House of Representatives

Standing Committee on Science and Innovation

Inquiries into pathways to technological innovation

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Inquiries into pathways to technological innovation

With special emphasis on the drivers

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2 INTRODUCTION

This contribution is provided to assist the House of Representatives Standing Committee on Science and Innovation "Inquiry into pathways to technological innovation". The study into technology innovation cannot be reasonably undertaken without linkage to the drivers and the motivation to innovate.

This document looks at some of these. It is based upon a period of 15 years growing Australian and South East Asian companies. The author was the Founding Director of the Technology Business Incubator at the Australian Technology Park (ATP) in Sydney and CEO of a corporate venture fund and technology business incubator in Malaysia and now Director of the Ballarat Technology Park. Prior to this, the author was General Manager of Toshiba Research and Development Centre in North Ryde for 5 year and Software Development Manager for Wang Labs before that. This has given the author some exposure to innovation in our regions businesses and people / cultures and models of operation.

Australia has one of the most technological innovative societies where many multinational companies trial new innovative products. However, the balance between being a consumer and being a developer of the technology innovation has, in the author's experience, changed dramatically over the past 10 yrs to the stage where we own very little of what we have helped to create. We have not valued protection of Intellectual Property over the published results in our universities. We have not protected our ideas from exploitation by other less ethical nations. As a result, we are now in a position where our innovators and entrepreneurs do not see much benefit in growing Australia companies to exploit the innovations. This results in a very complex problem to solve and there is not a simple one-dimension solution such as more money to schools etc. Although inspiring teachers this is part of the solution to encouraging the creativity of our people

3 TECHNOLOGY INNOVATION

3.1 Technology Innovation forms

- New idea or feature for product
- New business process models
- New process or system
- New basic research

3.2 The two general types of innovation

- Opportunity driven innovation,
  - when the initial need is identified
  - entrepreneurs and founders create the innovations
- Necessity driven innovation (very often too late)
  - when things go wrong
  - the competition hots up
  - the product fails
  - your suppler drops you for higher volume customers

3.3 Stages of innovation

Many companies innovate in the early stages but then become locked into product and management styles (legacy systems and structures)

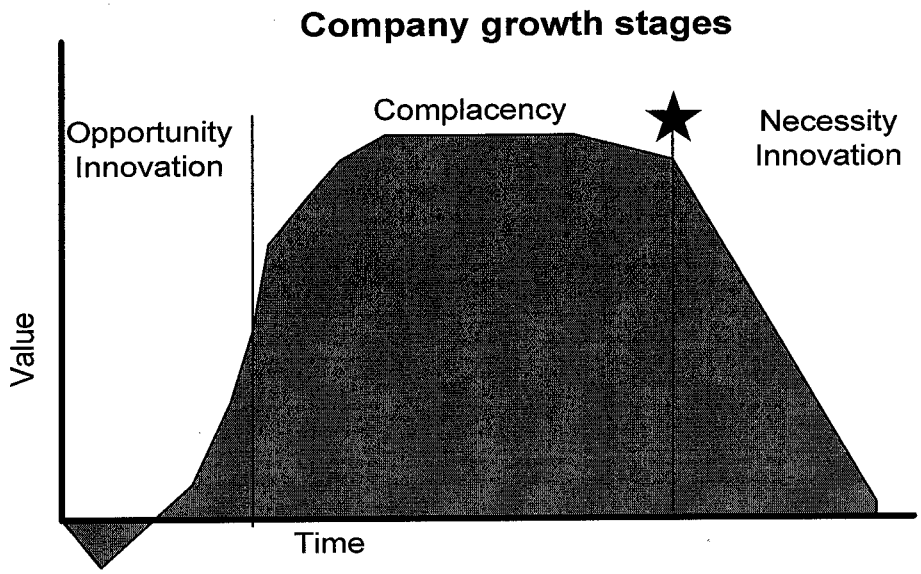

Figure 3-1 Company growth Stages

The need to innovate appears to be at the early and the later stages. However, we must innovate over the whole life cycle. The problem that companies have in common with humans is that they do not always know when the start of a rapid decline ★ is going to happen. The development of an innovation strategy and looking at the creative dynamics of the organisation should uncover a clue. We need to let the people in the organisation introduce opportunity driven innovation throughout the life and reward for this.

