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Industrial Cluster Development:
Lessons from the Success of the Innovative Tasmanian Light Shipbuilding Industry Cluster

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Lessons from the Success of the Innovative Tasmanian Light Shipbuilding Industry Cluster

ABSTRACT

Since the inception of Porter's Industrial Cluster Theory, there has been considerable debate concerning its ability to provide a useful framework for governments in their effort to develop innovative and internationally competitive industry clusters (see Baptista, 1996; Boddy, 2000; Gordon & McCann, 2000; Lyons, 1995; Yla-Anttila, 1994). The theory, whilst powerful at describing why innovative industry clusters came to exist in different regions throughout the world, was quite weak at providing an analytical basis for the identification of entrepreneurial activity worthy of government support. This research analysed the development of one of Australia's most successful industry clusters, the Tasmanian Light Shipbuilding cluster, and distilled the positive roles that an Australian state government had therein.

Keywords: Innovation, Government and Entrepreneurship.

INTRODUCTION.

Since the 1970s, the onrush of globalisation in Australia's markets has presented significant economic policy challenges to the country's federal and state governments (Everett, 2002; Goldfinch, 1999; Moustafine, 1999). A major concern for Australian legislators was (and remains) the question as to how to make a nation previously protected by a 'fortress' of tariffs and subsidies more productive and competitive in world markets (Brown, 2000; Edwards, 2002; Martin, 2000; Quiggin, 1999). One theoretical framework that achieved prominence in Australian economic policy development in the 1990s was Porter's (1990) Industrial Cluster Theory (ICT). As part of his book *The Competitive Advantage of Nations*, Porter develops the notion that innovative industrial clusters are integral to export earnings and the generation of national competitive advantage. Porter's ICT argues that a nation's industry will be internationally competitive if a synergistic interrelationship exists between four important variables: 'factor conditions'; 'local demand conditions'; 'related and supporting industries'; 'firm strategy, structure and rivalry'; and the two influencing roles of chance events and government.

Since the inception of Porter's ICT as a basis for Australian government policy development during the 1990s, however, there has been considerable debate concerning its effectiveness at generating real economic growth (see for example, Boddy, 2000; Gordon & McCann, 2000; Lyons, 1995; Wejland, 1999; Yla-Anttila, 1994). One of the major reasons cited for this debate has been difficulty for governments to conceptualise their role in supporting innovation and developing effective industrial cluster policy (Brown 2000; Enright & Roberts, 2001). Indeed, Brown (2000) suggests Australia's poor performance is almost entirely predicated on the 'confused role of government and its policy makers', a statement echoed by Porter in 2002 when he stated that:

> …in Australia, what is less understood is that the government has some positive roles, like innovation and training, infrastructure, and things like that. I think that the real frontier is [understanding] the positive roles to be played by government whilst avoiding the distortion or intervention in competition (in Trinca, 2002:39).

In order to understand the positive roles that a government can play in the support of entrepreneurial activity and the development of innovative industrial clusters, this paper reports upon an examination of the 25-year history of one of Australia's most innovative and successful industry clusters, that of the Tasmanian Light Shipbuilding Industry (TLSI) cluster (Industry Audit, 1998). In 1977, there was one firm that chose to pioneer aluminium-welding technology in Tasmania's shipbuilding industry. In 2004, the innovative industry cluster comprised eleven entities, ranging from marine fire safety technology to advanced aluminium welding training centres; entities that have successfully provided training and innovative goods and services to the world's markets. The value of the TLSI cluster's innovations to the regional Tasmanian economy is without question. Since its inception, it has grown substantially in terms of both its sales volume and innovative output (Industry Audit, 1998), and at its peak between 1996 and 1998, it generated an annual turnover of AUD$400 million in export earnings for the Tasmanian economy (accounting for approximately 25 percent of the state's merchandise exports) (Industry Audit, 1998). The TLSI cluster also includes the world's leading manufacturer of high-speed aluminium ferries, International Catamarans, which at the peak of the industrial cluster's output, managed to capture 40 percent of the world's passenger ferry market, earning the status of being the regional economy's largest private sector employer (Wickham & Hanson, 2002). Given its demonstrable importance to the regional Tasmanian economy, an examination of the TLSI cluster's development provides an opportunity to observe which government roles were most effective in developing an innovative industry cluster that has been competitive in global markets.

METHOD.

