater than just rent. As discussed in chapter four, the interrogation of the NVivo ‘revenue’ node had shown evidence of a range of activities. These extended from a thorough control on costs and expenditure to renting out meeting and conference rooms, fund-raisers and event management such as the organisation of seminars on business topics or by inviting guest speakers. This last activity provided learning as well as networking opportunities for tenants. In addition, two out of the three Melbourne managers actively sought financial contributions from successful commercial organisations. NVivo analysis on revenue revealed nodes identifying other options such as: staff minimisation, buying in bulk and buying second hand goods. Overall, the manager’s focus on financial objectives in each incubator was guided by three strategies; stringent cost containment, limited money-making opportunities and ultimately catering to the objectives of the tenants more than that of the incubator.

3. Insufficient options for generating primary income for the incubator

Under these financial constraints, the expectation that a not-for-profit incubator could be run and provide good return on investment was likely to be unreasonable. The NFP managers were aware of their limitations and of alternatives and clearly wanted a broadening of the financial scope available to them, with more autonomy to follow their vision and decide what worked in their situation.

Of similar importance to the managers was the performance of the incubator, as measured by the success of the tenants, whereby successful tenants could mean
continued funding. This had been measured or commented upon in various ways in the literature by Autio and Klofsten (1998), Bergek and Norrman (2008), Hansen et al, 2000, Merrifield (1987), Nowak and Grantham (2000) and others. For the not-for-profit incubator there was a problem. In order to become successful, tenants not only needed access to support services but also access to financial resources.

4. Insufficient options for generating resources for tenants

Another main challenge was thus the access to finance for incubator tenants. Apart from generating income for the incubator itself, some studies recognise the financial impact of the incubator manager with regards to obtaining finance for their tenants. For example, Mian (1997) reported on BI managers’ attempts to access financial support for their tenant firms in technology incubators. The BI manager’s success was rates as “ranging from moderate to major in value-adding” (Mian, 1997: 277). Also, Callegati et al (2005) found that a number of BI managers had collaborated in some form or other with venture capitalists in connection with their work as incubator managers.

As discussed in Chapter Four, this study found that all three Australian NFP managers identified the need to be able to, and genuinely wanted to assist with the financial struggles of their tenants but had few direct ways of involving themselves in their financial affairs. Opportunities were limited to, for example: providing referrals to accountants or banks (TEC), running seminars on finding financial resources (BBI) or providing external mentoring on finance (MEC). None of the NFP participants had access to seed capital or had personal connections with or access to Venture Capitalists. This highlighted the dilemma resulting from their lack of options: that although the NFP BI managers regarded their relationship with the tenants as a business relationship, they could neither help them nor derive income from them beyond rent. The inclusion of for-profit incubator manager interviews in the research is therefore valuable to be able to compare and contrast their situation.
5.1.2 Generating income and resources for FP incubators and tenants

The extant literature on for-profit incubators provided only a limited view about income sources for FP BI managers (e.g. Allen and McCluskey, 1990; Callegati et al, 2005; Nash-Hoff, 1998). However, the findings in this study showed that, there was a wide scope for the for-profit managers to conduct their businesses in the most profitable manner. The imperative to provide a return on investment and freedom from any policy restrictions that limited it created a consistency of purpose and process not available to the not-for-profit incubator managers. This allowed the for-profit incubator managers to employ a wide variety of potentially high-risk income generating strategies in the pursuit of profit, just like any other for-profit business. These included:

- Focus on fast business growth and cash-flow
- Seek high potential incubator tenants
- Charge high value, short term rent
- Negotiate share-holdings with tenants in return for support
- Offer tenant loans with interest
- Ask for payment for services
- Share in the profit from intellectual property rights
- Deal in real-estate and property development

The challenges for the for-profit managers were thus predominantly related to the maintenance and growth of their own businesses first, with that of their clients second. Despite their obvious priority however, the managers showed evidence of understanding the mutual dependency that existed. The tenants were paying for a variety of business support services and it was in the best interests of the incubator to optimise their tenants’ success. As well as providing services, the managers worked to make the most of available business relationship opportunities.
5.1.3 Commonalities in the financial relationships of NFP and FP managers

Besides the financial relationships with their tenants, both the NFP and FP managers were focussed on:

1. financial relationships tenant to tenant
2. financial relationships between BI manager - local business community

1. Financial business relationships tenant to tenant

All participants were found to encourage financial business relationships between tenants. For-profit and not-for-profit managers both seemed well aware of the advantages of doing so: easy access, communication, trading and learning through proximity and ultimately increased chances of survival and growth for all. The findings in chapter four showed that in a number of incubators be it not-for-profit or for-profit, joint ventures, cross trading and mergers were occurring. This was good for the incubator and was part of the managers’ strategy. A natural extension of this focus was for the manager to encourage the development of financial business relationships with local businesses.

2. Financial business relationships with the local community

In their business dealings, the not-for-profit managers demonstrated their holistic business world-view. This echoed the researchers’ philosophical stance that every individual business is part of a larger commercial whole, reflecting the commercial reality that all individual businesses do business with many others. The managers included members of the local community as financial business partners and were clearly aware of the mutual benefits for the incubator, tenants and local economy. As the NVivo findings showed, financial interaction between the tenants and businesses in the surrounding community was encouraged. Trading, developing joint ventures, using local suppliers and creating business relationships and networks within and outside the incubator were considered to be crucial parameters for success. Managers made statements indicating their belief that financial success was made significantly more achievable, or at least encouraged, by the incubator.
having an acknowledged place of trading within the business community. This will be argued further in the social context of this discussion.

The economic well being of the community was however, a significant component of the not-for-profit incubator managers’ financial focus in its own right that went beyond the recognition of mutual benefit. As part of their way of doing business, the managers of the BBI and MEC generally appeared to put more than expected effort into building financial relationships with the local (business) community. Their personal commitment to it also went beyond recognition that it was part of their charter to financially nurture the community as well as their tenants. In the case of the TEC, the manager built financial relationships well beyond the local business environment by attracting bio-tech and larger businesses into the university industry park from interstate and overseas. This also occurred with for-profit incubators such as Tagus park, the BTC and Manchester, where the manager had personally been involved in attracting a variety of new entrepreneurs from different locations into the incubator. Although discussed in the literature as one of the foundation causes for the existence of business incubators and sometimes used as a performance measure, researchers have rarely made this into a specific focus area to determine the outcomes for the incubator and/or the community.

One of the dilemmas of the NFP incubator managers was that one benchmark for their performance was the impact of incubation on the local economy. However, researchers acknowledge how very difficult this is to quantify (e.g. Hackett and Dilts, 2004a; Sherman and Chappell, 1998). Appropriate measures are hard to identify and reliable data for not-for-profit incubators was unavailable in these monetary terms. Also, the default to an internal ‘return on investment criterion’ (ROI) was one on which they would invariably score badly. This put the NFP incubator in a precarious benchmarking situation. The opposite was true for the for-profit incubators. Even though aware of the mutual benefits and the financial role their incubator could play in the community, the financial well-being of the surrounding business community was of less direct importance and not necessarily a benchmark for their success.
Not surprisingly, the focus on financial business relationships was found to be one of the parallels between the not-for-profit and for-profit manager’s strategies. The for-profit managers also displayed a holistic business world-view in that every individual business was viewed as part of the wider market including for example, the European Union, as was clearly stated by both Manchester managers. Members of other European countries were considered to be business partners and the interaction between promising UK start-ups and those in other places were considered important to the building of partnerships and alliances. Therefore, as well as engaging in financial transactions directly with their tenants, the for-profit managers also engaged in activities that were designed to optimise the probability of other business dealings outside the incubator. Introducing tenants to other sources of capital, business mentoring and business opportunities through networking in other countries was a common activity. This will be further discussed in the social context of incubation.

Perhaps more surprisingly there was also evidence of the larger societal economic well-being influencing the for-profit manager’s way of conducting their business. The ‘double-bottom-line’ and even ‘triple-bottom-line’ ethics of modern business were found in most of the for-profit incubators. Although parallels such as this were found between not-for-profit and for-profit incubators, there were many differences.

### 5.1.4 Differences in the financial perspective of NFP and FP managers

There were a number of differences in perspective between the NFP and FP BI managers with regards to financial challenges. These were:

1. the focus on return on investment and rapid growth for their own businesses
2. the focus on direct support for their tenants
3. the focus on tenants’ financial success
1. The focus on return on investment and rapid growth for their own businesses

The most obvious difference to the not-for-profit situation, in line with the literature (e.g. Callegati et al, 2005), and confirmed by the seven incubator managers interviewed, that the primary focus of for-profit incubator managers was real business growth and return on investment. There was a direct connection for them between working to support their tenants businesses and the drive to create a healthy return from their endeavours as an entrepreneur running a profitable business incubator. The for-profit managers were found to be highly motivated to choose their tenants based on their perceived potential growth because their own business success was tied directly to that of the tenants. The faster the tenants businesses grew, the more profit that was made and the faster the incubator business grew. The Tagus, UMCI, Zernike and EiR managers had a lot of autonomy and used it energetically to guide the tenants through their start-up and development phases, with an emphasis on doing it quickly, e.g. the Zernike manager stated that three months to a year incubation would be enough for a promising start-up. The contrast here was that the NFP managers had a greater emphasis on nurturing and survival rather than fast growth and financial success. Without the tools to hasten tenant success, the timeframe in the NFP situation was pragmatically seen as ‘however long as it took’. The type of tenants that suited these situations was therefore also different.

2. The focus on direct support for tenants

As for-profit managers were focussed on attracting start-ups with a potential for high growth and good profit, their job was to provide avenues by which this could occur. This would entail preparing them to pitch their ideas for VC panels, help with the preparation of business plans and introduce them to interested parties. For example, the manager of the MBSI in Manchester, pre-screened each potential start-up on the strength of their business opportunity. The incubator tenant then received help from an incubator team or in some cases a Manchester Business School MBA student group with the writing of a business plan and if promising,
might be introduced to an interested investor. Investors were mostly connected to the Manchester Business School or other parties on the incubator board, which consisted of two merchant banks and a well known law firm (see appendix 4). Similar strategic incubator boards were found in the Tagus, Zernike, UMCI and the BTC. This contrasted greatly with the volunteers on the board of the not-for-profit managers in Melbourne were the BI managers were operating at the other end of the spectrum: nurturing start-ups that essentially needed to reduce their overheads to survive.

3. The focus on tenants’ financial success

There was very little written in the literature about incubator tenant failure, other than discussing the tendency within the not-for-profit incubators to: “…underreport incubator-incubation failures and over-report successes” (Hacket and Dilts, 2004: 58). This was due to the financially dependent status of NFP incubators, who were trying to manouevre within a politically charged environment: “…where they must constantly demonstrate the success and benefits of the incubator and its tenants, in order to justify the continued funding of incubator operations with public funds” (Hackett and Dilts (2004a: 58).

This study revealed that the focus of the for-profit manager on the financial success of the tenants was intense. Tenants had to perform or at least show that their projections were well researched and indicated good growth and that the entrepreneurial team was strong. There was little tolerance for set backs and business failure, with either increased shareholder value or financial success being a pre-requisite to continued tenancy. The tenant was otherwise seen as taking up the space that may be occupied by a more promising tenant. In other words, the incubator tenants had to ‘earn’ their place in the incubator. In contrast, the NFP incubator seemed to have a high tolerance to failure and used minimal criteria for continued tenancy. This was remarked upon strongly by the BBI manager who had given notice to non-performing incubator tenants on several occasions but had been overruled by the incubator board based on the view that nurturing aspects were more important. Also the MEC manager expressed concern that in hindsight some
tenants should perhaps not have stayed as long in the incubator as they eventually did. These were the types of situations that led to NFP managers suffering financial frustrations.

5.1.5 Summary of financial challenges

By summarising and emphasising the polarised financial situations that the NFP and FP managers were found to experience, this research has shown that not-for-profit incubator managers endured a number of frustrations linked to their financial challenges. Their frustrations revealed within the NVivo research data base included:

- Minimal sources of direct income, limited to rent and funding
- Policy restrictions enforcing lower than market rent and free mentoring
- Not enough discretion in choosing/losing tenants
- Minimal autonomy in financial terms
- Board members lacking in financial resources and business experience
- The need to penny-pinching and spend time fund-raising
- Limited resources to plan ahead
- High tolerance to business failure of clients
- Inability to make a more significant impact on economic well-being of the community, that is, an organisation needs to be financially secure before it can engage in works for the local good
- Restrictions in expanding the incubator
- Restrictions on funding, short-term forecasts for more and the ever looming possibility of funding being cut off
- Lack of options to deal with financial challenges due to lack of opportunity to broaden the limited range of financial options available.

Besides government grants and rent, not-for-profit managers indicated particular frustration that they had no access to other forms of income such as limited shareholding, private funds, funds for small business loans, real estate development or business development consulting. The only autonomy and options not-for-profit
managers were found to have did not have the potential to generate a significant return on investment. Only by having recourse to engage in financial dealings with the tenants as well as seeking ongoing finances from government can the not-for-profit manager have any chance of meeting the expectations of all stakeholders and plan for success. By growing the business and making a good profit, it can be assured that the profit will be invested in the community, the hallmark of a successful social venture (Frances, 2007).

Whereas the NFP managers’ situation resulted in many frustrations the FP managers seemed to fare much better. The following list reveal some of the aspects found amongst the participating FP managers that could also assist the NFP managers.

- Multiple sources of direct income
- Policy consistent with activity – make a ROI
- Ample autonomy to follow the vision
- Multiple financial options to do business deals with tenants
- Commercially successful and experienced incubator board
- External financial advisors, nationally and internationally
- Enough finances to invest rather than ‘penny pinching’ on mundane issues
- Enough resources to plan for new projects and plan ahead for future projects
- Very low tolerance to non-business performance and failure of tenants.
- Availability of enough finance to develop and serve the local community
- Less reliance on public funding

The for-profit managers’ perspective is important in that it highlights a wide range of available profit making activity that may reduce or eliminate the not-for-profit managers’ frustrations.
5.2 Research question A.2 – social challenges

A.2 “What are the social challenges faced by NFP and FP BI managers?

After having analysed and discussed the financial challenges, the second sub question to research problem ‘A’ was designed to generate a clear image of the social challenges confronting incubator managers, for in addition to A.1 they allow the split role of the NFP incubator manager to be fully understood and discussed.

The literature reveals that the second objective of the not-for-profit business incubation process was to promote socio-economic well-being (e.g. Allen and McCluskey, 1990; Brooks, 1986; OECD, 1999). Remarkably, a major outcome of the NVivo7 analysis was that the ‘social’ comments rated a higher frequency of mentions than any other, including the financial ones. This was especially significant as it included much data from the more commercial for-profit BI managers as well as from NFP incubator managers and tenants. The importance of the ‘social’ over ‘financial’ aspects of incubator practice was thereby highlighted which effectively signifies a new contribution to the existing understanding of the incubation process.

5.2.1 Developing the internal social focus of the NFP incubator

The social (capital) focus of the incubator managers was found to begin at facilitating personal contacts but soon emerged in NVivo as a major tool in the managers’ tool-kit for assisting their tenants. This was particularly the case for the not-for-profit managers. Three major challenges relating to the social context and objectives of not-for-profit incubator managers were found in the study. These were:

1. fostering the well being of incubator tenants
2. building a dynamic incubator community
3. managing relationships with the sponsors and board
1. Fostering the well-being of incubator tenants

Although the wellbeing of the incubator tenant is scarcely referred to in the literature (Burnett and McMurray, 2004), the questionnaire and interviews with the tenants revealed a major focus towards the social context for businesses entering the not-for-profit incubators. Incubator tenants were found to be escaping personal loneliness and family pressures as well as the feelings of isolation from the business world. The not-for-profit BI managers understood the importance of social contact for the tenants, especially in the first months after their arrival. Initial welcome gestures made new tenants feel comfortable and established them in the incubator community. For the BI manager this also established the communication pathways and foundations for trust (Maslow, 1954) that could be relied upon later to allow the manager to participate actively in the development of the tenants’ businesses. However, developing a relationship of trust with tenants came with its own challenges. All three Melbourne managers struggled with the dilemma inherent in developing a trusting relationship as a business advisor and personal mentor, but when a business did not perform or struggled with the monthly rent, transforming into a disgruntled landlord. Over the two years of interviews, this challenge was regularly referred to by all three Melbourne BI managers. Despite this challenge however, the social context was found to be an area of unlimited opportunity to the not-for-profit managers to nurture their tenants in contrast to limited opportunities to assist the tenants financially.