The "dumbing down" of the work place and society (people are not dumb) has a very negative effect on innovation and produces a level of powerlessness in the community and companies. The classic process worker with defined input and output has little opportunity to influence or innovate within the process. This happens in all organisations not just manufacturing. The larger corporations, governments and universities are all guilty as they lock up an individual in a defined 9-5 box.

3.4 What are some paths to change this? Enterprise Culture

It is clear we cannot redesign the work place around each individual however we can with some changes move towards structure that will enable us to compete in the new, free

markets that bring the global market to our doorstep. The concept of enterprise culture is "a culture based on an economic policy that encourages commercial initiative and audacious imaginative planning"[1].

The government statement on enterprise culture support this concept "small businesses in Australia make an invaluable contribution to our economy .... We must foster this entrepreneurial spirit and do all we can to ensure that enterprising Australians can create a business and prosper. A vibrant small business sector is central to flexible work practices, improved work and family balance and community life".[2]

In an enterprise culture, people actually earn what they are paid and are paid what they earn. This enables people to excel and to be rewarded for it. This is exemplified by Jack Stack in the USA, who produced "the Great Game of Business GGoB"[3]. The GGoB tool shows the concept of open book management as a major empowerment model, which has shown an amazing level of success in the companies that have implemented it. In this model all the employees are able to see the actual contribution to the firm and clearly see the value of performing well and effectively. This environment is conducive to the introduction and creation of new technology innovation. They can also have equity in the firm and follow the share price.

3.5 Cluster of inter-trading companies

The concept of individual entities making up a matrix of enterprises to produce the flexible organisations of the future has some interesting aspects. The concept of a Keiretsu[4] in Japan has some useful insight. Whilst the author was establishing Toshiba's R&D in Sydney, there was a range of small "back street" companies dotted around Japan closely linked with a corporate giant and developing core products in small separate businesses. In

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1 www.allwords.com
2 www.liberal.org.au/2004_policy/ Sept26_Promoting_an_Enterprise_Culture.pdf
3 FastTrac Australia has also challenged Australia's business owners and leaders to develop an enterprise culture as the foundation for global competitiveness. Great Game of Business is the key intervention to building this culture through the processes developed by Jack Stack at SRC. With a growth in share value from 10 cents in 1993 to over $55 in 2000.
4 Keiretsu A Japanese term describing a loose conglomeration of firms sharing one or more common denominators. The companies don't necessarily need to own equity in each other (www.investopedia.com)

Australia, there are many forces against such structures, such as taxation, corporate regulations and accounting practices in the legacy systems we inherit from past practices.

In this proposal the company would have separate legal entities (the circle) within the new "conglomerate corporation" with each sub element having a legal contract with the head organisation. Such as figure 2 compared with the current structure figure 1. Each individual entity would be globally competitive and may be part of more than one organisation.