This research comprised a series of semi-structured interviews with all of the key informants within the TLSI cluster and the state government during the period 1977 to 2002. In particular, interviews were conducted with each of the state Premiers during the TLSI cluster's formation, the managing directors of the TLSI cluster firms, and the heads of government departments and agencies with which the TLSI cluster had significant interactions. In total 25 semi-structured interviews were conducted, each lasting between 60 and 90 minutes. The interview questions posed to the participants were derived from an extensive collection and analysis of historical data pertaining to the TLSI cluster's development. As such, the interviews contained both standardised interview questions (i.e. common to all informants) and specific interview questions (i.e. aimed at the key informants' specific involvement in the TLSI cluster's history), and were formulated to elicit the primary data required to answer the research questions posed in this inquiry. Both the standardised and specific interview questions were formulated to facilitate the aggregation, analysis, and validation of information, and enabled the researcher to interrogate the evidence gathered from other sources. These questions were designed to cover the necessary issues, but were framed in an open-ended manner, to allow the interviewees sufficient latitude for introspection and open reporting of their own perspectives. As a result, the informants were free to pursue those matters that they considered important.

This collection of primary data using a semi-structured interview method allowed the informants to tell their own story in their own way, thereby allowing the researcher direct access to the experience of the case (Clandinin & Connelly, 1994). These individualised recollections aid to strengthen the inquiry by counteracting the bias that may exist in the secondary documents (Burgess, 1982), by adding matters of fact or detail that may only be recorded in individual memory (Samuel, 1982), and by giving voice to those not usually

heard (Fontana & Frey, 1994). The semi-structured interviews assisted this inquiry in each of these areas, as they enabled the researcher to access facets of the case that would not have been available by any other data gathering technique. The interpretation of the data, and the verification of the conclusions, were facilitated by the use of the QSR NUD*IST software package. The interview transcripts were imported into the NUD*IST software database, following which the categories (i.e. the coding of the data) were established as a series of nodes. These nodes were initially generated from the themes highlighted in literature review process, formed part of an index system that allowed the researcher to categorise respondent data in terms of extant theory. Each node was then reviewed in order to identify common themes necessary for the researcher's second-round coding that underpins the discussion and conclusions in this paper.

One of the most prevalent concerns surrounding the reporting of longitudinal industrial cluster research concerns the evolutionary nature of the industrial life cycle. Peters and Hood (2000) discuss how the industrial life cycle notion can influence the effectiveness of a government's industrial cluster policy platform. A growing literature base suggests that 'who innovates' and 'how much' innovative activity is undertaken by an industry cluster is closely linked to the phase of the industry life cycle, and is of vital importance to effective policy implementation (Klepper, 1996; Leigh, 2003). It is therefore necessary for this research to report on the longitudinal variation in government policy, and link them to the developmental needs of the TLSI cluster over the stages of its life cycle.

RESULTS AND DISCUSSION.

The role of government during introductory stage of the TLSI cluster's life cycle (1977-1984).

During the introductory stage of its life cycle, three key government roles positively influenced the TLSI cluster's development. The first was the state government's initial non-

committal stance towards the specific development of the state's 'new' shipbuilding industry. The second role surrounded the enhancement of the state's reputation within the domestic market as a centre for maritime research. The third role was the government's support for the entrepreneurial activities undertaken by Incat, when it became apparent that the company was a potential source of significant economic growth for the regional economy.

The state government's initial non-committal stance towards the state's 'new' industry was not deliberate, as its policy focus at the time was on the macro-economic restructuring of the state's economy away from its dependence on hydro-industrialisation:

> At the end of the Reece era [the previous state Premier] Tasmania had probably exploited those industries – not exploited but got the best that they could probably get out of it – and it was a bit of a turning point then (Doug Lowe. Personal Interview, 2002).

Due to this focus on the macro-economic restructuring process, the state government did not at any stage focus on, or pre-empt the growth requirements of the industry. The Premier of the day recalled that:

> We didn't perceive it as anything special. You have come one step further than the actual development of policy that lead to the establishment of the shipbuilding industry. The thrust of government industrial development policy in the mid 1970's was really evolving from a very bureaucratised public sector government structure advisory secretariat seated within government, predominantly from people who were experienced in the public sector as distinct from the commercial sector itself (Doug Lowe. Personal Interview, 2002).