2. Building a dynamic incubator community

Unencumbered by policy and financial constraints, all participating NFP BI managers focussed on the development of social relationships within and outside the incubator. Especially the BBI manager who, based in a low socio-economic area in the inner city made it his mission to encourage and build networks. Internal weekly lunch meetings were set up and monthly BBQs took place in order to build networks with the community. The BBI also scored high on communication, business networking, and social interaction in the questionnaire. Also in the MEC the relationships between the BI manager and tenants were referred to as being very close. There were only fifteen incubator spaces and tenants operated in close
proximity to each other. The central kitchen played a role in providing social interaction and the incubator manager’s office was located in the middle of the building and was easily accessible. The focus on social objectives by the not-for-profit managers was clearly a successful strategy in supporting and developing businesses. As intended, the contact made at social activities organised by the incubator managers commonly developed into friendship and trust that underpinned and strengthened any ensuing business relationship. The BBI and MEC managers believed, and the tenants found, that social capital facilitated business development as tenants learned about resilience and survival techniques just by being around other businesses which had gone through similar teething problems. This created a sense of belonging, which enhanced and facilitated one-on-one or group business mentoring by the manager. The TEC, being more high-tech focussed, scored lower with regards to the development of networks and high with regards to the relationship with the manager and even more with regards to a sense of belonging. The incubator actively built their profile around the image of being a high-tech innovation ‘hub’ while preserving the autonomy that these types of businesses required.

The interviews with managers of NFP seemed to indicate that they understood social perspective and the value of social capital. By comparison however, the social objectives of for-profit managers were somewhat secondary to financial objectives. It was found that nurturing was generally less personal and more selective. Tagus park for example, was large and comprised many start-ups. Socialising took place at different locations and the manager was not personally involved with every business. Also the virtual incubator models (EiR, MBSI, NIKOS) reported little interaction between clients or virtual tenants, and less interaction between manager and tenant. For example, the EiR started off as a small physical incubator housing around eight tenants and turned ‘virtual’ a few years after launching. According to the manager they did not have the critical mass to build internal networks and social capital. In addition they worked with fast growing high-tech start-ups that expanded quickly and did not seem to mix because they were apprehensive about sharing business know-how and their IP. EiR thus chose to move into a smaller space, although big enough from which to manage
their clients. Social capital in this incubator was thereafter only focussed on external working relationships between both the managers and incubatees.

In general however, FP managers were aware that social relationships had potential ramifications which went beyond merely the tenants having someone to talk to. In the BTC, UMCI, Tagus and Zernike, the BI manager undertook many similar activities as NFP managers such as guest speakers, seminars and social meetings among tenants to promote social interaction. The deliberate encouragement of social contact within most of the participating incubators was undertaken with the express expectation that connections would develop into business relationships. The relationship could be beneficial for both businesses and therefore fulfilled one of the major objectives of the incubator, that of promoting the growth of the businesses. Most managers took this further by extending their networks into the surrounding social and business community. This facilitated an extensive network extending outward from the incubator and had the additional benefit of firmly establishing the incubator within the community framework.

### 3. Managing relationships with the sponsors and board

Managing relationships with financial sponsors and board members was a particular issue highlighted in NVivo. The NFP BI managers found this relationship to be particularly challenging because financial and social objectives regularly seemed to conflict with discussions on strategies for incubator growth. It was found in the research that NFP boards commonly consisted of people representing the financial sponsor and rarely of people with completely independent views. The research also established that because the participating NFP BI managers relied on funding or at least on financial back up, this gave the board the authority to exert influence over the short, medium and long term goals of the incubator. These challenges will be dealt with more fully when discussing the optimum parameters for sponsorship and funding of the incubator.
5.2.2 Developing the external social focus towards community

Managers faced two challenges with regards to social issues and the community. These were:

1. building a social profile in the local business community
2. building regional and global networks and alliances

1. Building a social profile in the local business community

The literature provided the insight that social capital enhances economic wealth and healthy local communities. In particular, Putnam’s (1993, 1995) studies found that well networked and connected communities were more prosperous than those which were not. This is of great interest as Putnam (1993) illustrated that the level and strength of social capital directly influenced economic wealth and social happiness, a concept termed more recently as: socio-economic wellbeing. In addition Coleman’s (1998) study on a community of diamond merchants established that social capital provided a sense of belonging based on trust and that membership came with certain privileges. Similar evidence emerged in this study. The support felt by tenants through being part of the incubator and broader social and business community had a direct effect on the tenants’ capacity to do business and optimise success. Respondents to the surveys along with the interviews of BI managers frequently commented on the internal and external business relationships that had been developed through incubator connections.

As shown in Chapter Four, having extended their networking into the community the NFP BI managers in particular had consciously created a role for themselves in the social context. To perform optimally, the not-for-profit incubator managers knew that they and their tenants needed to be well regarded in the local community. To that end they actively worked to build a positive profile through developing social capital and business connections. Ultimately, all were found to be proud of their standing in the community and especially the BBI manager indicated that the local council and businesses in the community were glad to have them and supported their role. These findings were in contrast to the direction taken by the
FP managers where financial objectives were given more importance and the importance of social relationships were seen as a pathway to achieve this financial objective.

Although the for-profit managers did not seem to place the same emphasis on social objectives as not-for-profit managers, they were well aware of the benefits of building links with the local community both socially and financially. Especially the manager of Tagus park was focussed towards economic development based on social understanding. This stance of Tagus was commonly promoted, with brochures lauding the advantages of tenancy through being proximal to other businesses and the advantages of networking inside and outside of the park. The incubator was established with a mix of private and government funding specifically with community in mind. The concept was to build a very large industry park around which housing and a community would be further developed. This was the establishment of a socio-economic microcosm based around an incubator concept where the financial and social benefits were inextricably intertwined.

5.2.3 Summary of social challenges

There were many social challenges, of which the nurturing of incubator tenants and the building of a dynamic incubator, local community and an aware incubator board were uppermost. Not-for-profit incubators and their managers were found to be successfully performing an integral role in the social well-being of the incubator itself and the local community. It was found that the progression of social interactions led to financial interactions, which in turn contributed to greater levels of financial well-being in the incubator and community, thereby leading to greater social well-being for all. The social relationships that developed with members of the local community were part of the strong incentive for the incubator tenants to stay local after graduation. This further added to the size and strength of the business community and further strengthened socio-economic well-being.
Despite these outcomes being the actualisation of the intent of those who set up the not-for-profit incubators, one of the dilemmas of the NFP incubator manager was how to quantify the success of these endeavours. The default to a ‘return on investment’ benchmark fell well short of determining the true impact of the incubators on the local community.

The findings showed that the for-profit managers’ focus on social well-being of the tenants and community generally had a lower emphasis to that of the not-for-profit manager but had many similarities. Although the most independent or venture capitalist funded incubator managers saw social capital merely as a side-benefit similar to the importance of the financial impact on the local economy, the example of Tagus showed that with substantial private investment an incubator can also have a very strong emphasis on the socio-economic benefits to the community.

The importance of the role of incubators in improving the social well-being of the community was fundamental to the setting up of the NFP incubators and a high priority for the BI manager and boards. Although, this last relationship was not without challenges.

5.2.4 The impact of A.1 and A.2 on the conceptual framework

Figure 5.2 shows the impact on the original conceptual framework after addressing sub-questions A.1 and A.2. This began with recognising the limitations on earning independent income and the necessity to seek income from other secondary sources to realising that the objectives of the NFP manager could be explained more in terms of creating socio-economic wealth.
This leads to the importance of the internal and external financial relationships of the NFP incubator manager with regards to the functioning of the not-for-profit incubator. The analysis of the various financial mechanisms showed that the incubator manager could strengthen internal and external financial links, in order to increase the probability of tenant success and the creation of socio-economic wealth for the internal incubator community as well as the business community as a whole. It also showed that tackling financial challenges was found to be inseparable from the social context. It was further found that this type of community focus greatly paralleled the insights of previously discussed early thinkers on socio-economics such as Tonnies (1887) and Durkheim (1893) and resembled recent researchers like Putnam (1993, 1995) and Bourdieu (1983). Although not incorporated into the model, the contrast found between the NFP and FP financial strategy showed that what was being achieved under a different set of policies. The financial frustrations that the NFP manager lived with were contrasted with the ‘antidotes’ available to the for-profit manager. Nevertheless, not-for-profit managers were found to be very creative and skilled in surviving in a financially constrained environment, but the likelihood was that it would not be enough to save the incubator from a poor financial performance rating. Moreover, it would not encourage the NFP BI manager to set higher financial goals.
The second major impact on the original conceptual framework was the emphasis on the importance of the social context to the internal incubator performance. Managers were initially found to understand the importance of the social context of the personal aspirations of the tenants. Beyond this, they were found to understand and utilise their reliance on using a social context to promote the business aspirations of the tenants, i.e. the role of social capital in business. Further to this was the extension to developing social and business relationships with the larger socio-economic community through extensive networking facilitated by the managers. Ultimately, the relationship of the managers to the local community was found to go well beyond mutual benefit. The not-for-profit managers in particular were found to orchestrate their role in the socio-economic well-being of the community based on their conviction that they and the incubator had a social responsibility.

Having discussed the research relevant to establishing the financial and social challenges of incubator managers, the following part discusses the balance between the two as it manifested in the various aspects of the incubator.

### 5.3 Research question A.3 – balancing financial and social objectives

A.3 “What is the optimum balance between financial and social challenges of not-for-profit incubators?”

The previous two sections established the challenges confronting not-for-profit incubator managers, with regards to the financial and social. The question now is what mix of the two can be determined as being optimum in offering the best outcomes for the not-for-profit manager in the pursuit of: growing and graduating successful businesses, while being financially viable and making the maximum contribution to the socio-economic well-being of the community. This study shows that the balance between financial and social objectives is largely dependent on the perspective of the stakeholder being considered and thus would need to be assessed and benchmarked accordingly.
Considering the balance inside the walls of NFP incubators, the not-for-profit manager had to satisfy two main stakeholders, namely the tenants and the board in order to receive continued funding.

In regard to the tenants of the NFP incubators, the balance between financial and social challenges was found to be clearly in favour of the social challenges. This had emerged overwhelmingly in the NVivo node statistics showing a consistency between what the not-for-profit incubator stakeholders were mostly concerned about and what the manager could most easily provide. The situation presented the not-for-profit incubator manager with the greatest opportunity to make a difference and at relatively little cost. This suited the imperative to keep costs down and minimised any need to return to the sponsors and the board for additional funds. Thus the aims were to build strong internal relationships, strong local networks with local government, and local businesses and also to attract people who were thinking of starting their own business. The focus on social capital was however, time consuming and had the disadvantage of showing less tangible evidence of success.

Conversely, the financial challenges relating to the tenants were ironically the absence of options available to support them or strike business deals with them. The manager could not provide loans, make mutually beneficial offers such as a shareholding in return for services nor make money through paid business consulting, competitive rent or developing the real estate. All this affected the selection of clients who in most cases were lower risk, lower reward, slower growth types rather than higher risk, higher reward faster growth businesses. To an extent, the tenants were thus selected based on a financial necessity rather than financial viability. While this may be suitable to the low socio-economic sectors that need to be redeveloped, the NFP BI board should take into account the financial as well as social imperatives when assessing and funding the incubator.

In regard to the interest the boards had in what was happening inside the incubator, according to managers, the balance between financial and social challenges was found to be mixed. The views of the boards towards the challenges were also found
to be misaligned, a problem that is at the heart of the not-for-profit incubator managers’ primary dilemma.

On one hand, both the MEC and BBI managers and board for example, seemed predominantly focussed on maintaining occupancy and their social mission of adhering to the low rent policy as well as supporting tenant businesses. That is, the board seemed to focus only on what they could influence: the recruitment of new tenants, adherence to the incubator policies, representing and promoting the incubator at events and advising the incubator manager with regards to grants and funding issues. These were not necessarily the issues considered most important by the manager to be discussing with the board.

On the other hand, financial challenges were also a common agenda item although not focussed on the financial affairs of the tenants. With regards to the three Melbourne incubators, most board members were not experienced in business mentoring or monitoring and could not help the manager to help the tenants. The board was however interested in the financial health of the incubator. Following the initial funding of the incubator set-up, the board encouraged the manager to make the incubator become at least self-sustaining. With the financial challenges discussed previously, the manager struggled to consistently achieve this. Even the demonstration of a return on investment in the less tangible terms of incubator outcomes such as business survival rates, increased employment, spin-offs to other businesses, etc. has been acknowledged in the literature as very difficult to track and quantify. Unless, the NFP incubator was recognised as a form of social entrepreneurship, adopting a mission to create and sustain social value rather than monetary value; the not-for-profit incubator seemed condemned to the perception of financial failure. To compound this problem, in the absence of sufficient primary income the managers were more likely to be applying for further grants to allow them to improve their businesses and make them grow.

A major dilemma within the incubator was thus the result of misalignment between the social and financial challenges. While the board supported the managers’ low cost socially based methods of supporting their clients, in reality many tenants required access to finances. Whereas the board encouraged the managers to
network and mentor their tenants, in reality the managers needed more staff and resources to do so.

The balance between financial and social challenges was equally difficult to define outside of the incubator where the socio-economic well-being of the community was found to be another important focus for the managers, as well as being the second main objective for setting up the incubators. Evidence for this emerged around an NVivo parent node titled: ‘socio-economic well-being’. In the MEC and BBI for example, the managers facilitated social interaction between the tenants and members of the local community, but with an emphasis on local business people. In the case of the TEC a technical incubator, the term ‘local community’ was perceived as ‘the other businesses and people within in the ICT and Bio-tech industry’ of rather than being physically located in the surrounding areas.

The results of the managers’ balancing efforts were reflected in the research outcomes depicted in earlier in Figure 4.14 which showed a number of benefits of the incubator for the surrounding (business) community. The incubators were seen as:

- a hub for business education and training.
- the centre for small business know-how
- a place that showcases local business and industry success
- an entry point to new networks

Overall, the incubator was perceived as a place that enhanced community feel, developed infrastructure and created socio-economic wealth.

Although the balance appeared in favour of the social objectives, the financial impact on the local economics (although harder to quantify) was potentially bigger. These results were reflected in the second part of Figure 4.14 showing impact of incubation on economic development.

- the incubators created a rise in local employment
- the tenants spent money locally
• joint ventures were made
• businesses attracted other businesses (e.g. in the case of Tagus)
• an increase in business rates and taxes for the local community
• the surrounding community gained entry into a new market place
• and accommodated the expansion of tenant businesses.

It should be noted here, that despite the outcomes of this study identify a significant gap remaining as to how to quantify these impacts in terms that allow the true value of incubators to be estimated. This could and should be the future focus of incubator research.

5.3.1 What could be the balance that optimises stakeholder value?

From the findings of the research, it was thus realised that the question of balance may be posed more clearly as ‘what could be the balance that optimises financial and social stakeholder value?’ However in seeking an answer to that question, some more fundamental questions need to be answered: i) how to compare financial with social value, ii) how to prioritise value to any one stakeholder over another and iii) how to do either when all of the stakeholders with interests in the financial objectives were the same as those for the social objectives, namely the sponsors, the board, the manager, the tenants and the local (business) community.