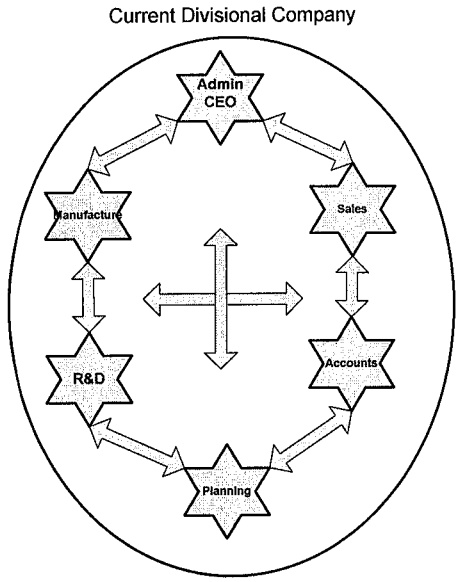

Figure 1

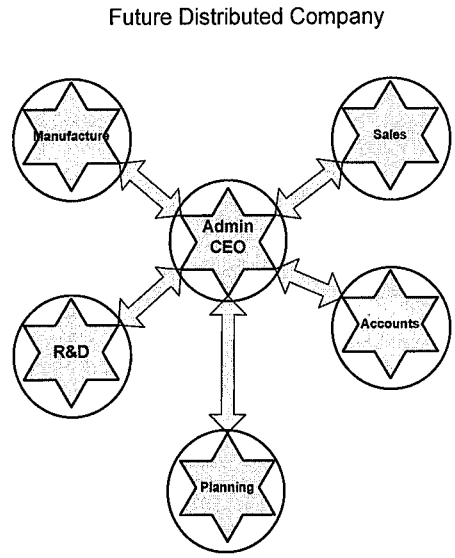

Figure 2

The new structure is critical for the survival of employment prospects as the growth of internet companies, which will compete with each element with the larger structures. The most effective entities and therefore globally competitive in a free market will be the best collection of these entities, some of which may be virtual and distributed globally.

This may be viewed as insourcing and not outsourcing. This new type of entity (network of companies) may also be necessary to adjust to the "innovation blowback" The disruptive impact is now confined to developing countries, but "blowback" from this surge of innovation could quickly be unleashed on the rest of the world. To meet the challenge, established businesses must learn new skills— not least important, an ability to orchestrate

complex networks of specialized enterprises[5] that introduce technological innovation as competitive strategy.

3.5.1 Knowledge capital

The concept of actually valuing the knowledge (that is mostly the technical know how and innovative ideas that produce new product and services) in a firm is being looked at and may prove that the actual assets of the firm are not where the accounting model show it to be. It is clear that the concept of Knowledge Capital when clarified and implemented will help our balance sheet to be more effective. "In a constantly changing knowledge economy, the only sustainable competitive advantage is the knowledge capital of a firm. This knowledge capital lies in the minds of the firm's employees in either explicit or tacit form, waiting to be reaped."[6]

The OECD ministers agreed "... the critical importance of 'intellectual assets', including the human capital, innovation and business networks in enhancing productivity and in sustaining growth in a competitive global market. The ministers proposed a programme of work aimed at improving understanding of the role of intellectual assets and their importance to economic performance" [7]

The AGCC group looking at knowledge capital in Australia [8] indicated, "Studies in the USA highlight that more than 60% of the assets of organisations today are tied up in knowledge capital, which under current accounting rules and practices, is neither represented nor valued". The Global Access Partners (GAP) group are also pushing the envelope in this area also with a GAP Congress on Knowledge Capital. This will be in Melbourne November 2005, which will cover "How businesses measure and report their knowledge-based assets under current accounting practices, and what are universal

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5 www.mckinseyquarterly.com/ ab_g.aspx?ar=1558&L2=21&L3=35
6 Knowledge in Organizations Definition, Creation, and Harvesting Smita Kothuri, May, 2002 gseweb.harvard.edu
7 Ministers meeting at the OECD in Istanbul May of 2004
8 Australian Government Consultative Committee on Knowledge Capital

standards for Knowledge Capital assessment" [9] which will be the key discussion topics at this strategic international conference

3.6 Education, young achievers

We should educate our students "to create a job and not just look for a job". Even though Australia has a world-class education system, we focus on corporate employees following the large corporate model.

To do this will require a change right back in the early education system to reward the trader attributes and create a nation of business people. An important lesson taken away by the author from his five years working with Toshiba in Sydney was that "everyone is in sales" at least we have to sell ourselves and our unique talents and gifts. There is a very interesting product called YOMP[10], which is aimed at inspiring entrepreneurs and is an interactive model, which develops a pictorial business plan and can help students and non-business people understand the elements of business and the equity process. This with the help of successful mentors has the possibility of improving the understanding of the technology business process and should aid innovation in these areas.

3.6.1 Looking at school

We also need to change our approach to children at school and in the home.

