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2008

Research and development structures within the Australian wine industry: organizational implications, global challenges and a changing of the wine culture

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**Research and development structures within the Australian wine
industry: Organizational implications, global challenges and a
changing of the wine culture**

A collected work presented for the award of
Doctor of Philosophy by Published Works

from

THE UNIVERSITY OF WOLLONGONG

by

David Knox Aylward

March 2008

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PART 1

CONFORMANCE WITH DOCTOR OF PHILOSOPHY DEGREE BY

PUBLISHED WORKS

1.1 BASIS OF THE APPLICATION

I am a graduate of the University of Wollongong with a Bachelor of Arts degree (Distinction average), having graduated in 1989. I also held a full-time staff position at the University between 1992 and 2007. I have standing of not less than eight years after admission to my first degree at the University of Wollongong. I am, therefore, applying for the Doctor of Philosophy degree By Publication under rule 12.31b.

1.2 REQUIRED INFORMATION

12.31a In conformance with rule 12.31a, my identified sponsoring unit is the School of Management and Marketing within the Faculty of Commerce.

12.31b The list of publications included in this collected work is identified on page 4 of the Preamble under ‘List of included publications’.

12.31b/c A full statement or overview of approximately 13,500 words is set out from page 7 of the attached preamble. In accordance with rule 12.31b, this overview sets out ways in which the collective publications provide an original and significant contribution to knowledge. (i) This comprehensive statement also

details all sources from which the works were derived (ii) It details the extent to which work of others has been used.

12.31c (iii) On all publications I was first author, and on all but two publications, the sole author. These publications have been based upon empirical projects undertaken by the applicant. In all cases the applicant was responsible for the idea, initiation, design, conduct and direction of the projects and the consequent published work. This included the two co-authored works.

12.31c (iv) The statements from my two co-authors are included in attachments 1&2. These statements confirm the extent of my contribution to the work and my legitimacy as first author.

12.31c (v) Evidence that my publications have standing as a significant contribution to knowledge is detailed throughout the Preamble and in the 'Recognition and Impact' section.

12.31c (vi) I hereby declare that the works submitted for this Doctor of Philosophy By Publication have not previously been submitted for any other qualification at a tertiary institution.

My full list of publications is detailed in Attachment 3.

1.3 ACKNOWLEDGEMENTS

Upon presenting this collected work I would like to acknowledge the valued support of several people. I would like to thank A/Professor Michael Zanko, who mentored me through much of the process and whose key insights helped keep my line of inquiry on track. His expertise in both organizational science and in the mechanics of compiling a collected work of this significance was invaluable. His guidance, understanding and wisdom have been greatly appreciated. I would also like to thank A/Professor Andrew Sense, who has spent considerable time providing detailed insights and suggestions on expression and structure. His contribution has been extremely valuable in producing the final document.

I would like to thank Professor John Glynn, who recognized from my early articles that I had a contribution to make and strongly encouraged me to formalize the process through a PhD by Published Works. It was his continued and unquestioning support, at both an emotional and resource level, that allowed me to pursue this investigation in a meaningful way. I will be eternally grateful for his support.

Rob Hood also lent his expertise without question or complaint in proof reading drafts and providing honest and valued feedback. Thank you for everything Rob. Kim Roser provided valued advice and encouragement throughout the entire process. It was much appreciated. Finally, I would like to thank my wife Allison who listened to my endless concerns and provided unquestioning support. I certainly could not have done this without her. This is dedicated to my wife and two children, Thomas and Eloise.

PART 2

LIST OF INCLUDED PUBLICATIONS

For the purpose of this collected work and its assessment I have only included core scholarly journal articles. While my total contribution to the field of study between 2002-2007 is represented by a combination of 25 scholarly articles, refereed conference papers and invited professional journal articles, I have selected eleven journal articles as the most significant for this collected work (I have only included these as they are all journal articles and therefore represent higher quality contributions than conference papers or professional articles). On all but two of these selected journal articles I was the sole author. On each of the two co-authored articles I was first author. Articles are arranged chronologically.