Ultimately these questions led to the realisation that the questions about balance were dependent on several variables simultaneously. The discussion of A.1 and A.2 showed that the notions of financial and social value were dependent on many variable including the policies and profit status of the incubator and the priorities of the managers making it very difficult to compare their value. The discussion of A.3 showed a high dependence on the perspective of the stakeholders making it very difficult to put one ahead of another. Ultimately, these notions led to the realisation that the questions about balance were intractable as long as financial and social value remained separated and without a means to compare them and that the recipients were the same at all times although perhaps under different circumstances and to different degrees. Further investigation may therefore need to rely on incorporating value-quantified notions of socio-economic well-being.
Various models were found to have achieved some measure of success in this regard. The Israeli model (cited in Econtech, 2003; Lalkaka, 1996; Peters et al, 2004) allocated defined portions of equity (and thus profit) between various stakeholders: the tenant entrepreneur, the incubator and other investors. The Australian BITS incubators were partly modelled on this basis. In the case of a NFP incubator, social as well as financial benefits could flow to variety of alternate stakeholders or other community groups such as educational institutions or specific social ventures initiated by the incubator. By using private as well as public funding for the set-up for the incubator and their start-up businesses and allowing for shareholding, the eventual profit would enable the incubator to pursue various socio-economic objectives.

5.3.2 Incubators as socio-economic ventures

Viewing the not-for-profit incubators as socio-economic ventures removes the complication of treating financial and social objectives independently and removes the difficulty of discussing each in isolation. Interpretations concerning ‘financial’ or ‘economic’ well-being were found to be difficult to separate in the NFP incubator environment and appeared to merge into the combined notion of socio-economic well-being. This theme came out clearly in all of the survey and interview responses.

All participating managers in Australian and overseas were found to have a profoundly personal view of the socio-economic well-being of the incubator, their tenants, and their local community. The balance appeared to be more a matter of incremental corrections by the managers to adjust one way or the other depending on the immediate situation or desired outcome. In these circumstances the balance of influences between the financial and social objectives can be seen as a construct of the particular manager, created to make the most of any given set of conditions. The conclusion reached here is that no ‘one size fits all’. The diverse range of financial and social objectives and challenges was found to be a result of the circumstances in which the not-for-profit and for-profit managers and the stakeholders involved, operated. The delicate balancing act sustained between the
social and financial objectives was thereby a product of the managers’ flexibility and skills. To say that there was an optimum balance of social and financial objectives even for a single challenge in a single incubator would be to unrealistically simplify the problem. How then did any manager of any incubator achieve any sort of balance. The research focus on the managers now becomes even more understandable as the following discussion shows how it revealed tools that managers use to juggle the challenges and objectives of running and growing the incubator to the satisfaction of all of their stakeholders.

5.4 Research question A.4 – how to achieve the balance

A.4 “How can the not-for-profit incubator manager achieve the balance between financial and social challenges?”

In the previous section, the not-for-profit incubator managers were found to be the catalysts that facilitated the entrepreneurial and dynamic ever-changing day-to-day balance between financial and social challenges. Nash-Hoff (1998) asserted that to be successful an incubator needs an “entrepreneurial champion.” This champion does not necessarily need to be the manager, though the incubator manager is the likely candidate. Similarly Lichtenstein’s (1992) sentiment that the manager is a critical factor is consistent with the vast majority of interview responses from this study. However, it is often difficult to find incubator managers with appropriate skill sets. As Lalkaka, (2002: 174) reported: “... many incubator sponsors have problems attracting “business-oriented incubator managers who can generate incomes and reduce their dependence on state subsidies”. This study addresses this question and highlights the factors that may enable the manager to achieve the balance between social and financial outcomes.

Given the wide range of situations and stakeholders that NFP managers dealt with routinely, they were constantly confronted with situations where they had to ‘think on their feet’ and act according to their instincts often with minimal support. Administrative support was generally available in-house but rarely were external support systems available to help them through the difficulties. They were
effectively a ‘one person show’ and under these circumstances they had no choice other than to use their own capabilities.

5.4.1. Entrepreneurial traits and characteristics

The characteristics and traits of successful entrepreneurs such as motivation, drive to succeed, high need for achievement, and the willingness to accept risks have been recognised in the literature by other researchers. (e.g. Brockhaus and Horwitz, 1986; Hisrich, 1990; Khilstrom and Laffont, 1979; Kuratko and Hodgetts, 2004; McClelland, 1961, 1987; Moore, 1986). These characteristics were also recognised among BI managers in this study. In particular this study highlights a number of styles, skills and talents that incubator managers used to balance the special challenges related to the running of an incubator. The importance of social skills such as communication and networking were well established in the analysis. Beyond these, tenants and managers independently identified a comprehensive list of attributes that the manager used to run the incubator on a daily basis. These were labelled in NVivo as communication skills, social interest, creativity, flexibility, tolerance towards uncertainty and business experience. The majority of these attributes matched two particular categories in the literature, those of ‘social capital’ or SC and ‘entrepreneurial orientation’ or EO.

The findings and the literature (Utsch et al, 1999) also illustrated how start-up entrepreneurs can be non-conformist groups of people, who may think and act differently from those who work as employees in governments, universities or in larger organisations. The spirit of the successful not-for-profit managers interviewed in this study captured these sentiments of the non-conformist.

5.4.2 Building social capital

Another major finding from the research was that social climate and associated activities played a significant role within not-for-profit incubators. Other studies in this area have similarly identified culture and climate as necessary ingredients for successful business to take place, (Pearson, 2002; McMurray and Dorai, 2005;
Siegel and Kaemmerer, 1978). Much of the research on this was captured in the literature review and will only be reiterated briefly where applicable.

The literature defined social capital as comprising two major areas; i) the belonging to groups or networks and ii) the depth of relationships within these groups or networks, with communication being the critical element. Communication involves the transfer of knowledge, which may be implicit or explicit. Implicit knowledge often resides in people’s minds and is only shared where there is a network designed to provide mutual benefits and connectiveness amongst the actors (Granovetter, 1973). The managers demonstrated their understanding of this by facilitating face-to-face communication at a variety of levels. Internally the managers nurtured all forms of relationships from one-to-one, group, business to business and incubator-wide. These networks were then extended into the world outside of the incubator, thereby creating complex webs of potentially supportive relationships for the not-for-profit incubator residents and more importantly commercial relationships. To facilitate this process, certain capabilities were required from the BI managers. They were found to be good communicators on a multitude of levels and utilised the trust built up over time as the basis for continually extending and integrating their networks. Apart from the internal and external relationships, the incubator managers successfully maintained relationships with a variety of other stakeholders including the incubator advisory board, affiliated university and government representatives, investors and developers. It is difficult to conceive of incubation and entrepreneurship without the actors of social interplay and the managers’ skills in facilitating their interaction.

In conjunction, a broad category of capability identified during the interviews was found to describe the entrepreneurial style of management created by the managers.

5.4.3 Entrepreneurial orientation

The culture within the incubators was found to be only partly described by the social context. Importantly, a number of business dimensions were identified that
contributed to the successful performance of the incubator and incubator manager. These elements corresponded in the literature to the dimensions of EO: autonomy, innovativeness, pro-activeness, risk taking and competitive aggressiveness. Further it was found that in the fit-for-purpose world of the business incubator manager, these EO styles were adapted according to location, incubator model, tenant profile, and other situational factors.

1. Autonomy

The managers of not-for profit incubators were found to have low levels of autonomy compared to their for-profit counterparts. This seemed to be primarily a result of the NFP status of the incubator, which led to generally high levels of involvement of the incubator board. Perhaps because of the public source of the funding and/or the social nature of the policy of the incubator, boards felt it necessary to play a more active role. This bureaucratic involvement however, seemed to impede rather than assist the BI managers in fulfilling their dual role of supporting businesses and running a self-sustaining business. Further, this impeded their capacity to be autonomous due to lack of available finance and over-dependence on financial sources controlled by some boards. To entrepreneurs these were intolerable shackles on their creativity. Two of the three not-for-profit managers felt that they needed more autonomy to be able to really make a difference. This single issue caused more problems for the not-for-profit manager than any other as lack of autonomy had a stifling effect on the managers’ capacity to run the incubator more effectively. Along with other factors it contributed to reduced levels of pro-activeness, risk-taking and competitive aggressiveness.

Higher levels of autonomy were found in for-profit incubators where the managers were given considerable latitude to apply the most appropriate strategies to their situation. This seemed to result from the consistency of the return on investment purpose understood by the managers, the tenants and the incubator board leading to a more constructive relationship and respect. Managers also referred to a trusting environment in the board-room where opinions were listened to and advice welcomed and flowed freely. Managers’ autonomy was not constricted but
encouraged. High levels of autonomy were seen to be a prerequisite for the effective running of the incubator not just a desirable style.

2. Innovativeness

The NFP BI managers were found to be particularly innovative in the way they managed to achieve higher results with meagre resources. Their innovativeness manifested in the financial context by generating creative solutions to their lack of capital. In the social context, they created opportunities for business owners to meet and communicate either socially and/or commercially with the community. For example, the data revealed that the number of joint ventures, groups projects and cross-trading were higher in the participating NFP than FP incubators. In some instances NFP BI managers achieved a combined financial, social/commercial and training outcome by organising and charging entrance fees to events which featured business mentors providing training courses and workshops attended by members of all of the stakeholder groups. An extension of the managers’ innovative flair was found in their ability to build an innovative climate within the incubator. In particular in facilitating technical expertise (outside experts as well as in-house mentoring) to high-tech tenants. They knew the importance of innovation to product development, commercialisation and to business success and that the tenants would learn optimally both by experience as well as through mentoring.

The for-profit managers had to have a good understanding and firm grasp of business development through innovation as their own as well as their tenants profit was at stake. They needed to recognise market opportunities, and recognise and work with innovative entrepreneurial teams. Making the right deals and supporting the tenants through the commercialisation process in relation to new technologies, products and services was vital to the success of the incubator. In summary, the very nature of business incubation required a high level of innovativeness from both NFP and FP managers to be able to deal with every type of tenant business. Managers had to be ready and able to tune into new business ideas at any given time, judge potential and decide on strategies on how to deal with prospective tenants.
3. Pro-activeness

Pro-activeness was another area where the participating not-for-profit managers seemed stifled. They seemed reactive rather than proactive, albeit mostly because of lack of certainty on available funds. The managers did not seem to be able to plan for longer term improvements, modifications, extensions, equipment, business programs, as that required certainty of finances. This was particularly unfortunate and ironic given the longer term focus of the not-for-profit incubator manager towards the broader socio-economic well-being of the community and their responses towards future trends.

On the other hand, the for-profit managers were actively planning 3-5 year exit strategies with and for their tenants. They had different income streams and could rely on at least some stable forms of income, while experimenting with others. Income projections for the sponsors demonstrating the growth potential of tenants and the incubator itself was part and parcel of their role.

4. Risk taking

Although the level of risk taking was ranked lower for the NFP BI manager, both the NFP and FP BI managers were characterised in this research as risk takers. Their entrepreneurial spirit turned itself to whatever specific areas they had to focus on. According to the responses of the interviewees within the NFP incubator environment, more risks were taken with people, whereas in the FP environment more risk was taken with money. Both types of managers found to have adopted suitable levels of risk taking and were mentoring tenants in accordance with their incubator model. The freedom to take risks however was found to be an intrinsic style of many of the tenant businesses in all types of incubators. Overall, the range of risk-taking behaviours and attitudes observed in this study was extensive in all areas of the incubation phenomenon. The nature of risk for the not-for-profit manager was dependent on their limited freedom to take risk and their bottom-line, whereas the for-profit environment required a higher level of risk as their decisions could have a direct impact on the ROI of the incubator.
5. Competitive aggressiveness

In general, the not-for-profit incubators seemed to operate in an environment of cooperation rather than aggressive competition in line with their social mission to build socio-economic wealth. The policy of low rent imposed upon them meant that they could not compete in the rental market anyway. In contrast the growing competition in profiting from the success of good business ideas and promising start-ups caused the for-profit incubator managers to employ many of the same tactics as commercial competitors (real estate managers, business consultants and venture capitalists) to bring profit generating businesses into the incubator. This EO style can be seen as one that exemplifies the fit-for-purpose choice that results from the circumstances that the managers find themselves in. It is logical that the not-for-profit incubator manager would score lower in this style than for-profit manager. What counts is that the managers modified their style to suit the circumstances facing them and the incubator.

5.4.4 Summary with regards to achieving balance

The BI managers achieved the balance between financial and social objectives in the light of context and purpose by applying entrepreneurial skills to prioritise them and appropriate management styles to act on them.

Even though from the BI managers’ perspective there was a clear lack of incubator management business training, the participants were all recognised by their tenants, boards and community as very successful in nurturing businesses and keeping their own businesses afloat. This leads to the belief that BI managers who actively build social capital and develop high levels of entrepreneurial orientation are very capable at juggling the financial and social objectives and challenges within and around their incubators. However, there can be little doubt that a combination of entrepreneurial ability, business experience and education/training would forge the best incubator managers in both sectors.
The conclusion reached here builds on the answer to A.3 whereby the managers recognised the importance of context and purpose in establishing a balance between financial and social objectives and then utilised all of their strengths to devise appropriate strategies to accomplish them within their situation. The mix of social skills and business styles required to accomplish this has been captured in the literature under the social capital and entrepreneurial orientation research areas. This research indicated that the managers of the not-for-profit incubators had what it took to achieve success despite their lack of education and training and that many of the talents displayed by them were those recognised in entrepreneurs. Based on criteria found in the review of entrepreneurship literature and in this analysis, both incubator managers and incubator tenants could be viewed as being entrepreneurs and showed strong similarities in terms of vision, business know-how and managerial skills to lead small entrepreneurial teams. They were innovative and took risks in running dynamic entrepreneurial organisations. Both needed high levels of autonomy to drive the business forward and to achieve their vision. They also needed to be pro-active and competitive, although in the case of NFP managers less competitive and more socially aware.

5.4.5 The impact of A.3 and A.4 on the conceptual framework

The impact of A.3 and A.4 on the framework was that the balance between financial and social challenges was found to be primarily dependent on stakeholder perspective and incubator model. Balance also varied depending on situational factors in play at any time and circumstance, such as inside and outside of the incubator. The task of assigning value to financial and social objectives in a way that allowed comparison in order to then determine a balance was found to be unachievable. Socio-economic well-being was considered to be a more pragmatic notion that collectively described the majority of outcomes. Finally, it was recognised that the balance achieved at any given moment appeared as a temporary construct created by the entrepreneurial endeavours of the BI manager to make the most of any given set of circumstances. This was perceived as the actualisation of the managers’ holistic world-view.
Following analysis into how to achieve a balance between financial and social challenges, the incubator managers’ social capital skills, entrepreneurial styles, and general ability to manage the complex bigger picture, socio-economic interactions emerged as the main solution. The incubator managers’ holistic view of the incubator as part of a larger dynamic was found to be fundamental to their ability to manage their ever-changing tasks. Figure 5.3 shows the final conceptual framework.

Figure 5.3 – The Impact of SC and EO on Incubation

5.5 Main research question B – the parameters for funding

“What are the parameters for optimum sponsorship and funding of Australian not-for-profit incubators?”

The proposition offered is that since funding has to accommodate and occur in response to the activities of the incubator, determination of the parameters for funding requires a full understanding of all of those activities. The research has shown the incubation process to include numerous stakeholders: sponsors, the incubator, the manager, the tenants, local businesses, the local community and even the broader market. Numerous processes were seen to occur simultaneously, from
running the incubator business, including budgeting, organising support services, mentoring, etc., to dealing with the various stakeholders and adhering to the policy. Some managers were social entrepreneurs perceiving the incubator as the catalyst for socio-economic development. Others were commercial entrepreneurs perceiving the incubator primarily as the catalyst for producing economic wealth. However, it seemed that only through a holistic view of the incubator and the interrelated worlds of all of the stakeholders outside can sponsors and managers envisage their place in the myriad of operating and cooperating systems.