- A 2 yrs old starts to draw on the wall do you
    - Tell them to stop which discourages innovation
    - Give them some paper to draw on or pin it on the wall
- A 8 yr old trend setter starts to collect ninja turtles (a collection of pictures and personal drawings) and make folders and others followed the trend
    - Do you ban the activity from school as disruptive which discourages innovation

9 http://www.globalaccesspartners.org/kc_flyer.pdf
10 YOMP is Royal Marines slang describing a long distance march carrying full kit. in.wikipedia.org This is analogy with what is required to grow a new business

- Encourage enterprise

- A 18 yr old is too advanced for the class and changes the settings on the school computer (the student knows more than the teacher)
  - Tell the student off and ban from the class which discourages innovation (the schools action)
  - Give the staff further training and set up an environment for experimentation.

3.7 Supply chain issues

The concept of Disintermediation [11] or removing the middleman is affecting our supply chains and many Australian companies, which are in essence distributors or resellers, will be disconnected from the customers as the change in products richness and reach both improve with the introduction of net-based business[12]. The need to develop understanding in this area is critical to the survival of many of the local companies let us show them before they get to the start of a decline see the star in Figure 3-1 ★

3.7.1 Asian model

The Asian model observed first hand during two years running an SE Asian investment fund. The family and the concept of saving face are very strong and as mentioned, the Keiretsu, all have an effect on the business innovation process. Asian children are pushed through a comprehensive education system and make formidable business negotiation challenges to future Australia companies trying to do business in Asia. We are not the only ones affected as "Japan Braces for a 'Designed in China' World. The Toshiba Corporation is planning a tenfold increase in the number of engineers at its new chip development centre in Shanghai, to 1,000 by 2004" [13]. The Chinese engineering programs growth needs to be seen as a strategic issue to our future, as it is reported that around 60% of the

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11Disintermediation is eliminating the middlemen; companies can sell their products cheaper and faster. Many people believe that the Internet will revolutionize the way products are bought and sold, and disintermediation is the driving force behind this revolution (www.webopedia.com)
12 Blown to bits Evans and Wurter
13 www.bchinab.com

graduates from Chinese universities are engineers. Australia may need to actively grow our engineering base and select and train the engineers of the future if we want to partake of the fruits of our innovations.

3.8 Final note

Australia has allowed many core developments to go overseas and now needs to innovate in new areas. One critical area is the environmental technology where we have a unique opportunity to take advantage of the diversity of climates and techniques to manage it. Let us retain some innovations and develop new ones.

The author has been involved with the establishment of over 100 companies in Australia and South East Asia together with investments in 30 of these (Aus$ 40M). He also ran a program for 1000 entrepreneurs funded by the Malaysian Government in Malaysia in 2001/2. This the author believes has provided a strong insight into the successful attributes for company founders. It is interesting that this is summed up in two books "Soar with your strengths"[14] which encourages us to look and build on our strengths and not forever look and try to fix our weaknesses and a book called "First break all the rules" (of conventional wisdom)[15] . This draws from assessment of 80,000 successful managers by Gallop. The one thing they all have in common is that they all broke the conventional rules given in the MBA and business programs.

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14 Clifton. D (1992) Soar with your strengths Dell Publishing NY
15 Buckingham M. & Coffman C. (1999) First break all the rules Simon & Schuster NY. USA

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Many of the ideas expressed in this paper are not new or revolutionary to the standing committee members; however, it is important to look at a holistic solution to the complex problem.

This includes

The government	to any change policies that are anti innovative and reward innovation
The media	to report and support local innovators as hero's
The business community	to recognise the need to innovate to survive
The unions	to enable our people (their members) to innovate and eventually produce an enterprise culture
The universities	to support growth of disciplines such as engineering and science to produce technology innovation and enterprise innovation
The society	to elect representatives at all levels who understand the need to encourage Australia to compete in the global search for effective and useful technology innovations

I would like to thank the Standing Committee on Science and Innovation for the opportunity to contribute to this critical review

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