Aylward, D. & Zanko, M. (2008), Reconfigured domains: alternative pathways for the international wine industry, *International Journal of Technology, Policy and Management*, Vol. 8, Iss.2, pp.148-166

Aylward, D. (2007c), Differentiation or path dependency: A critical look at the Australian wine industry, *Strategic Change*, Vol. 16, pp.285-298

Aylward, D. (2007b), Fault lines: Emerging domains of inertia within the Australian wine industry, *Prometheus*, Vol. 25, No. 1, pp.85-98

Aylward, D. (2007a), Innovation and inertia: The emerging dislocation of imperatives within the Australian wine industry, *International Journal of Technology and Globalization*, Vol. 3, No. 2/3, pp.246-262

Aylward, D. (2006b), Innovation lock-in: Unlocking research and development path dependency in the Australian wine industry, *Strategic Change*, Vol.15, pp.361-372

Aylward, D. (2006a), Global pipelines: Profiling successful SME exporters within the Australian wine industry, *International Journal of Technology, Policy and Management*, Vol. 6, No.1, April, pp.49-65

Aylward, D. (2005b), Global landscapes: A speculative assessment of emerging organizational structures within the international wine industry, *Prometheus*, Vol. 23, No. 4, Dec , pp.421-436

Aylward, D. (2005a), Extending the grapevine: Innovation and knowledge transmission within the Australian wine industry, *Australian Agribusiness Review*, Vol. 13, February, 2005

Aylward, D. (2004), Innovation-export linkages within different cluster models: A case study from the Australian wine industry, *Prometheus*, Vol. 22, No 4, pp. 423-437

Aylward, D. and Turpin, T. (2003), New wine in old bottles: A case-study of innovation territories in 'New World' wine production, *International Journal of Innovation Management*, Vol. 7 No. 4, pp.501-525

Aylward, D. (2002), Diffusion of R&D within the Australian wine industry, *Prometheus*, Vol. 20, No. 4, pp.351-366

My decision to submit at this particular time was based on:

(1) A generally agreed upon 'watershed' in the international wine industry's operating climate. A defined paradigm shift was occurring, in which regimes of mass production, standardization and 'scientific determinism' were no longer satisfying the multidimensional requirements of an increasingly discerning consumer base. There were clear indicators that what I had identified as the global-local nexus of complex international demands and the need for those demands to be met by regionally differentiated research and development (R&D) extension and products was emerging as a new contour in the wine landscape.

(2) The driving force behind my collected work over the past five years was, in mid-2007, finally confirmed by the Australian wine industry itself, in a major restructure that was intended to emphasize regional differentiation, product story, specific and appropriate R&D extension, and a move beyond commodity price points.

PART 3
CASE FOR THE AWARD OF PhD BY PUBLISHED WORKS

**Research and development structures within the Australian wine
industry: Organizational implications, global challenges, and a
changing of the wine culture**

Abstract

This collected work represents an exploration of the way in which research and development (R&D) is structured within the Australian wine industry, the organizational implications of that structure, and the industry's capacity for change in what has become an increasingly dynamic international context. Specifically, my work addresses: R&D diffusion within the sector; the development, role and implication of R&D clusters; an emerging disconnection between Australia's governing wine bodies and their users; and finally, the industry's present and future status within a multidimensional wine landscape.

The particular contribution of this work lies in its conceptual advances in understanding the Australian wine industry's evolving organizational framework, and in its practical relevance to policy-makers and strategic directions for the industry. First, through largely empirical studies this work maps the longitudinal development of R&D structures over the past decade, the premise upon which they were designed, and how

they extend to the industry's users. Second, using in-depth surveys and interviews with a diverse cross-section of the industry's wine firms, combined with research into the industry's operating configuration, this work establishes an organizational framework within which to examine the industry's capacity for change. The framework is unique in that it represents an infusion of the wine industry's organizational dynamics and the cultural attachment that its stakeholders have to the wine product. This is particularly important in understanding how the methods of planting, harvesting, production and marketing reflect and impact on the way in which wine producers think about their product.

3.1 INTRODUCTION

A brief history of the Australian wine industry

From its tentative foundations in the 1830s through to the 1970s the Australian wine industry was largely defined by family companies, sporadic innovation, and simplistic supply and demand transactions catering to domestic markets. There was little organization of research and development (R&D), or resources, and the strongly individualistic spirit in the industry ruled out any effective centralization of infrastructure and delivery mechanisms. Certainly the period was punctuated by significant growth phases and scientific breakthroughs. It also witnessed the emergence of branded wine regions such as the Barossa Valley in South Australia, the Hunter in New South Wales, and Rutherglen in Victoria. What it did not have, however, was a discerning and diverse consumer base. There was a clear trajectory of supply and demand based upon an embryonic and undemanding wine market. Internationalization was virtually unknown until the 1950s and without such global influence the Australian wine industry remained insular and uncompetitive (Beeston, pp.1-25).