Along with this world-view sponsors were found to require an understanding of, and managers to actually have particular skills to successfully mould the incubator and surrounding environment and to guide and accommodate the activities by which the challenges and objectives could be met. These were found to fall into two major entrepreneurship streams of research, those of social capital and entrepreneurial orientation style. The findings showed that in each of the incubator models the participation in and use of internal and external networks was vital to the development of joint ventures and the obtaining of financial resources that can build the business further. Moreover, social capital was perceived as one of the key criteria to the growth and survival of both the incubator and tenant businesses. Especially the overseas incubator managers stated frequently that their facilities would not be what they were if they did not have the local, regional and international networks, and the financial backup of their board of directors and advisors. It was also the role of the incubator manager to help find and create markets for their clients. This could involve helping clients to obtain contracts, close a sale or leverage the board and other contacts to find money and customers. Not-for-profit incubator managers seemed to not have enough commercial links and thus relied more on quality systems for government contracts and tenders.

Overall, many challenges and dilemmas were found to confront the not-for-profit incubator manager;

- the incubator as a profit making business vs. socio-economic tool
- the sponsor’s aims vs. the manager’s aims
- the necessity for bigger income vs. charter to charge low rent
the financial objectives of tenants’ vs. financial objectives of the incubator
- competing within community or being part of community development
- quick ROI vs. long-term success
- the apparent paradox of focus on the financial vs. focus on the social

From these dilemmas it was concluded that the complexities of the incubator managers’ situation needed to be understood by the sponsors first before a funding model could be established. The parameters for funding identified in the research included:

- financial objectives of sponsor, to be used to benchmark performance
- social objectives of sponsor, to be used to benchmark performance
- socio-economic context within which the incubator operated
- board structure and content
- roles and responsibilities of manager, including autonomy
- skills of manager backed up by professional training
- proposed incubator model
- choice of the type of tenants to suit incubator model
- options for incubator-tenant financial relationship
- funding model to facilitate all of the above

Having derived the answer to the second part of the question “What are the parameters for optimum sponsorship and funding of Australian not-for-profit incubators?” the researcher agrees with Abetti, (2004) that “no pattern of sponsorship and funding has emerged worldwide as preferred, let alone as optimum”. However the conclusion from this study suggests that such a pattern can be derived. The answer must be fit-for-context and fit-for-purpose in each case and developed from a detailed understanding of the balance of financial and social objectives pertinent to each situation. From this, optimum sponsorship can then be defined as adequately and effectively promoting activity and tools which, contribute to the optimised funding model and success of the incubator. These are:

- detailed documentation of the objectives of funding providers and some quantifiable measure of their financial, social or socio-economic value
- a board populated by people with the skills to understand the expectations of the fund providers and the situation of the BI and the BI managers
- job description of the BI manager
- appropriate internal performance measures
- appropriate external performance measures taking into account the socio-economic impact perspective
- performance criteria tied to an appropriate time-scale
- criteria allowing for diversity of tenants; high/low risk businesses, high/low turn-over businesses
- provision for continued funding based on meeting milestones including top-up money or extra help from a business savvy board with a view to growing the BI – the BI’s BI strategy
- performance criteria including acceptance that while the expectation of being ultimately self-sustaining may never occur, the expenditure is achieving its aim of being a viable tool to grow the economy or simply providing greater community well-being if the ripple-effects are there, such as reduced crime-rate
- provisions that allow for a return to reliance on funding beyond the time a BI has become self-sustaining – accepting that downward fluctuations may occur and that this not necessarily a reason to abandon the project or cut-off funding
- longer term strategic options that accommodate change, such as allowing the model and operating parameters to be changed in response to changes in the needs of the community or the business environment
- an exit strategy

In summary, the success of an incubator depends primarily on the sponsors, the board and the manager understanding and having the skills to respond to all of the situational factors within which the incubator operates. With this clarity and a common set of goals and operating procedures, together they can set up a social enterprise with appropriate commercial overlays to ensure the financial viability of the venture.
CHAPTER 6.
CONCLUDING REMARKS AND FUTURE RESEARCH

6.0 Introduction

Before proceeding with the concluding remarks of this research, a recap of the ground covered in previous chapters is appropriate, since it is against this backdrop that the conclusions will be discussed.

Chapter one gave a short chronological history of incubation in Australia and introduced the overall study, including the research problem and subsequent questions. Chapter two cited references from three literature streams; i) incubation and incubator studies, ii) entrepreneurship studies, and iii) social capital studies, culminating in the identification of a research gap that had yet to be addressed. The problem identified lay in the split role and difficult challenges that incubator managers encounter while endeavouring to adhere to the simultaneous social and commercial objectives of their stakeholders (sponsors, incubator tenants and larger community) and the need to run the incubator as a self-sustaining entrepreneurial business-oriented organisation’ (Abetti, 2004; Allen and McClusky, 1990; Rice and Abetti, 1996). This problem formed the central theme of this thesis.

These issues pointed to the two most vexing dilemmas confronting incubation; what funding model would best facilitate the financial and social performance of incubators while optimising their contribution to economic and social development and, what roles and characteristics best prepared the incubator manager to balance the challenges of focussing on both financial and social objectives of their sponsors and of the local community.

However, upon tackling the problem it was realised that the questions were not independent. It was seen as a logical pre-requisite that only by having a detailed understanding of the incubation phenomenon from a BI manager perspective could
any discussion of the sponsorship and funding parameters required to support the incubator be assessed. Moreover, only by determining the actual circumstances involved in and surrounding not-for-profit incubation activities could an attempt be made to determine an optimum model for funding.

The research was investigated from the contention that the issues arose because the institutions supplying the funding to Australian not-for-profit incubators had not adequately defined their objectives or expectations of the activity and had not looked at incubator performance relative to those expectations. These institutions often relied on independent reports that focused on financial issues relating to the incubator operation, that is, on the financial return on investment of the incubator.

The research questions were explored by gathering information related to tenant and manager opinions about the financial and social challenges confronting them and the mechanisms used to deal with them; including the strategic management styles of the incubator managers based on five entrepreneurial orientation dimensions and two social capital concepts. Building on incubator literature and entrepreneurship theories a number of conceptual frameworks were developed to help describe the incubation phenomenon and to explore the incubator environment.

The research framework and methodological approaches to the data were outlined in chapter three covering holism and realism paradigms, the use of case studies, mixed methods and triangulation. Combined quantitative and qualitative studies were used to first test some of the views held by current researchers and second to generate new theory. The utilisation of both quantitative and qualitative methods in this research developed a broad appreciation of the subject. These were not just alternative methods of approaching the same issue, but of asking different types of questions (Creswell and Maietta (2002). Subsequently, data was gathered from a mixed sample of players.

Forty-six incubator tenants, ten incubator managers and four other stakeholders participated in the study at various times to discuss their hopes, fears and
impressions of life in an incubator. They revealed details of activities and the skills required to deal with them. The diverse sample provided the foundation for triangulation, hence reliability.

Excel spread sheets were used to collate and analyse the responses of the tenants with NVivo®7 software chosen to implement the grounded theory based analysis as described in the methodology and handle the interview responses of the managers with rigour. The data analysis process was described in detail in Chapter four, leading to three core analysis process models capturing the research in the form of node trees portraying the various relationships between the themes emerging from the analysis. These were then used to generate findings with qualitative support coming from quotes, that together could be used to address the research questions. Chapter Five addressed the research questions through a discussion of the findings supported by the existing literature, statistics and analysis models derived from the interviews and occasionally by direct quotes from the tenants, managers and other stakeholders. These discussions led to the following concluding remarks.

6.1 Concluding remarks

CONCLUSION I

The performance measures for incubators do not suit not-for-profit models. The phenomenon of incubation is correctly viewed as an agent of change and growth in the market economy on multiple levels and is an entrepreneurial endeavour. However this does not mean that all incubators should be measured with the same yardstick as that used to assess for-profit models, i.e. return on investment. This is clearly not representative of the successful outcomes of not-for-profit business incubation models with the result that a number suffer from poor performance ratings. This research has found that the Australian not-for-profit incubator model should be based on a different premise, that of being a predominantly social enterprise by which the financial turnover of the incubator is secondary to
bolstering local socio-economic conditions and nurturing struggling start-ups. The not-for-profit incubator’s performance should therefore be measured against social and community building success and the prevention of early business failures. Incubator benchmarking processes cannot be based on primarily commercial performance measures. Incubators at the not-for-profit end of the spectrum can only ever be judged as successful when they are seen and benchmarked as social business ventures or as a form of social entrepreneurship be it mixed or high tech, be it government or university funded. For-profit incubators are a different matter, where the return on investment criterion is definitely suitable. They function in a high pace innovative and competitive environment where the vision is investment, shareholding, commercialisation of new technologies and profit. Commercialisation comes before nurturing and only those who show a short term and high potential of ROI are nurtured. The performance of for-profit incubators should rightly therefore be focused on profit through investments and global relationships and only if appropriate to the model, against social outcomes.

CONCLUSION II

The current not-for-profit status and policy are not compatible with the viability of the not-for-profit models researched. As shown, benchmarking not-for-profit incubator performance based on return on investment is inappropriate, however it does highlight that most if not all incubators are capable of making a profit under the right circumstances. Following from this are the questions of how to make the most of the profit making capability and what to do with the profit. This thesis is an answer to the first question. The answer to the second is to satisfy the mix of financial and social objectives. Superficially these appear to be independent objectives, however to meet financial objectives or social objectives both require that finance be made available or generated. Therefore the premise that a not-for-profit enterprise does not need to make a profit does not necessarily follow. With unlimited funding a not-for-profit incubator could be a purely social venture, however in the case of limited funding; incubators need to be able to make a profit to enable them to pursue their social objectives. This confirms the inaccuracy of the initial conceptual framework where the not-for-profit vs. for-profit status was given
such prominence. In the new conceptual framework the most successful social ventures could be those that make the most profit. The reality, of course would be scaled to suit the funding, the incubator model and the mix of objectives.

CONCLUSION III

The primary stakeholders of NFP incubators require a balanced understanding of the objectives of all stakeholders to operate successfully. There are many stakeholders associated with a not-for-profit incubator, usually many or all of federal and/or local government sponsors, private sector sponsors, the incubator board and manager, the tenants, local businesses, the local community and the larger market. This list can be divided into primary stakeholders who run the incubator; the sponsors, the board and the manager and secondary stakeholders who are recipients of its endeavours; the remainder. As they all have objectives and an interest in seeing them met, representatives from both main groups are required on the board with ad hoc representation from larger commercial primary stakeholders such as lending institutions, successful entrepreneurs and from larger law and accountancy firms who can advise and/or financially boost struggling start-ups as well as the incubator.

CONCLUSION IV

An NFP incubator requires an operating policy from which to generate the appropriate funding model and performance benchmarks. Armed with a balanced set of objectives which are effectively the parameters for funding, the primary stakeholders are in a position to determine the operating policy and funding model suitable to meeting those objectives.

First, consensus must be reached on factors relating to the operating policy such as:

- prioritised objectives: internal/external, financial/social/socio-economic
- incubator model: NFP/self-sustaining/FP, biotech/industrial/etc.
- the roles and responsibilities of the manager and board
• criteria for board consultation vs. manager autonomy
• options available for incubator-tenant financial relationship bases
• tenant selection and occupancy criteria
• physical requirements of the incubator

Second, following from this, the funding model needs to address initial and ongoing funding criteria tied to the operating policy. Funding must be balanced against provisions for the incubator to apply variable rental rates, offerings of seed capital or share-holding arrangements. Finally, the funding model requires detailed criteria upon which to benchmark performance across the range of financial and social objectives rather than the narrow commercial criterion applied to date. Whereas generation and implementation of the vision lies to some extent with all of the primary stakeholders, the fact is that the incubator manager is at the forefront and actually turns the vision into the reality of achieving the objectives for which the funding has been made available, making that role deserving of special attention.

CONCLUSION V

Not-for-profit incubators require appropriately experienced, educated and/or trained entrepreneurial managers. Appropriate credentials of the incubator manager are crucial to the success of the venture as it is their competency that ultimately carries the enterprise to success or failure. Defining that adequacy is not a simple process.

This study concluded that there was a difference in credentials between not-for-profit and for-profit incubator managers, with business experience being the primary credential for the former and higher educational qualifications for the latter. However, against the backdrop of sponsor objectives, location, revenue models and type of tenant, the financial success as well as nurturing factor of an incubator depended more on the incubator manager’s social capital skills, entrepreneurial orientation styles and general ability to manage the complex of socio-economic interactions. Entrepreneurial flair is considered to be a more
fundamental requirement than education and training. Therefore with activities ranging from selecting and nurturing tenants, accessing resources, building and sustaining an entrepreneurial team, interacting with stakeholders from every strata of the social and financial world and teaching others how to ‘do business’, both the not-for-profit and the for-profit incubator manager need to be entrepreneurial as well as having practical skills and formal education.

6.2 Recommendations

There is a need for clear strategic directions for not-for-profit incubators to overcome the tendency for their performance to be judged by financial viability criteria alone.

The following criteria are offered for consideration.

Financially, not-for-profit incubators:

i) should be focused on achieving financial independence for the incubator and fostering local community economic wealth*

ii) should operate under a model combining cash generation plus government and private funds as appropriate

iii) should have a system for flexible rent arrangements based on tenant success (e.g. profit/investment criteria)

iv) should have a budget that allows for financial relationships with tenants such as low interest loans, shareholdings, etc.

v) should be focused on using their financial success in pursuit of the socio-economic mission, which is the building of prosperous communities

Socially, not-for-profit incubators:

i) should foster the social mission of the sponsors

ii) should be involved in local and regional networks

iii) should be socially orientated business hubs
iv) should provide basic business training and education including sessions for potential start-ups
v) should foster local business entrepreneurship and innovation
vi) could involve the provision of other not-for-profit services

The following should be considered with regards to the credential for recruitment and training of an incubator manager

vi) incubator managers must at least possess the capability to assess the recruitment criteria used for potential tenant businesses
vii) incubator managers should be able to demonstrate their understanding of and preferably have skills in entrepreneurship
viii) incubator managers should have prior business experience (preferably having started and run successful small businesses)
ix) incubator managers should have had or receive adequate education in order to facilitate business advice and ongoing training in organisational management
x) incubator managers should have the social skills to bring in and be able to build a broad range of social capital
xi) incubator managers should have the capability to orchestrate business partnerships, forge alliances, organise events and connect tenants with prospective business contacts within and outside of the incubator

6.3 Contribution to theory

The literature was found to be heavily weighted towards the models (what) and the drivers (why) of incubators. A wide variety of incubator models were discussed with the majority falling into either the not-for-profit or for-profit categories and having predominantly social or financial objectives respectively. Beyond this, the literature seemed in need of in-depth studies of those who run incubators and how they make them successful. This research made a positive contribution to fill that gap and contributed to the development of theory in powerful ways. The study:
i. shed new light on the phenomenon of incubation by clarifying the terms of incubation, incubator and incubation process,

ii. expanded the existing research by providing a number of new concept models explaining the incubator as an enterprise, the incubator as an holistic business model, and the position of the BI manager with regards to all its stakeholders,

iii. is the first to investigate the dichotomy between the motivations and objectives of the sponsoring organisations and those of the clients–entrepreneurs from an incubator manager perspective,

iv. is the first to correlate entrepreneurial strategic management orientation together with social capital constructs as a way to identify performance in incubators,

v. is the first to offer insights into the parameters for funding based on operating parameters, prioritised financial and social objectives and benchmarking

In the context of the research, interviewees gave rich and detailed accounts of decisions and organisational processes occurring within the narrowly defined contextual field of incubation. As such, the interview design, implementation and analysis seemed to achieve a reasonable level of internal, face, and construct validity. Although interview data lack the sample size to allow statistical generalization, the researcher feels the limitations are acceptable because the primary goal was theory building rather than theory proving.