As such, the TLSI cluster did not experience the issues surrounding many of Australia's industrial cluster failures prevalent in the 1990s in which governments built up infrastructural support to potential industries in the hope that this would attract firms, as for example, the federal and South Australian government did with the failed multi-function polis planned for Adelaide. Consequently, the development of the innovative technologies remained the sole responsibility of the innovative firms that existed during the industrial cluster's formation. As stated by Premier Groom:

> … if government takes a too bigger role in [the private sector's activities] that is fraught with huge dangers because the record of government running shows is not very good. I happen to believe government needs to be there backing up…but the innovative process is still fundamentally a private enterprise show (Ray Groom. Personal Interview, 2002).

The second key role was the state government's development of the region's reputation within the broader domestic maritime market as a national centre for maritime research. The Tasmanian government implemented a series of lobbying initiatives that resulted in the federal government providing additional funding to the AMC and relocating its national maritime research institute (the CSIRO) to Hobart. Premier Lowe said of this strategy that:

> The next step in my judgement was to make sure that we made Tasmania, as far as possible, a super centre for southern oceans activity and we looked specifically at developing not so much ship building but ship servicing facilities, particularly in the Port of Hobart but also looking at the Tamar Valley, it had developed of its own initiative a lift operation for smaller vessels, both for construction and for overhaul, so we had, at both ends of the state some great work going on (Doug Lowe. Personal Interview, 2002).

The Tasmanian government's enhancement of the region's reputation helped to develop the demand conditions faced by the private sector shipbuilding firms, most significantly in the from of customers ready to import their products from interstate. It was only after the domestic exporting success of Incat's semi-aluminium catamarans in the early 1980s were realised that the Tasmanian government undertook its third key role, that of accommodating the growth requirements of Incat with a loan guarantee for its innovative aspirations. The government support for Incat was provided when the firm could demonstrate that it did not possess the resources required for its continued expansion, and then only after its management was able to demonstrate that significant increases in employment were the likely result of the support. As the Premier of the day noted:

> I think we saw Clifford as one opportunity amongst many– but I don't think it was ever thought, "We could become a grand shipbuilding nation of the world?" Whatever. I think it was – "Let's see how if this one goes and we will get on with the next one then". It was, here is an opportunity, let's support it (Robin Gray. Personal Interview, 2002).

The role of government during the growth stage of the TLSI cluster's life cycle.

During the growth stage of its life cycle, three key state government roles positively influenced the development of the TLSI cluster. The first was the Tasmanian government's continued effort to enhance the reputation of the regional economy. The second was the Tasmanian government's direct involvement in Incat's sales negotiations processes with its

international customers. The third was the Tasmanian government's policy initiatives that served to maximise the synergistic relationship that existed between Incat and the clustering firms.

The first of the state government policies that positively influenced the development of the TLSI cluster was the continued enhancement of the region's reputation as a centre for maritime excellence, although the policy's focus changed markedly to encompass the international marketplace. Premier Field's press release at the time explained the merit of this strategy:

> The government's strategy recognises that to be viable today, companies involved in ship and boat building needed to have a national and international perspective, and develop their operations accordingly. We have been building boats in Tasmania in a regular and conventional way since 1814. As we seek to establish a solid economic base for the 21st Century, nothing is more logical than to expand our marine industry (Field, 1989:2).

This change in focus was driven by the continued success of Incat's innovative product line in the domestic ferry transportation market. Through the use of government sponsored trade missions and the associated negotiation activities, the Tasmanian government used the success of Incat to illustrate the region's maritime competency to international buyers of these products, in turn facilitating an increase in the international demand conditions for Incat's production. The Tasmanian government also applied pressure on the remainder of the TLSI cluster firms, and indeed the region's maritime industry as a whole, to similarly increase the quality of their production:

> Obviously we saw a need to encourage any Tasmanian industry where we had some special advantage. I think we are a maritime state – being an island state, it is particularly relevant to Tasmania and we saw this as something that had potential. We sought to ensure that it wasn't just Incat that drove the industry's success, we needed to ensure that the set of firms here were able to produce the sort of goods and services that the state had become renown for (Ray Groom. Personal Interview, 2002).

The Tasmanian government helped the region's shipbuilding and maritime manufacturing firms to achieve high quality production by maintaining its existing lobbying efforts for additional infrastructural funding for the industry. As Premier Rundle stated on the matter of federal government lobbying:

> We certainly put in a lot of effort on that using our Federal members and Federal Liberal members as well, there were direct representations made to Canberra by the State Government and also by our Federal Senators. But, they were all on the job, there was no doubt about that, because obviously it was a very important industry, employing probably about 1,000 at that stage (Tony Rundle. Personal Interview, 2002).