Between the 1970s and 2000 the wine industry transformed itself in dramatic fashion from this domestic-oriented, cottage style industry to become a significant participant in international markets. The emergence of national governing bodies, R&D organizations, the introduction of R&D levies on all producers, and the courage of iconic industry leaders brought about an overhaul in which a new, centralized structure strongly oriented the industry towards international markets. This transformation is clearly reflected in the

production and export figures for that period. Of the 360 million litres produced in 1974 only 6.5 million or 1.8% was exported (Walsh, 1979). By the new millennium the figure was just under 50% (Winetitles, 2007).

My collective work began in the Australian wine industry's celebratory phase – the lead up to the new millennium. This period represented the height of centralization in production, R&D, distribution, and internationalization strategies for the industry. In 2000, Australia was the world's sixth largest producer and fourth largest exporter of table wine and had developed a reputation for producing technically faultless, fruit-driven wine for immediate consumption (Winetitles, 2001). It was a product that captivated the commodity markets of the UK and the USA and challenged the long-held market share of European producers. The centralization of resources and domination by large firms that had driven this growth phase had placed Australia on the map of international wine producers. It had also, however, perhaps perversely, sown the seeds of dislocation and eventual inertia by locking the industry into this commodity sector at the expense of differentiation.

Rather than developing strategies for further improvement and sophistication in order to move on from initial milestones, many of the industry's governing organizations became themselves captivated by early success (Aylward, 2006b; reinforced by Johnson, 2006). They continued to lock the industry into supplying a market sector that demanded little in the way of experimentation and distinction. It was a market that was to prove seductively easy, but dangerous. The industry would forfeit much of its leadership due to

what can be argued was a somewhat simplistic understanding of the product it created, a degree of complacency, and ultimately, an unacceptably high level of risk aversion within most governing organizations. While a number of the industry's fine wine makers continued with their experimentation and the production of distinct wines, they remained 'culturally isolated' from the imperatives of the industry at large.

Differentiation in product, region, and marketing now demanded by an increasingly educated consumer base requires a degree of flexibility that the industry's current organizational framework does not allow for (Note in the industry's own New Directions document (WFA, 2007) the story of Australia's attachment to the commodity wine sector is illustrated clearly in export statistics). In 2001 the commodity sector (below \$4.99 Free On Board sales (FOB) per litre) accounted for 60% of the industry's exports. In 2006 it accounted for 77%. Conversely, in 2001 the premium sector (above \$7.50 FOB per litre) accounted for 10% of exports. By 2006 this had decreased to 7% (Winetitles, 2007).

Now, however, in a long-awaited response to widespread concerns from industry commentators, international distributors, and consumers alike, the Australian wine industry is belatedly attempting to restructure. Whether it is a well designed and thought through attempt to adapt to changing demands or an ill-conceived reaction to pressure, however, will take some time to determine.

On 2nd May 2007, the Australian Wine and Brandy Corporation (AWBC) and the Winemakers Federation of Australia (WFA) made a joint announcement that legitimizes the major research outcomes of this PhD. The widespread pressure that led to this announcement, and the strategies that must now be initiated to ensure its acceptance, reflect the conceptual focus of my papers and the empirical data that underpins their propositions.

The announcement stated that over the next five years the industry would restructure itself to sell an extra \$4 billion of wine by selling into higher price points (Speedy, 2007). The restructure would be *“founded on the firm conviction that Australia must become a more significant participant in the regionally distinct and fine wine market”*. Further, that *“The factors that drove Australia’s success between 1985 and 2005 are no longer dominant nor exclusive . . . (and that) the challenge for Australia’s winemakers is to combine a much more rigorous business and return-driven approach with a passion for quality, uniqueness and innovation”* (WFA, 2007 Press Release).

This collected work proposes that this restructure would involve growing, producing and selling higher quality wines with distinct heritage, hand-crafted qualities, and strong regional identities. It would also involve an organizational reconfiguration with profound implications for all industry stakeholders. There would be the need for a regionalized R&D framework, rather than the centralized model that has dominated the industry for the past twenty years. There would be a need for flexible, region-specific production rather than the mass, multi-region production processes currently in

existence. There will be smaller, more flexible distribution channels designed to deliver and promote high-end wines within niche markets. And finally, the marketing of Australian wine would need to move beyond the bland ‘Brand Australia’ campaign that has crippled the industry’s diversity since its launch in 1996. Instead, an explanation of, and pride in, differentiated product ‘stories’ with regional characteristics is now required if the industry’s reputation as a supplier of character-free, commodity-style products is to be dismantled.