6.4 Contribution to policy

What then can governments do to foster a healthier socio-economic outlook for incubators in Australia? The analysis and conclusions suggested a number of considerations for policy makers concerned about improving business incubator performance. The researcher believes that the current evaluation methodology
emphasising outcomes such as tenant survival rates, employee growth and incubator financial turnover provides only a partial picture and lacks a holistic perspective. Performance measures should be broadened to include the broader impacts on financial, social and socio-economic contexts in which incubation takes place and fostered by releasing the financial control to the incubator manager. The new conceptual models together with the recommendations provide the basis for new sponsor-incubator dynamics with a relevant performance framework tied to a balanced view of the objectives and outcomes as they pertain to all stakeholders.

6.5 Future research

In order to find a deeper meaning and possible solutions within the context of the challenges faced by managers of not-for-profit incubators, this study has real potential to contribute to incubation research. Further, from a national perspective as well as international perspective by participating in future collaborative studies. For example, the Israeli model shows promise. This model involved public funds being used to lever private funds and catalyse the incubator industry, with all management undertaken by the private sector.

Many topics with regards to the development and managing of incubators are yet to be explored. For instance the role of incubator boards is in need for further investigation. Other areas are the fast growth of virtual incubators in Australia and overseas and the building of incubator networks worldwide. This research only investigated a small number of incubators over a small period of time. Given that incubators take time to establish, research that provides a longitudinal perspective through conducting yearly interviews would be meaningful too. Further, it was established that similar incubator problems occur in different parts of the world, and thus a world wide incubator project in collaboration with networks such as the North European Network for Service Incubators (NENSI, 2007) or the Information Development Incubator Support Centre (iDISC, 2007) would be meaningful.
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APPENDICES
Appendix 1

Incubator Tenant Questionnaire

In Confidence

This questionnaire is conducted by Hermina Burnett, PhD candidate at Swinburne University of Technology. Your participation in answering this questionnaire will be valuable in supporting incubator and small business research. All information will be treated with confidence.

Thank you very much for your participation in this study and for helping other start-up businesses in incubators.

PART A. General information

Business details of Participant:

Type of Business

Name of business (optional):

Incubator address:

Age of tenant business:

Industry:

Number of Employees including owner(s):

Full time          Part time          Casual
Structure of your business

Please circle the appropriate answer

Are you a Sole Trader / Partnership/Company

Is your business a family business?   Yes / No

If yes, what is the relationship between various members?

If yes, what is their function in the business?

Partnership

1. Do you have a partner in the business? If yes, what is your relationship?

2. What role does your partner play in the business?

Gender:

<table>
<thead>
<tr>
<th>Age</th>
<th>18-25</th>
<th>26-35</th>
<th>36-50</th>
<th>51-65</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
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</tbody>
</table>
PART B. Incubator experience

Please give a quick overview of your business:


Incubator choice

1. Have you previously run a business before moving into this incubator? Yes / No
   If yes, where was your business located?

2. Why did you choose to move into a business incubator?


3. How long have you been based in the incubator? (Please circle)

<table>
<thead>
<tr>
<th>Less than 6 months</th>
<th>1 year</th>
<th>1-2 years</th>
<th>More than 2 years</th>
</tr>
</thead>
</table>

4. What do you think are the advantages for your business being based in a small business incubator?
5. What do you think are the disadvantages for your business being based in a small business incubator?

6. Please rate the importance of the incubator to the overall success of your business.

1  2  3  4  5  6  7  8  9  10
Low  high
PART C. Management styles

Entrepreneurship and Risk-taking

1. Are you an opportunist in your business? Yes / No
   If yes, how did you spot the opportunity (ies)? How did it/do they surface?

2. Are you a risk taker? Y/N If so, when and how do you take risks?

3. Do you have shareholders? If so, how are they involved in your business?
4. Do you welcome uncertainty in your business? Y/N

5. How do you handle loans and risks in your business?

Innovation Practices

1. Do you see yourself as an innovator in your business? Yes / No
   If yes, how do you innovate in your business?

2. Does the incubator environment trigger creative thinking? Y/N

3. Are there opportunities created in the incubator to learn and innovate? How?
4. How important is innovation to the survival of your business?

<table>
<thead>
<tr>
<th>Very important</th>
<th>Important</th>
<th>Neither</th>
<th>Not Important</th>
</tr>
</thead>
</table>

1. Why do you want to run your own business?

2. How do you keep control of your business?

PART D. Networking and Communication (please tick)

1. What type of communication channels do you use when in contact with any other businesses around you?

<table>
<thead>
<tr>
<th>Inside the BBI</th>
<th>Outside the BBI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone</td>
<td>Phone</td>
</tr>
<tr>
<td>Face to face</td>
<td>Face to face</td>
</tr>
<tr>
<td>Email</td>
<td>Email</td>
</tr>
<tr>
<td>Internal</td>
<td>Internal memo’s</td>
</tr>
</tbody>
</table>
2. How often are you in contact with any other businesses including suppliers?

<table>
<thead>
<tr>
<th>Inside the BBI</th>
<th>Outside the BBI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 times a day</td>
<td>1-2 times a day</td>
</tr>
<tr>
<td>1-2 times a week</td>
<td>1-2 times a week</td>
</tr>
<tr>
<td>More than 3 times a week</td>
<td>More than 3 times a week</td>
</tr>
<tr>
<td>Once a month</td>
<td>Once a month</td>
</tr>
<tr>
<td>Less than once a month</td>
<td>Less than once a month</td>
</tr>
</tbody>
</table>

3. How and where do you share information with others in the incubator? (Tick as many as you wish)

<table>
<thead>
<tr>
<th>How</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>Networking meetings</td>
<td>In the internal café of the incubator</td>
</tr>
<tr>
<td>Training sessions</td>
<td>Communal kitchens</td>
</tr>
<tr>
<td>Business meetings with other businesses</td>
<td>Visit each other’s workplace</td>
</tr>
<tr>
<td>Special Events</td>
<td>Outside of the incubator</td>
</tr>
<tr>
<td>Other: please specify:</td>
<td>Other: please specify:</td>
</tr>
</tbody>
</table>

4. What topics do you discuss during networking meetings (Tick as many as you wish)

<table>
<thead>
<tr>
<th>Customer service</th>
<th>Turnover and money</th>
<th>Social / personal issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing</td>
<td>e-commerce</td>
<td>Other:</td>
</tr>
</tbody>
</table>

5. How well do you know other tenants and/or management in the incubator? (Please circle)
6. How important is networking for the success of your business?

<table>
<thead>
<tr>
<th>Very important</th>
<th>Important</th>
<th>Neither</th>
<th>Not Important</th>
</tr>
</thead>
</table>

Mentoring

1. Do you make use of business advisors / mentors to make decisions in your business? Yes/No

If yes, who are they?

2. If yes, how often do you speak to an advisor or mentor about your business?

<table>
<thead>
<tr>
<th>Inside the BI</th>
<th>Outside the BI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 times a week</td>
<td>1-2 times a week</td>
</tr>
<tr>
<td>More than 3 times a week</td>
<td>More than 3 times a week</td>
</tr>
<tr>
<td>Once a month</td>
<td>Once a month</td>
</tr>
<tr>
<td>Less than once a month</td>
<td>Less than once a month</td>
</tr>
</tbody>
</table>

3. If yes, how important is their advice to you with regards to your business?

<table>
<thead>
<tr>
<th>Very important</th>
<th>Important</th>
<th>Neither</th>
<th>Not Important</th>
</tr>
</thead>
</table>

4. What type of formal business studies could help your business at this stage? (Please circle)
<table>
<thead>
<tr>
<th>Courses on particular trades</th>
<th>Certificate IV in small business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short courses on business topics</td>
<td>TAFE / RMIT diplomas</td>
</tr>
<tr>
<td>Short courses on computer skills</td>
<td>BAComm or Management</td>
</tr>
<tr>
<td>Accountancy package (e.g. MYOB, Quicken)</td>
<td>MBA or MEI</td>
</tr>
<tr>
<td>NEIS course</td>
<td>DBA or PhD</td>
</tr>
<tr>
<td>Other:</td>
<td>I do not want to do any more formal business studies</td>
</tr>
</tbody>
</table>

5. What type of small business seminars could help your business at this stage? (Please tick)

1. Marketing sessions
2. Book keeping & Financial planning
3. Legal support and knowledge
4. Business Mentoring and Coaching
5. Cluster groups: networking sessions with peers to share experiences
6. Information on how to be more innovative
7. Customer Service
8. Knowledge on leadership and entrepreneurship
9. Business Communication such as presenting, speaking and writing
10. Knowledge on team building and cultural diversity in your workplace
11. How to sustain a competitive advantage over others
12. How to make difficult decisions
13. Problem solving techniques
14. How to balance work and life
Appendix 2

Semi structured Interview Guide I Introduction and building rapport

<table>
<thead>
<tr>
<th>Interview Guide</th>
<th>Semi-structured interview</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas investigated</td>
<td>Inspired by</td>
<td>Topics to discuss</td>
</tr>
<tr>
<td>General conversation about incubator</td>
<td>Hackett and Dilts, 2004 and others</td>
<td>How the incubator came about</td>
</tr>
</tbody>
</table>

1. Managing the organisation (social)

<table>
<thead>
<tr>
<th>Experience</th>
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<th>What did the manager do before joining the incubator?</th>
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<tr>
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<td>Bandura, 1986</td>
<td>Do they have a business plan?</td>
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2. Social Capita I - Developing goodwill (social)

<table>
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<tr>
<th>Network s</th>
<th>Nahapiet and Ghoshal, 1997; Higgins and Kram, 2002</th>
<th>Did the managers bring in networks and contacts?</th>
<th>What type of networks/contacts?</th>
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<tr>
<td>Relationships and Communication</td>
<td>Baron and Markman, 2000</td>
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1. EO Dimensions - Managing the organisation (financial)

| Autonomy | Brockhaus and Horwitz 1986; Greenberger and Sexton, 1988 | How do the managers ‘run’ their incubator? | Some tactics |
| Revenue | Abetti, 2004, Hackett & Dilts, 2004a,b; Gasse, 1982 | How do you deal with financial stress and funding? | Not-for-profit stress |
| Risk-taking | Bearse, 1998; Hackett and Dilts, 2004a, b; Utsch et al, 1999; Frese and Pluddemann, 1993 | What are your financial objectives? | Examples |
| C- Aggressiveness | Utsch et al, 1999; Maslow 1954 | Do you focus on Nurturing or conducting business? | What is their choice? |

2. Social Capital - Developing goodwill (social)

| Networks | Bøllingtoft and Ulhøi, 2005; Neergaard, 1999; Neergaard and Madsen, 2004 | How do you develop networks in the incubators? What do they organise in this area? | Some tactics |
| Relationships and Communication | Pittaway, 2004; Timm and Stead, 1996 | How do you manage your relationships with tenants? | Some examples |
| Mentoring skills | Gary, 2004; Thomas and Kram, 1988 | In which areas do you guide your tenants? | Some examples |
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#### 1. EO Dimensions - Managing the organisation (financial)

<table>
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<tr>
<th>Area</th>
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#### 1. Social Capital - Developing goodwill (social)

<table>
<thead>
<tr>
<th>Area</th>
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<tbody>
<tr>
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<td>Bøllingtoft and Ulhøi, 2005; Nahapiet and Ghoshal,1997; Neergaard and Madsen, 2004</td>
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<tr>
<td>Relationships and Communication</td>
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</table>
## Semi-structured Interview Guide IV – Finding solutions

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<th>Interview Guide</th>
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<td><strong>Inspired by</strong></td>
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<td>General conversation about the job of the BI manager</td>
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<td>Unstructured</td>
</tr>
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1. **EO Dimensions - Managing the organisation (financial)**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Reference</th>
<th>Discussion</th>
<th>Level of decision making</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy</td>
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<tr>
<td>Innovativeness</td>
<td>Drucker, 2002; Yencken, 2003</td>
<td>How can BI managers create an innovative environment?</td>
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<td>Risk-taking</td>
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<td>How can BI managers mitigate financial risks?</td>
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<tr>
<td>Pro-activeness</td>
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<td>How do BI managers plan the future growth of the incubator?</td>
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<td>Ideas and Examples</td>
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</table>

2. **Social Capital - Developing goodwill (social)**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Reference</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationships and Communication</td>
<td>Shockley-Zalabak, 1999; Timm and Stead, 1996</td>
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Appendix 3

Letter of Informed Consent to provide data for Swinburne Ph.D Research

Dear

As a Ph.D student from the Australian Graduate School of Entrepreneurship at Swinburne University, I have designed a research project that explores tenant and manager experiences in an incubator environment.

The project involves collecting information through structured and semi-structured interviews by discussing incubator programs and processes, innovation practices, issues like autonomy, networking, relationship building and other challenges and dilemmas within the incubator environment.

I am asking cooperation from you by consenting to be interviewed and by allowing me to discuss the topics with you while filling in a questionnaire or digital recordings. Interviews are expected to take around 1 to 1.5 hours. In reporting this project, I shall be coding firm names and report by tenant respondent numbers only not to compromise your privacy or the confidentiality of the questionnaire.

Your participation in the interview, specifically when taped by digital recorder, is very valuable for SME and incubator research, but you may withdraw from further participation at any stage. If you should feel the need to withdraw at anytime during the research, all information you have provided will be destroyed. All information supplied to the researcher will be treated in confidence and you will not be personally identifiable in any report of the research that is published.

This letter explaining the project includes a consent section. The consent section is to be signed after the interview and the page returned to me. If you need any further information about the research, please feel free to contact me or speak to my project supervisor Dr Shahid Yamin [+61 03] 9214 8381.

If you have any concerns or complaints about the conduct of the research study, please contact: The Chair Human Resource Ethics Committee, Swinburne University, PO Box. 218, Hawthorn, Vic. 3122.

This project will be conducted by: Hermina Burnett, Swinburne Graduate School of Management, Swinburne University.

Thank you for agreeing to assist with this research project.

CONSENT SECTION

I ____________________________ agree to take part in the Ph.D research investigating experiences, challenges and work practices in incubator environments.

I hereby consent to participate in the research and accept that I will be digitally interviewed and/or by written questionnaire. I understand that I may withdraw from the research and I am in agreement that all information supplied to the researcher may be used for research purposes and will be treated in confidence.

--------------------------------      ----------------------
(Signature)
Appendix 4

Case Information

This appendix contains more detailed case study information about the 10 incubators where interviews were held with the incubator managers and in the Melbourne cases, where the incubatees were interviewed. The incubators will be handled starting with the Melbourne (BBI, MEC, TEC) and Perth (EiR) based incubators, followed by those in the Netherlands i.e. Holland (Zernike, Nikos, BTC), the United Kingdom (UMIC, MBSI) and lastly Portugal (Tagus).

1. The Brunswick Business Incubator (BBI), Melbourne

- Large stand alone incubator
- Converted old secondary school
- Not-for-profit government funded structure
- Mixed model with offices and light-manufacturing space
- Inner-city incubator in low socio economic area (1.5km from CBD)
- Benchmarked Australia’s most successful Small Business Incubator in 2005
The model

The Brunswick Business Incubator (BBI) is a not-for-profit semi-industrial incubator model, jointly funded under the Commonwealth Government’s AusIndustry Small Business Incubator Program, the Moreland City Council and the Victorian Government and is an initiative program of the Northern Area Consultative Committee (NACC). Primarily an initiative of the Moreland City Council, BBI opened in 2002 and houses around 60 start-up SMEs (at the time of research) with room to grow to around 85. The two buildings, previously a secondary college, were provided by the municipality with further financial resources to refurbish the site provided by the Federal government. This means that the effectiveness of this incubator should be judged by government in terms of employment growth and number of graduated businesses, ready to graduate into the community (Barrow, 2001; Bhabra-Remedios and Cornelius, 2003).