Specifically, the Tasmanian government undertook political action to secure additional funding for the educational and research and development requirements of the industry. As with its direct support for Incat's needs, however, the Tasmanian government only lobbied for additional federal government funding after its need was recognised by the private sector, and where the private sector firms could demonstrate that these needs were necessary for their future growth.

The second role undertaken by the Tasmanian government was that of direct support during Incat's sales negotiations with their potential international customers. This was directed by the incumbent state Premier at the time, through his department of economic development, most notably in the form of funding for international customer visits to Incat's factory, but also by having the Premier accompany the potential customer during their visit. On the issue of providing this form of support, Premier Field commented:

> … when [Clifford] was involved with the U.K. bloke, I went out for a meal with him, to give him some comfort, so Clifford could show he had real government support and that everything was on the level. These efforts were both moral and actual support from us–which is quite important actually, so that other people know that the government backs them in their industry (Michael Field, Personal Interview, 2002).

As a result of the state government's policy initiative to become involved in Incat's sales negotiation process, it provided a level of prestige, moral support and sales expertise that was otherwise beyond the ability of the innovative firm to provide.

The third key role undertaken by the Tasmanian government was to undertake measures to deliberately maximise the synergistic relationship that existed between Incat and its supplier firms. Inherent in Porter's ICT is the notion that within a clustered network of firms, some forms of scale or scope economies exist through which the industrial cluster develops an internationally competitive advantage. Through its development of marine parks and

industrial councils (in which firms complementary to Incat's operations can more easily interact) the Tasmanian government deliberately enabled the realisation of the synergies of both scale and scope inherent to the region's natural industry. As noted by Premier Rundle:

> I think it was partly due to Incat's expertise and international recognition and partly because of the expertise that we had developing in training of skilled people and also the growing number of companies who were out there doing internationally competitive and technically innovative products and services. So, it was a logical bringing together of all of the expertise and skills that had been created over a period of probably 20 years – and they had reached a sort of critical mass, at a point where you really did have something to offer (Tony Rundle. Personal Interview, 2002).

The role of government during the maturity stage of the TLSI cluster's life cycle.

During the maturity stage of its life cycle, three key state government roles positively influenced the development of the TLSI cluster. The first key role was the continued enhancement of the regional economy's reputation as a world centre for maritime manufacturing excellence. The second role was to formalise the relationships that existed within the regional shipbuilding and marine manufacturing industries. The third role was the Tasmanian government's deliberate strategy to dilute Incat's importance and impact upon the regional economy.

The first key state government role was its continued enhancement of the regional economy's reputation as a world centre for maritime manufacturing excellence. During the maturity stage however, the focus of the Tasmanian government's reputation strategy in the world shipping vessel market changed from the singular promotion of Incat's success to incorporate the output of the entire industry. The following government press release summarises the strategy:

> Tasmania is to be marketed as a "one stop shop" for international customers requiring shipbuilding services…the aim of the strategy is to jointly market members' products and services to show the world that Tasmania has the innovative services and products for manufacturing their ships (Napier, 1998:1).

The functional strategies incorporated by the Tasmanian government included trade missions, direct involvement in the international sales negotiations process, and the provision of marketing assistance to the industry. The marketing assistance provided to the industry was

specifically targeted at generating a consistent message for all of Tasmanian firms in the international marketplace.

The policy to incorporate the entire set of cluster firms developed the demand conditions for the regional industry, with the region now marketed as a 'one-stop-shop' for a wide variety of innovative and high-quality maritime production, not simply fast catamaran production. The state government could afford to undertake this marketing strategy given the success that the TLSI cluster firms had enjoyed both individually, and as a network, during the growth phase.