Location

The BBI is located in the city of Moreland, an inner-city suburb in the Northern Metropolitan region of Melbourne (3km radius), 10 minutes from the Central Business District. Covering an area of 51 square kilometers, the municipality has one of the highest population densities (137,000) in Australia (Moreland, 2006). The community is culturally very diverse, with more than one third of local residents born overseas, coming from more than 150 countries (Moreland, 2006). Losing part of its manufacturing base to cheaper Asian countries in the last decades, the city is re-developing its commercial business and community infrastructure in the hope to become a place of more diverse economic action. As part of this plan, The Brunswick Business Incubator was designed to become a catalyst in attracting new entrepreneurial activity.

The manager

Mr. Graeme Walker was hired as incubator manager in 2002 about six months before the incubator opened. His first visit was when the buildings were still vacant.
“I had heard about a job coming up for a new incubator and had just seen the advertisement in the local paper, so went over to have a look. The school looked totally run down. Many windows were smashed; the carpets were old and torn. Many of the old school desks were still sitting in the empty class rooms and there was graffiti on some of the walls. I felt great and saw tremendous opportunity in this place. It was big, bold and I knew I could build this into something beautiful. I have built businesses from scratch before, so applied for the job that afternoon”

Graeme oversaw the refurbishing of the incubator using his own business know-how and handyman skills. He also designed the lay-out of the offices and board rooms.

Graeme holds a small business certificate has founded and run six small retail businesses and a bed and breakfast in the Melbourne hills. He worked as a small business mentor for a number of years before becoming the incubator manager of the BBI.

Staff
Graeme has two employees. The team is made up of himself, one administrative assistant and one personal assistant.

Excerpts of interview data

G In 1994, the Moreland City Council did a feasibility study based on a couple of other models around Australia to see if there was a need for an incubator in the City of Moreland. The C of M has 5600 small businesses so it was quite obvious that it was needed. It originally started in 1994, as initiative of the Northern Area Consultative Committee, the State and Local Government and took a while to undertake the feasibility study, then they went looking for a building, which is one of the biggest problems when you build an incubator, you have to have the right place. About three years later they found this building that was an old secondary college which had been closed down and amalgamated with another one, so the building came up. They asked the State Government if they could lease the
building – it took a lot of pressure, but yes, it worked and in 1999 they got the approval for the building but we really didn’t start work until 2001. We are now operating a well working mixed incubator.

H How many can it accommodate?
G It is running at 103% occupancy right now! We’ve always had 100% occupancy. Currently we’ve got 54 business and 3 virtual tenants. We’ve just applied for some more funding from local government which I’m sure we’ll get and we should probably by Dec 2007 have about 80 businesses.

H Through my incubator research, it seems that it’s hard to make an incubator commercially viable. Do you find the same?
G Yes. But there are things that help. You’ve got to have the right building, the right location and you’ve got to have the room, the space. A small incubator would find it very difficult to make a profit. If you’re going to have 20 businesses it will never be commercially viable. It’s going to always cost you money. We do give tenants a reduced rental, we don’t charge commercial rents, but our costs go up like everyone else, they increase dramatically whether they be insurance, power, gas, whatever. And that gap will get wider and wider and we’re noticing that now with our incubator even though we have 54 businesses in there. Our gap is still good, we’re making a profit at the moment and a lot of that goes back, but we’re very fortunate that we have the space and number of businesses in there. To do it in a smaller scale, I don’t think it would be worth it.

G Micro businesses. Even smaller than small business. A lot of start up businesses, or coming from a home base and found out that it’s unproductive and not professional. A good step is for those people to go into an incubator. Some people get a bit funny about an incubator, they think it’s hatching and ‘I’m not a real business’. The great thing about calling our place an incubator is that it gives everyone an opportunity to talk about it and when people go out there and say ‘I work at the Brunswick Incubator’ people go ‘what, where?’ It gives them an opportunity to tell them about it. We get a lot of home based businesses moving out. I’d like to see every business move out within about 18 months. I think 3
years is a good time. We don’t want to force people out after 3 years either if they’re not ready to leave and some people who are innovating and coming in with new ideas shouldn’t be leaving.

What type of services does the incubator provide?
G Mentoring, business support, reception, a serviced office environment really. We’re there to help and assist them. We’ve built a fantastic group of network contacts who are more than happy to be mentors for these people, which is very important. I think the role of the manager is to have those skills with other people also that you can call on. I have so many different types of businesses there, I couldn’t possibly know how to run each of them. Over the years, we’ve built up enough contacts with people who we can call on who will help them. I think that’s very important. It’s also that nurturing environment and I think it’s empathy too that’s a big part of it.

“We’ve always been in the newspapers, because we sing the praises of our businesses and we’re always showing businesses and others how we deal and shop locally. I walk down the street and people blow their horns and wave to me from shop windows, so people in the community like us. When the Council gives us some funding for something, the ratepayers know that they’re getting value for money, because we’re putting something back into the community. We make sure that we invite and notify the community that we’re doing that and I think that’s important. Ratepayers want to see something happening for their rates”.

2. **The Monash Enterprise Centre (MEC), Melbourne**

- Small stand alone purpose-built incubator
- Not-for-profit Government funded structure
- Mixed model, professional and technical services, all office facilities
- Suburban location in industrial precinct, approximately 25km from CBD
- Has won numerous innovation and tenant of the year awards

**The model**

The Monash Enterprise Centre (MEC) can be classified as a government funded, not-for-profit incubator. In 1997 the City of Monash commissioned a feasibility study to assess the need for a small business incubator in the local community and in March 1999 the purpose-built MEC was opened as a small business incubator. The incubator provides effective, targeted business development services and improves the growth potential of small businesses by maximizing strategic partnerships with the Monash Council, government bodies and local businesses. Income also comes from Monthly license fees which are considered more flexible than long term rental agreements. The centre also operates as a virtual incubator
allowing the same discounted rates as the tenant businesses for use of the facilities within the Centre.

Although one of the smallest incubators in Victoria (space for around fifteen tenants with a second stage extension of an additional 15 small office units planned), the MEC is classified as one of the most successful in the country in terms of operations, quality programmes on offer, small business outcomes and sustainability. Testimony to that is the number of awards won from the Australian and New Zealand Association of Business Incubation (ANZABI), now the Business Incubation and Innovation Association (BIIA). They were awarded: the ‘National Innovations Award’ in 2001, and were voted ‘Metropolitan Incubator of the Year’ for best practice in the Australian incubation industry in 2002. In 2001 as well as 2003, this incubator produced the ‘National Tenant of the Year’.

The location
The Monash enterprise centre is situated in the heart of a small industrial precinct in the city of Monash, strategically located in the South-eastern suburbs about 25 km from the centre of Melbourne

The manager
Ms Jenni Pietch joined as the incubator manager one week before the incubator opened. Jenni is an accountant and has small business know-how having run a number of small businesses with her husband over 25 years.

Staff
Jenni has one full time employee, a receptionist/personal assistant

Excerpts of interview data

J  If you can build a sound base in the incubator so that the business owner becomes confident in what they are doing, believe they have a network of people that support them, call on them so they’re not feeling that isolation, you can develop and hopefully accelerate their growth…..and that’s where it’s so difficult for me to measure exactly what happened in Monash. We had figures of employment growth, we know how many businesses went through in the 7.5 years
and we were a fairly rapid turnover incubator and there were 70 businesses that went through in that time, plus the 20 that were in it when I left. We had this firm belief of moving business on, so that when they came in they knew that they weren’t there to stay. But to actually get that atmosphere working, that community atmosphere of peer support, to get them educated that they weren’t in the incubator for the long term, to get them to use the services that was the pressure that was on me, because you were using the sense of influence all the time. And you had to lead by example all the time…..

H you mentioned the pressure: how was that for you personally?

J I managed really well for 6.5 out of 7.5 years, and because I was so excited about what I was doing, there was no way I could have let go and moved on. But there comes a time when you realize that you have achieved most of the things you can possibly achieve unless the place is forging forward, so that your role as manager, as small business developer, as actually working running a small business yourself, trying to work on inadequate government funding and trying to be entrepreneurial and influence the entrepreneurial thinking of all the businesses that came past your door…… it takes it toll…If the role could have been changed to encompass perhaps another 2 satellite incubators it would have been different.(Jenni)

H what are ‘satellite incubators’?

J I believe we have such a workable model that if people would have given us more money, we could keep the incubator as it is, but we also could have built on the land beside us or nearby a specialty incubator where we only take in business that have export markets and then also on the land behind we may have be able to build a serviced office complex that allows us to move businesses out of the incubator…….. But there was never that forward thinking that would take my role as CEO of a small incubator into a much broader perspective….. where I could have grown as an individual and manager and used that model to run the export incubator and the serviced offices….. and then I could have grown and we could
have had a manager of the serviced offices, we could have had an incubator administrator and we could have had an export incubator administrator. I could have handled that alright, because we knew how to run an incubator and all 3 would have been smallish pockets where you weren’t absolutely overrun with 60 incubator tenants. That’s what’s so disappointing to me, that we weren’t able to replicate that model and take that structure forward, that nobody had the foresight in government or in business to say we could expand ....
3. La Trobe Technology Enterprise Centre (TEC), Melbourne

- Middle size purpose-built stand alone incubator within University industry park
- Not-for-profit University funded structure
- University – technology model
- Commercialisation of university research and other local new technology (ICT, Bio tech)
- Mainly office and lab facilities
- Suburban location in industry park of university (approx. 12km from CBD)
The model
LaTrobe Technology Enterprise Centre (TEC) was specifically designed to assist the development of new firms from student spin-off companies and research initiatives and also to provide space to other new start-ups coming in from the local community. The initial funding for the infrastructure of a Research and Development park including a stand alone incubator came from the sale of a large parcel of land to a major corporation (Rio Tinto). The R & D Centre opened in 1993, with the incubator following in 1995. The building was specifically designed as an incubation facility to nurture and support new entrepreneurs (Bell and Smith, 2003). The incubator has space for around 35 start-ups (at the time of research) and is regarded as one of the most successful university incubators in Australia. Adjacent to the incubator building is currently under construction the new ‘Victorian BioScience Centre’ (VBC). This centre will be dedicated to biotechnology and function as a laboratory research facility. It also assists in the influx of incubator tenants as part of the building is devoted to a ‘Research Hotel' or ‘pre-incubation' facility, where post-graduate students can work on projects that may or may not have commercial potential.

The location
The TEC is located on university grounds in the city of Darebin, about 12 km north East from the city of Melbourne

The manager
Ms Sue Bell has more than 8 years experience in developing and managing technology parks and early stage IT incubators in Queensland, Regional Victoria and Melbourne. Prior to her appointment at La Trobe, she was the incubator manager for Information City, an early model BITS incubator and managed the Greenhill Enterprise Centre (GEC) an incubator at the University of Ballarat for three years. Sue is a founding director and president of The Technology Parks & Incubators Association (TPIA).

Staff
Sue has a deputy manager and two other full time employees

Excerpts of interview data
S It started in 1994 when the first part of this building was erected as the Park Centre which belongs to the university and the people working here put in an application for the Better Cities government program for funding for the next wing which came on board as a purpose-built incubator in 1997 and that’s got 30 suites. We don’t always have 30 companies here, some take up 2 suites, some 3, etc.

H What’s your background?
S Commerce and in business incubation for about 12 years and tech parks for 11 years. It started out as mainstream incubation, cleaning companies, whatever, and then moved into IT and multimedia and now we’re doing bio-tech as well.
S we have a three stage plan, pre-incubation, incubation and harvesting

The first stage is a pre-incubation period where the start-up entrepreneur can work from home without paying rent. We offer people the opportunity to develop their product or service at the stage where they still can do market research. They also work on their business plan then. During this phase we are offering founders access to TEC resources and staff as required or in an ad-hoc manner. If their plan is good, stage two of our program requires that they take up a tenancy within the TEC. During this stage we work with a client to develop and implement an operational plan.

At the TEC we have space in modules ranging from approximately 24 square metres to 100 square meters. At this stage tenants of the TEC are also granted access rights to the University’s library at the same level as University staff members. They can be in the incubator to grow their business for a number of years.

This third stage is the agreed ‘exit or graduation’ but that differs from company to company. Our program not only supports companies who are seeking external investors but those who intend to grow organically.
H That’s what you’re doing yourself – you’ve got some great networks.
S Yes. It’s important. When I first became involved with the bio-tech, I knew nothing about bio-tech, so the first thing I did was join the Bio Melbourne Network. I was at the launch and I thought ‘this is the network for me’, you learn the jargon, who’s who, who’s doing what without being a scientist. The flow-on effect is that I’m also known in bio-tech circles now.

H Do you get businesses from there?
S People refer people. So without being a scientist or being involved in bio-tech hands on, I’ve now built a bio-tech network around myself which is always there. Now because we’ve got this new product development centre just moved into the park, I’m starting to look at the nano area now and the product development area and ask ‘what are the circles I need to be involved with’ so I know people are talking about and who’s who in the zoo. As a professional, I need to know where those resources are, I don’t need to have all the information myself, but I do need to know where to go to get them. Any incubator manager at any level needs to know how to do that, because quite often when a client comes to you in crisis, when you get to the bottom of it, it’s not always the business, it might be a personal thing. You need to be able to say ‘I suggest you contact these people’. You need to have appropriate resources at hand for whatever is relevant to your type of incubator and client base. So that’s what I do. I’ve now got quite a good international network.
4. Entrepreneurs in Residence (EiR), Perth

- Small size stand alone incubator within industry park
- For-profit with additional government funding
- Technology model, local new technology specialising in ICT
- Virtual and some rented space office space if needed
- Suburban location (approx. 8km from CBD)

The model

EiR is technically more of an incubator than a venture capital fund. It operates an incubator and controls $10 million of Federal Government money it received through the Building on IT Strengths program in the 2000-01 financial year and
provides seed capital, management expertise, accommodation and mentoring specifically to ICT start-up companies. The BITS model has been discussed in the introduction chapter of this study. The initiative was started by a consortium and the government, but is operated as a private company.

EiR CEO Greg Riebe tried to find those businesses worth incubating. "One of the biggest differences between us and a venture capitalist is the amount of funds we can offer, plus we are more hands on because we are dealing with the ventures at a much earlier stage in their life cycle." Financing can range from $50 000 to $400 000 over a two-year period. Co-investment increases the level of investment to a maximum of $900 000 if required. EiR has close relations with a number of other investors who can provide co-funding in selected circumstances. Through its own resources and a network of service providers, EiR seeks to attach to the incubator companies experienced professional individuals and organisations to mentor, coach and support in order to accelerate their development. These value-added services include financing, technical and legal advice, and coaching and support from the incubator Network. EiR had six incubatees at the time of the research study.

The Technology Park in which EiR is situated is managed by Zernike Australia Pty Ltd; an offshoot of the Netherlands based Zernike while three companies; Zernike, Imago Multimedia Centre Ltd and Software Engineering Australia (WA) Ltd all currently have a share-holding in and manage EiR. Arnold Stroobach MD Zernike used the parent company to commercialise products into the European market. This included identifying whether the product had a niche in the market and finding the best way to market it. He said that despite the funds it had under control, Zernike was a seed capital player.

Location
EiR (originally Perth Ideas Centre of Technology), was established in June 2000 in the technology precinct Bentley in Perth, which is located opposite the Curtin University grounds, 8 km from the Perth CBD.

The incubator offers companies housing at Technology Precinct, Bentley. The facilities are situated in the major clusters of ICT companies in Western Australia, offer access to shared and scarce facilities of key member organisations, and are
close to technology universities and ICT research groups. For those incubator companies in the new media area, EiR will also to seek to co-locate a new residence within a digital media precinct under consideration by State Government.

The manager
Greg Riebe

Staff
Greg has one partner Anabel, but no physical tenants.