The second key role was to formalise the relationship between the region's entire set of shipbuilders and maritime manufacturers (TLSI cluster firms or otherwise) and the state government. After the Prince of Wales Bay maritime park was established by the Tasmanian government, the private sector firms, along with the Aluminium Welding School, formed the Tasmanian Maritime Network (TMN) within which the TLSI cluster could better develop its communications and lobbying efforts. After the Bacon Labor government's industry audit program of 1998 was completed, the TMN was restructured to form an Industry Council that represented approximately 85 percent of the region's shipbuilding and marine manufacturing firms. The head of the maritime industry council, Mr. Terry Hall, said of the strategy that:

> The Tasmanian government decided that it would be a good idea to form industry councils – Manufacturing Industry Councils, and a few others. What they found there, through surveys and everything else, it was difficult to bring people together and gain commitment. Now, what we had already, in a way, was one of these councils. It had already formed by our own efforts anyway, so we were able to encourage the rest of industry to join in the council as a group (Terry Hall. Personal Interview, 2002).

The industry council arrangement also helped to ensure that that the set of firms within the industry could better incorporate the success factors of the TLSI cluster into their operations, and therefore become involved in the process of further developing the regional industry's 'firm strategy structure and rivalry' to comply with world-best standards.

The third key role was the Tasmanian government's strategy to dilute Incat's importance and impact within the regional economy. The policy was implemented through the attraction of additional innovative shipbuilding firms to the region (producing vessels unlike those of Incat) in the hope that the TLSI cluster's supplier firms would have alternate sources of sales opportunities incremental to that of Incat. Premier Bacon indicated the rationale for this policy direction when he stated that:

> One of the big problems identified with the industry at that stage was that it was too reliant on Incat and that having one major company does not a healthy cluster make! You've got everybody relying on this one company … we saw that as a weakness of the industry. So, we assisted … to establish North West Bay Ships, we have given them considerable assistance over the four years, and now it is prospering and growing rapidly and winning new orders (Jim Bacon. Personal Interview, 2002).

The Tasmanian government was able to attract additional innovative firms through marketing the region's advanced infrastructure, support that was initially provided solely for the benefit of Incat. Where needed, the Tasmanian government also provided the option to undertake an equity arrangement with the new firms, an arrangement that involved funding of the new firms' relocation and start-up costs, but did not involve the state government intervening in the innovative process of the firm. Premier Bacon illustrated this policy choice:

> So, we assisted … to establish North West Bay Ships at the Margate Park, we have given them considerable assistance over the four years, in terms of finding them land, purchasing equity, and removing barriers such as zoning issues etcetera. North West are a valuable addition to the cluster, as they are in a different part of the market than Incat, and therefore not taking business away from Incat, but generating new business for the state (Jim Bacon. Personal Interview, 2002).

The maturity stage of the TLSI cluster's life cycle was highlighted by the Tasmanian government's efforts to further enhance the synergistic characteristics of the TLSI cluster, and to extend them to the wider community of Tasmanian shipbuilders and marine manufacturers. Interestingly, the Tasmanian government undertook significant and deliberate measures to ensure that the TLSI cluster diversified away from its traditional reliance on the demand generated by Incat. In terms of reducing the TLSI cluster's reliance on Incat, the Tasmanian government undertook deliberate measures to dilute the firm's importance as a generator of sales and 'internal demand' for the TLSI cluster's production.

For the first time, the Tasmanian government undertook an equity arrangement with a similarly innovative firm such that the TLSI cluster's firms would have an increasingly diverse source of internal demand for their production, and perhaps more importantly, their ability to innovative.

CONCLUSION.

This research adds a fine-grained view to Porter's (2002) comments that emphasised a government role in building clusters by encouraging innovation and providing infrastructure and training. The success of the Tasmanian government in building the TLSI cluster suggests that governments need to focus on those activities that fit a region's social and economic strengths even when, as in the Tasmanian case, these strengths are subtle. In the TLSI cluster the initial strengths were a confidence and skill set necessary for building sizeable ships, even thought these had not been built in the region for many years. The need to vary the type and strength of government assistance as the cluster developed was also emphasised, for example by providing training only after needs had become apparent and training could be targeted. Finally, the government was able to change the focus of assistance over time, broadening it to include new cluster members as they emerged. Overall, the TLSI cluster presents an object lesson in the advantages of careful government assistance that avoided the perils of taking actions that distorted the nascent industry.

The TLSI cluster is a thoroughly researched longitudinal case that includes interview data from relevant policy makers over a 25-year period. A longitudinal case such as this carries advisory messages for regional governments worldwide. It is admittedly a single case with all the problems of generalisability that are implied by that but the wealth of data gathered lends the argument authority and supports the claim that the research adds significant detail to Porterian cluster theory as it applies to government actions in cluster development.

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