Excerpts of interview data
“Between 1-5 years now, our first investment was made in 2001. That was a bit of a hangover from the original federal money that we were managing in terms they had actually never run incubators previously, they had never really run venture funds across any stage of the lifecycle.

The program was designed or brainchilded during the tech boom, so everyone wanted to invest in IT companies, the valuations were huge, the liquidity was fantastic on stock markets. They said ‘this is great, so you’re going to invest in this number companies’ and I think that 6 months after the program started the Tech Wreck came and no-one wanted to invest in IT companies anymore so you couldn’t get the co-funding with you and no-one wanted to list an IT company on any kind of public market because they’d never get it subscribed, so all of a sudden these 20 odd companies they wanted us to invest in was looking really difficult to do. They shrunk back the expectation of the numbers we could support given the small infrastructure we had as well”.

“We purchase equity. Our fund mandate states that we must have a call on equity or stake in equity, so we take a percentage in the business and that can vary considerably and depends on how much money we’re affording them and their level of investment and valuation, which is very hard to determine because most of them are pre-revenue. Some are still in the R&D stage and it’s all blue-sky. It’s more of an artful punt than anything else”
"One of the biggest differences between us and a venture capitalist is the amount of funds we can offer, plus we are more hands on because we are dealing with the ventures at a much earlier stage in their life cycle. The advantage of this is that you can stay close enough to watch their performance”.  

A Of 26 companies, there’s quite a few of them where the investment is minor (under $50K) and that it was very much the strategy of investing in those companies was that conceptually ‘we like the idea, but they need to go and do some more either product development or market research or find co-investments or supplement their management team, they clearly weren’t going to do it without our support. But at the same time we didn’t want to make a huge commitment to them, so we would forward a small amount of money and tell them that ‘with this bucket of money, you need to buy a market research into the European market ‘cos that’s where you say your market is, but we’re not sure we agree with your claims’. And they would go away and we would help them pull that together. The results would come back and in some cases they’d say ‘it’s too hard’ or ‘there’s too many competitors’. There’s a high drop out rate at the early stage of investing – probably 7-8 out of 10. You end up getting on average one that pays for itself, one that’s OK, one that’s a ‘burster’;
5. Zernike Group, Groningen, Netherlands

- International group of middle size incubators
- For-profit model
- Mainly urban locations just outside Groningen CBD in industrial park
- Mixed business but focussed on technology
- Privately funded, but often also obtaining government or European union funds for Various incubators and projects
- Stand alone rented facilities

The model

The Dutch based Zernike Group is an international company in the field of technology transfer, facility management, patenting and licensing, engineering, and consultancy (accounting, financing, marketing and sales) and has been developing and managing incubators since 1992. They manage incubators in the Netherlands, Australia, and UK and are developing links in China. Over the years, the development of the Zernike Science Park led to many new ideas about the best way
of commercialising scientific development. As a result, the activities of the Science Park changed significantly. The Zernike Science Park now offers seed capital via the Zernike Seed Fund, Hi-Technology Ventures and Z-Finance as well as a methodology for protecting and selling developments, commercial marketing and sales of high-tech products, accounting and tax support, and business accommodation in three different buildings. These changes were made to achieve one main goal, which is to become self-sufficient by carrying out activities in technology transfer that are commercially worthwhile.

The location
Their headquarters (Groningen) incubator is a middle size model based in the industrial precinct of Groningen. In 1983, the University of Groningen, regional authorities and the Ministry of Economic Affairs created a commercial / academic organisation in the form of a science park in order to synergise science and business.

Founder: Lex De Lange

Staff
Lex has four staff members

Excerpts of interview data
L “There are time that we focus on a quick development and strong return on investment. If a start-up cannot do this, we either suggest they sell us their idea so we can put it to work with a new team, work for us or get out, before they risk too much personal capital. We think that one year incubation should be enough for the winners to move out. We strongly believe in a ‘Do not pamper‘ philosophy... its tough out there and we should not nurture weak ventures”.

L That varies from country to country and for Australia is that e.g. helping with export, providing access to markets, access to funds, IP search and partner search and so on. We also have investment readiness programs, because many businesses are not ready. You see some companies here in the park with nice technologies, but
They come here and say...we have a great product, but no one wants to invest in us and we don’t understand why. After an hour talking and looking around in their business I understand why they have problems with getting people on board. Often the technology is good, but they are just not investment ready yet. You have to do some things, you cannot write an “I Am” of 30 pages and just sent that over...that is not the way to go. You need to have that in place and several layers like the investment layer, commercial layer and technology layer to address several different people. So we do a mix of networking, training and mentoring.

We need to start a global network where organizations open up to each other even East and West trade links. We’re now more oriented for the companies to go to Europe. Because we already have good European relationships and because there are not that many services at the park at the moment I said ‘ok, what can I offer at the moment without going into new difficult business development? Right access to Europe’. We’re now making a program for access to China. We have an office in China.

H What are the ingredients of an incubator manager, for you?

As an incubator manager and also a manager of technology parks, you need entrepreneurial skills or background. If you look at the start up companies, a lot have the feeling that a startup or incubator tenant is fresh from uni, but there’s all kinds of people and ages in an incubator, some have had businesses before. The entrepreneur always continues the entrepreneurial way...trial and error included. If you have a manager who’s not entrepreneurial the magic has gone. You need to have someone they can relate to and can understand and is entrepreneurial and is not like how to do it in the books (academic/theoretical?), they need to make it relevant to the person and to guide them. They need to know what the ugly outside world is really like and what motivates and inspires businesses and what their problems are and speak their language.
6. NIKOS Twente, Netherlands

- Virtual incubator style
- Not-or-profit
- University / technology transfer via virtual incubator model
- Interest-free loans and business training and mentoring
- Focus on knowledge intensive SME’s
- Research focus on entrepreneurship and innovation
- Situated in the University of Twente

The model

According to the law in the Netherlands each university has three different tasks: education, research and service to the community. This last aspect includes knowledge and technology transfer which should bridge the gap between fundamental research (the core activity of a university and research institutes), applied research (the research that is tailor-made for industry) and society. As the Netherlands Institute for Knowledge Intensive Ondernemerschap (entrepreneurship) NIKOS is geared towards small and medium sized enterprises (SMEs).
At the University of Twente (UT) there has been an active support for business development from the early 80’s; for graduates entering the entrepreneurial path, start-up companies using UT-knowledge, and innovative, SMEs as well as large regionally, nationally and internationally operating companies. Since its origin in 2001, NIKOS organises knowledge development and dissemination of knowledge intensive entrepreneurship. The business development department aims its support activities directly at entrepreneurial processes in the university (both students & researchers) and in the region (private people or SMEs), resulting in new start up firms.

The NIKOS Model


Within NIKOS research, teaching, and business development projects are gathered under one roof. They facilitate two particular programs that are of interest for incubation. The first, Tijdelijke Ondernemers Plaatsen (TOP), i.e. Temporary Entrepreneurship Places can be likened to a virtual pre-incubation initiative, in that it helps support the development of (starting) knowledge intensive enterprises (van der Sijde, 2002). The university supplies the entrepreneur with office space and
other facilities such as internet. The entrepreneur is mentored by an experienced business person, gets access to the network of the research group of the university, an interest free loan of €15,000 and access to ongoing training. The second, Glansrijk Eigen Baas, is an initiative focussed on the development of feasibility and business plans, specifically for people wanting to start their own business or develop business ideas after being retrenched or unemployed.

**The location**
The Netherlands Institute for Knowledge Intensive Entrepreneurship (NIKOS) is part of the School of Business, Public Administration and Technology at the University of Twente in the Netherlands. The Twente region is situated between Amsterdam and the Ruhr. The University of Twente is an entrepreneurial research university, founded in 1961 and offers education and research in areas ranging from public policy studies and applied physics to biomedical technology. The UT is the Netherlands' only campus university.

**The manager**
Aard J. Groen and Peter van der Sijde are involved with the programs.

**Excerpts of interview data with Peter van der Sijde**
7. Bedrijfs Technisch Centrum (BTC) Twente, Netherlands

- med/large size incubator
- university incubator
- industrial Precinct, Twente University in Enschede, Holland
- Technology incubator, mixed business with focus on innovative technology
- Privately funded by two universities (Twente, Saxion)
- Stand alone facility

The model

BTC-Twente is an incubator for innovative technological companies funded by the University of Twente and Saxion Universities (both shareholders of BTC-Twente) and has been active for over 25 years. The actual “incubation” usually takes place at one of the Universities, but after that the starting entrepreneur has to find suitable accommodation, potentially provided by BTC-Twente where facilities and also the necessary business support are available.

Besides her own expertise, BTC-Twente has a large network of experts that can be of use to the entrepreneur. Coaching, training and consulting are only a few
examples of the opportunities for the BTC tenants. BTC-Twente also claims to be a meeting point for entrepreneurs, where tenants and others who visit BTC-Twente can network, often resulting in cooperation between entrepreneurs. BTC and the University of Twente are associated with Kennispark Twente to further develop the area into a knowledge-intensive region by promoting activity through the link between science and industry, with a goal is to expand the campus and the nearby area into a sophisticated Research & Development Park. Similarly, they are developing Business and Science Park, Enschede, a dynamic and balanced mix of business service companies, semi-governmental agencies, and knowledge intensive, innovative companies, all stimulated by the ultimate catalyst, the University of Twente.

Ownership:
100% for profit model. They are a BV, in other words, it is a private service company with shareholders and they own their own building.
21% ABN AMRO Bank
35.3% Venture capitalist (PPM-OOst NV)
27.5% Twente University
8.1% Saxion Institute for higher Education
8.1% Ten Hag Holding

The Location
Situated in the knowledge park of the University of Twente (UT) in the province of Overijssel and the municipality of Enschede, Holland. This incubator is older than the other samples (25 years) and was part of a redevelopment initiative to expand the university campus and nearby area into a large Research & Development Park that attracts international business into the region.

The manager
Rob De Koning with a team of 6 full time employees. They house currently 63 companies.
Board
They have an incubator board consisting of: Vice president - the university of Twente, the president is from a private company and one private investor.

Excerpts of interview data

R Last year, we had a occupancy rate of 70%, now it is about 90% so we cannot complain. We are now at the point of having to say No to new businesses and make a waiting list. We have another empty building here in the park and will move 4 large BTC companies to that site, so we create for new small businesses to come in.

H What other types of services do you provide?

R BTC-Twente is well-known for being a meeting point for entrepreneurs. Not only tenants but also for others who frequently visit BTC-Twente often meet, not only during lunch but also in other public areas. This kind of networking often results in cooperation between entrepreneurs. Every first Friday of the month for example there is the BTC café with some preceded by an interesting lecture or presentation on a business topic.
We organize different network functions. Its something we must do as a new development within BTC. We are discussing a new networking project with BTC, NIKOS and ROC at the moment. The NENSI project (North European Network for service incubators) which is a project setting up a helpdesk for entrepreneurs that could be used by the tenants. It will be a IT tech network.

When new companies come into the incubator we set up a get together for them and also drinks with the other tenants to they get to know every one. You need to do this to create a climate. Coffee meetings work well and some tenants also have breakfast together. You NEED a restaurant or café as part of the incubator ...it’s the best tool for innovation and networking. Its about meeting meeting meeting. Just as it is location and location. We are lucky. We have in this industrial park some large well known companies and they attract the smaller companies to come
in. Also different nationalities in this park. We have Norwegians, Scotish, German companies etc. This is very good for the networking, and they are always invited. There also is another bio tech incubator here as part of the campus. They house a number of international people also. We live in a European community and have to sort off build that notion here in Enschede.

We network with other organisations. For example the Dutch Chamber of Commerce, Syntens, B&S-park and the faculty Club UT. We conduct several kinds of meetings with a special theme or topic take place. We also publish a quarterly edition of the BTC Courant which provides the tenants and other interested with information on current topics about BTC-Twente and its tenants.
8. The University Manchester Incubator Company (UMIC) Manchester, U.K.

- Industry park consisting of large Research and Development centres including incubator space
- part of a larger facility (imbedded in a larger park)
- city location, Manchester
- technology focussed (Bio-tech)
- university funded model
- purposely built

The model

The University of Manchester Incubator Company Limited (UMIC) manages the facilities and business support associated with The University of Manchester’s incubation activities. With its growing portfolio of incubators, covering both the Bioscience and IT/Hi-Tech sectors, UMIC provides an environment for spin-outs, start-up companies and SMEs. UMIC is a company wholly owned by The University of Manchester. The Manchester Bioscience Incubator was formally opened in September 1999. It is a biotechnology research and development centre combining laboratory facilities with a support infrastructure. It’s a package for
biotech start-ups, R&D satellites from pharmaceutical companies and biotech service companies.

**Spin Outs**

UMIC has been able to attract high potential companies to its incubator. The list of tenants is broad and diverse and includes both University of Manchester spin-outs as well as SME's and start-ups that have been attracted to the lab facilities and services, as well as the location (between University and clinic).

The spin-out companies supply products, technologies and services across a number of market sectors including:

- Aerodynamics
- Biotechnology
- Medical Imaging
- Internet Service Providers (ISPs)
- Healthcare
- Pharmaceuticals
- Process Control Systems

**Location**

UMIC manages the Manchester Bioscience Incubator, Core Technology Facility (CTF), North Campus Incubator and One Central Park Incubator in Manchester CBD. UMIC also provides business mentoring services to regional SMEs across all business sectors. It’s a sister company to The University of Manchester Intellectual Property Ltd

**Board**
The incubator is part of an integrated strategy for Innovation and Regeneration that is being coordinated by Prof. Rod Coombs University of Manchester. Prof. Coombs sits on the Senior Executive Team for the University and is the Chairman of UMIC.

**The manager**

Martino Picardo has worked in industry for years and was science director for a high tech company and experience in developing and managing technology parks and early stage IT incubators.

**Staff**

Martino has 6 staff employed by Unic.

**Excerpt of interview data**

*M “We were launched officially in September, 199. The money came from 3 different areas. There’s 15M pounds associated with this building and 5M came from the Wellcome Trust, 5M from the university and 5M from European Regional Development Fund, so right from the beginning incubation was seen as a way to grow knowledge economy and growing the bio-tech community. They (stakeholders) saw this as an opportunity to create new businesses in a growth area that would replace some of the old industrial type activities that were going on. They saw this incubator and the one in Liverpool as being a very important part of their regional strategy”.

*M “This is quite an entrepreneurial area. I think bio-tech is quite a difficult area to startup from just off the street, because it is so heavily focused on intellectual property and patents, that bio-tech spin-outs tend to come from university in the first place or from a big pharma company where people are either made redundant or planning to leave and start their own businesses up. We're quite fortunate in the region in that we've got AstraZenica's R&D Centre here just outside Manchester they're the end of our supply chain and what we're doing is creating a supply chain of service providers, tools providers and direct discovery marketers that ends in a big company like AstraZenica so we're very supply chain focused. We have very
strong links into the university now and we have good contacts throughout the region”.

M “I mean it would be very easy for me to grow from 6 to 60, but it doesn't accomplish anything, because my overheads and my cost base goes up quite significantly, and this way I can keep a budget that allows me to tap into a range of consultants and expertise as I need it’.

M “We had 2 companies, one from outside and one from inside, we helped them get about 20M pounds of venture capital funding virtually at the same time, almost with 2-3 months of each other, so both companies grew enormously over a short period of time. One of them is still here, Renovo, which is gone from 2 people to 100 people and they're still here, so then you get into a philosophical debate about whether or not they should stay or go”.
9. Manchester Business School Incubator (MBSI), Manchester, U.K.

- Small size incubator, office within university
- For-profit with private corporate funding and university in-kind support
- Virtual model
- Inner-city location

The model
The Manchester Business School Incubator is a virtual incubator that started as an MBA project and now offers opportunity to budding entrepreneurs and start-up businesses. It uses the talent, knowledge, skills and enthusiasm of postgraduate students and academics along with resources from a leading business school and its corporate partners, to start and develop business. It’s advertising reads, “Turning a
good idea into a successful business needs vision and expertise; The Manchester Business School Incubator can turn your idea into reality.”

By utilising MBA students to act as consultants, entrepreneurs get a high level of support in developing their ideas. In addition to this support the enterprises also receive advice from the Incubator’s partner organisations such as the Royal Bank of Scotland, NM Rothschild and Addleshaw Goddard. Advice about book keeping, insurance, marketing, corporate finance etc, from a network of associates is also available.

Business ideas are put through a rigorous selection process, scrutinised and evaluated before being accepted. The process then identifies the barriers that potentially hinder the development of enterprises and an action plan is agreed, with an Incubator team assigned to manage the delivery of the solution. The Manchester Business School Incubator project endeavours to demonstrate to potential fund providers (including banks, business angels, venture capitalists and investment banks) that it is a serious player by the rigour of the selection process and level of support the clients receive.

The Incubator team, who are all entrepreneurs themselves, offer on-going advice and support while the management team has strong links with the region’s business and academic networks that can offer the right level of support to individual business as and when they need it, regionally, nationally and internationally.

The manager
The Incubator is managed by a team of three headed by Leigh Wharton - all entrepreneurs themselves - who offer on-going advice and manage the MBA projects.

Excerpt of interview data
“The following March, we graduated and on graduation, 3 of us set up our own company and went into consulting and we were looking for our first client. We came back to the business school and went to the dean and said 'where are you with the incubator project?' They hadn't moved on so we came to an arrangement
where the school would pay us some money to deliver the incubator project. So from March 01 to April 02 we worked on delivering the incubator here. It took us a year to get the commercial partners, to get the structures involved, work with the academic staff to get it integrated into the MBA program, worked in terms of establishing deals while we were getting our credibility around the place and in April 02 we incorporated the company and started operating in June 02. So, we've been going a little over 3 years now”.

L. Manchester Business School Incubator is a for-profit limited company. We have a range of shareholders, we are in fact effectively, a spinout of the university - they have 51% of the shares. There are 100 shares, not all issued. Our 3 commercial partners are NM Rothschild, the investment bank, Royal Bank of Scotland, the retail bank and Addleshaw Goddard a large law firm, solicitors.

H. Lucky people, in Australia they are so struggling
L. The cash to the university is Central Government money - Higher Education Innovation Fund money, the reason that we are eligible for that is that we've introduced enterprise and business creation into the MBA program and one of the interesting elements of our model is the integration of commercializing business ideas with the education program, so the activities of the incubator are embedded into the MBA program.
L. Our model is that we can utilize the knowledge of students for the benefit of the incubator and the start-up businesses. And conversely, the startup businesses provide real-life learning opportunities to the guys doing the MBAs. So it works both ways.
• Embedded purpose-built incubator in large industry park incorporating separate research and development centres
• For-profit privately funded
• Mixed model, mix of facilities mainly offices
• High tech and mixed industries
• Some services provided on a not-for-profit basis to start-ups
• Country location, approximately 20 km from Lisbon

The model
Taguspark was a specifically designed, mixed government and industry initiative, set up in 1992 in the form of a private corporation (Taguspark, S.A.) run with mixed funding (44% private and 56% public). It houses around 130 new businesses and a number of larger established companies (at the time of research). The abstract to an article on Targus Park reads; “An incubator attracts, selects, supports, and follows entrepreneurs in their effort of developing concepts and ideas. Those
efforts are targeted to the creation of new firms able to contribute to regional and
economic development.”

A Science and Technology Park is a well known concept, targeted, in most cases to
fostering innovation by helping and facilitating the process of transferring
knowledge into commercial applications. With the development of information and
telecommunications technology, this concept started some years ago to open itself
more and more to the outside world, giving access to an enlarged portion of the
regional territory where it is located, more benefits of its action. Besides this, the
park gives visibility to its tenants because of the concentration effect that it
promotes and the physical proximity to a diversified number of entities all focused
in the development of the same technology fields, as a result of the selectivity
applied.

As a consequence the best place for an incubator to locate itself is inside a Science
and Technology Park. It not only benefits from the proximity to the other tenants
but also gives its HTSF's the possibility to stay near the environment where they
have grown. In fact, after having to leave the incubator, the firms may stay in the
Park where they have most of the main support links.

The Location
Taguspark is connected to the township of Oeiras, which forms part of the
Metropolitan region of Lisbon (20km.) The region covers an area of 46 square
kilometres it has a diversity of landscapes including a 9 km long coast line deriving
an income from tourism. The industrial now precinct takes up a large part, because
economic growth, affluence and proximity of Lisbon have strongly influenced
urban development in the last two decades (Oeiras, 2006). Together with a group of
business developers, the municipality wrote a new Oeiras strategic plan to re-
develop the infrastructure of the region hoping to attract overseas investors,
business overspill from Lisbon and new start-ups into an area of low socio
economic status.

The manager
Mr. Carlos Freire who started in the incubator in 1998. He holds an engineering
degree and an MBA
Excerpt of interview data

“The town of Oeiras was a small town. It had problems; it is between Lisbon and Tagus River. Not much to live on bit of tourism along the river, no income. Used to be like a municipality or a city in the middle of 2 areas, people would say that its in the middle of nowhere... so starting to build these projects, it takes vision as it brings in the highest percentage, in terms of the type and background of the people, you have a lot of people here with university level and up, its all new industry, scientific backgrounds, innovations, ...big change for the infrastructure of the community here”

“We believe that poor financial management, the often quoted reason for failure of new start ups, does not actually cover the full gambit of the reason for failure. Our experience has shown that these smaller companies fail because they commence operating before they are operational. The enthusiasm of getting the product to market takes precedent over how company processes are required to make it happen”.
## Appendix 5

### Node Summary Report

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Appendix 6

Coding summary report

already up and I arrived as the business development manager really to go out and start some of the projects....leads.... spinouts and new companies, either coming from the university side or from outside. So, I think that's been a really important part of our success in that we have not entirely dedicated this building to university projects and university spin-outs, we've always had an open door policy to external companies.

H Are they local companies?
M They tend to be.

H What's Manchester like?

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<td>M Absolutely, they've grown to the point where they're self sufficient, they've got their own money and they're either building premises or they're renting premises that are outside of the incubator. Some companies feel the need to move out sooner rather than later and you need to bear the burden of carrying them for a little bit longer. Sometimes there are positive reasons they've grown very quickly but there's not a building for them to move out to specifically.</td>
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<td>M Yes, but I run the business on behalf of the university as it's a university incubator. We're not so closely tied where it becomes part of the bureaucracy and the administration.</td>
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<td>M. Or the location, or the opportunity to collaborate with the university or the hospital so, what we try to do is try and identify companies that are actually either going to bring value back to the university or are going to find some value by being in the location</td>
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Appendix 7

Excerpts from the tenant interviews

Reasons for moving into the incubator

Example A – Moving innovations into the market place
“We think that the idea we've got is innovative. We always brainstorm new ideas and new ways of doing things here at work. We know we can't come out with the same product that everyone else has produced, so, what we've done is making “XXX” type software (a particular software package) more user friendly. It’s a bit of a challenge though to get it on the market, because people are used to the programs they know”
(Source: <Documents\Interviews\Incubator tenants\Xs>).

Example B – Reliance on new technology for survival
“This is a whole new business. We started off as a consultancy with existing products, but one of the pieces of software we developed in that business is now the thrust of this whole new company. We can’t move fast enough to get it out there before others are doing the same...we are now relying on it and are running out of money”.
(Source: <Documents\Interviews\Incubator tenants\aviation>).

Example C – Looking for help and advice
“The open source thing is a big one, I feel that's a new paradigm and we feel we're innovators in that space, highly contributing to that movement. But it's not just that, I think we're innovators in many areas. That makes it hard sometimes to find people who know what you are talking about”.
(Source<Documents\Interviews\Incubator tenants\bright>).
Example D - Reliance on new technology for survival

“...we are full time driven by innovation! We've developed an entire software platform from scratch, innovating for customer’s needs sake....once your customers understand what you are doing and saying, you are in business. The problem now is how do we get going and how do we get financially through our first years. We have customers slowly signing up online already, so know they are there, but in the mean time we need to eat”.

(Source<Documents\Interviews\Incubator tenants\Websyte Corp>.

Networking

Answers here ranged from: ‘I now have other people to exchange information with’ and ‘being introduced to other networks has really made my business grown’ to ‘I feel supported’ and ‘I have made great friends with...’ These findings correspond with other studies such as Lichtenstein, (1992), Bøllingtoft and Ulhøi (2005) and others.

Example A – Location

Respondent 40: “...what attracted me to this place (university incubator set in parklands) is the environment, there's no way I'd work in the city – for me it squashes innovation, because you cannot sit back and think. When things get tough I go for a walk around the campus...or spend some quiet time in the library... a good environment for innovation”.

Innovativeness

Innovativeness scored highest with fifty times referred to, especially by TEC respondents. This is not surprised as TEC was the university incubator housing most high–tech start-ups. Of the forty six, thirty seven respondents saw themselves as innovative. The following are some examples of responses expressing innovativeness and innovation practices occurring and challenges faced.
Example A – Moving innovations into the market place

“We think that the idea we've got is innovative. We always brainstorm new ideas and new ways of doing things here at work. We know we can't come out with the same product that everyone else has produced, so, what we've done is making

In the TEC, the focus was predominantly on how to access finance for product innovation with some radical new technologies being tested.

Example B – Reliance on new technology for survival

“This is a whole new business. We started off as a consultancy with existing products, but one of the pieces of software we developed in that business is now the thrust of this whole new company. We can’t move fast enough to get it out there before others are doing the same...we are now relying on it and are running out of money”.

(Source: <Documents\Interviews\Incubator tenants\aviation>).

Example C – Looking for help and advice

“The open source thing is a big one, I feel that's a new paradigm and we feel we're innovators in that space, highly contributing to that movement. But it's not just that, I think we're innovators in many areas. That makes it hard sometimes to find people who know what you are talking about”.

(Source<Documents\Interviews\Incubator tenants\bright>).

Example D - Reliance on new technology for survival

“...we are full time driven by innovation! We've developed an entire software platform from scratch, innovating for customer’s needs sake....once your customers understand what you are doing and saying, you are in business. The problem now is how do we get going and how do we get financially through our first years. We have customers slowly signing up online already, so know they are there, but in the mean time we need to eat”.

(Source<Documents\Interviews\Incubator tenants\Websyte Corp>).
Risk taking

Example A – Careful diving
Some reduced risk by planning carefully before facing the challenge.
“...we knew our organisation was interested in developing these test tools, but it wasn't their core business so they said 'not interested'. So, we nurtured it for a few years by ourselves, found we probably had a viable idea and then took another couple of years to gather the finances through doing some other small jobs until we were convinced it would work and able to launch our major project and really go out there. Being here (the incubator) gave us fewer worries about high overheads”.
(Source: <Documents\Interviews\Incubator tenants\aviation>).

Example B – Taking the plunge
“To do nothing is potentially a bigger risk than to do something. To do nothing could take you down a hole. To do something, at least you have the opportunity of survival”.
(Source: documents\Interviews\Incubator tenants\Netagy>).

Example C – Coping with fear
The challenge of possible failure was reflected in comments such as:
“We're going to have to get ready, product is being developed as we speak, but isn’t ready yet. To add to the list.... we are taking on people right now on the short term, because we aren’t really sure we’d get them when this takes off. So quite frankly, we are standing a chance to blow our budget by a factor of 3 as I am sitting here talking with you”.
(Source:<Documents\Interviews\Incubator tenants\Program 5>).

Example D – Facing the challenge
The first type of risk as defined by Baird and Thomas (1985: 231-232); venturing into the unknown, was also identified as part of the terrain by the respondents:
“Starting this business, we had no protection and that was scary, sometimes you talk to people who don’t want to start a business because “we have a family now and can’t take any risk”... well.... we did and we have a young family also”.
Example E – Risking assets
The second type of risk identified by Baird and Thomas (1985: 231-232); ‘committing a relatively large portion of assets’, was identified easily amongst respondents. There was concern for the absence of a safety net, however, it was not a barrier to them taking the risk, it weighted heavily on some:

“You can break. You should have the freedom to try something and just have the business risk, without having to think that what I’ve built up during my entire life with my family might go”.

Example F – Realising difference
Recognition that other countries do have ways of protecting the entrepreneur:

“...in Europe, you are really protected in your private life by a BV (Pty. Ltd. structure) or whatever, unless you misbehave or fraud or whatever, then they take your assets, but not when you try to build good business ...since coming to Australia I learned that you carry a lot more risk”

Example G - Calculated risk
The findings also showed that the respondents mentally mitigated risks by taking a ‘calculative’ risk attitude and when questioned, revealed ways in which they internally justified this. Such as belief in themselves:

“what I do is risky, except I have a strong basis of research to underpin what I do, so I would consider I’m a 5 on a scale of 10”

Example H – Calculated risk (2)
Belief in their ideas is also fundamental to entrepreneurs:

“the programming community in Melbourne was large enough, so I took the risk that I’d be able to offer people a position for 2 months and then pay them something close to what it would be if they had a permanent job, so not the normal
contract rate which was a factor of about 2 or 3 more. And it turns out that they were prepared to do it for a month or two”

(Source: Documents\Interviews\Incubator tenants\Program 5>)

However, there is recognition that there are times when people find the risk is too great:

“You also find Australian start-ups now just wanting to only sell their ideas to anyone inside and outside Australia, because they are too afraid to set up their own business. That’s a pity, because I believe that this is how we lose many good ideas that could have worked here with a bit of help and I actually thought that that was what incubators were for”.

(Source: Documents\Interviews\Incubator tenants\Peptide>)

Autonomy

Example A - Freedom

“It’s about freedom to do what you want. My first business partner is in China. It's a partnership between me and him called ‘The Workface’. Then there is my other business, the software business that I am holding with my wife: ‘Xs’, so I actually run both businesses from the incubator. I would not want to live any other way”.

(Source: documents\Interviews\Incubator tenants\Xs>)

Example B – Creating an identity

“The first thing was that we wanted our own identity, but still be part of something”.

(Source: documents\Interviews\Incubator tenants\longreach>)

Example C – Being in control

Greenberger and Sexton (1988) and Knight’s (1987) suggestions that the need for autonomy entails the desire for personal control and the desire to build something of one's own, was voiced as: “For me it’s an individual thing done by me and my staff. I need to feel in control of my life and my business”.
Bandura (1986) defined ‘self-efficacy’ as “people's judgments of their capabilities to organize and execute courses of action” and this was shown by;

**Example D – Self monitoring**

“we are our own policeman in a way, in our position you don't want to make it so attractive it invites others to get in. So you have to be frugal with your pricing and don't exploit the market”.

These responses demonstrate the mind-set of tenant entrepreneurs in incubators who identify with and put value in the concept of autonomy as a key dimension of developing a successful enterprise.
### Appendix 8 Publications of researcher

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Burnett, HHM and McMurray, AJ “Innovation in small business incubators: how idea generation, networking and client interaction lead to innovative practices in start-ups”, 2nd Annual conference AGSE, 10th -12th February 2005, Swinburne university of Technology, Hawthorn, Australia.

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<td>Burnett, HHM and McMurray, AJ</td>
<td>Comparing family and non-family variables in small business incubators: an exploratory study on family team dynamics and mentoring processes’</td>
<td>Australian and New Zealand Academy of Management (ANZAM), 18th annual conference ‘People First - Serving Our Stakeholders’,</td>
<td>8th - 11th December 2004</td>
<td>Dunedin University of Otago, New Zealand</td>
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<td>2003</td>
<td>Burnett, HHM and McMurray, AJ</td>
<td>Exploring the influence of communication on small business innovation and readiness for change</td>
<td>SEAANZ Ballarat 2003</td>
<td>28th of September - 1st of October 2003</td>
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