In effect, this body of work argues that the announced restructure has been brought about by a forced acknowledgement of the inertia or path dependency that has captured the Australian wine industry. It certainly gives credit to the enormous transformation in R&D, distribution and marketing since the 1970s, but it attempts to move beyond the ‘boosterism’ (celebratory) of the industry’s New World leadership and its veneer of expanding markets. In short, it investigates and details the subterranean faults in organizational structure that were already emerging at the height of the industry’s success.

This collected work is an exploration of the way in which R&D is structured within the Australian wine industry, the organizational implications of this structure, and the industry’s capacity for change in what has become an increasingly dynamic international context. Specifically, my work addresses: R&D diffusion within the industry; the development, role and implication of R&D clusters; an emerging disconnection between Australia’s governing wine bodies (with the exception of the Collaborative Research

Centre for Viticulture, operating under a different mandate) and their users; and finally, the industry's present and future status within a multidimensional wine landscape.

Relevance of the collected work

The particular contribution of this work lies in its practical relevance to policy-makers and strategic directions in the Australian wine industry, and its conceptual advances in understanding the industry's evolving organizational framework. First, through largely empirical studies this work maps the longitudinal development of R&D structures over the past decade, the premise upon which they were designed, and how they extend to the industry's users. Second, using in-depth surveys and interviews with a diverse cross-section of the industry's wine firms, combined with research into the industry's operating configuration, the work establishes an organizational framework within which to examine the industry's capacity for change. The framework is unique in that it represents an infusion of the wine industry's organizational dynamics and the cultural attachment that its stakeholders have to the wine product. This is particularly important in understanding how the methods of planting, harvesting, production and marketing reflect and impact on the way in which industry wine producers think about their product.

As the international wine landscape continues to evolve and reconfigure to the differentiated requirements of distributors and consumers, the Australian wine industry's capacity for adaptive response is critical to its survival. The collected work's empirical studies suggest that the industry's previous success is creating a path dependency (risk

aversion) that continues to undermine its adaptability. An explicit conceptualization within this work, therefore, is the fundamental concept of differentiation. Differentiation of R&D, production, distribution and marketing are the keystones to the work's ultimate conclusion: *that if the wine industry is to remain a sustainable and viable force it must change the way it thinks about its product and understand that it is far more a cultural asset than a simple, saleable commodity.*

In May 2007, my five years of propositions, interviewing, surveying and analyzing of industry trends was reinforced by the industry itself. The industry's governing organizations, after years of dismissing differentiation issues as peripheral to their overall strategy, accepted that there was a need for major industry restructuring.

Towards a conceptual framework of R&D reconfiguration within the Australian wine industry

The conceptual framework is developed iteratively through the collected work. Consequently, my emergent conceptualization of R&D structures in the Australian wine industry is built through each consecutive study.

This body of work, therefore, did not develop from the investigation of a traditional hypothesis, but evolved through processual 'building blocks' of empirical data and the analysis of those data within an organizational change model. Each study and its attendant research papers reinforced the critical role of R&D structures in shaping practice, attitudes, and culture within the Australian wine industry. And, with the

completion of each study, in incremental fashion, the conceptual lens became clearer and more focused, thus allowing for the emergence of a cohesive theory building process.

There are three overarching propositions that emerged from this collected work. These are:

1. The Australian wine industry's centralized research and development structures have created an uneven and disconnected innovation landscape.
2. These structures have adversely shaped organizational behaviour within the industry, and affected long-term capacity for change.
3. The Australian wine industry is locked into a regime of volume supply, dominated by the largest corporations. The resulting price-competition will erode the industry's competitive advantage and undermine its capacity to service an increasingly complex global wine industry.

My studies have also extended on traditional innovation cluster models developed by Mytelka and Farinelli (2000), and Feser and Bergman (2000). They placed these models within an organizational change context and thus demonstrated their long-term effect on individual and institutional behaviours. I have also argued, that risk aversion insulated the industry's focus from international requirements and thus created an operating landscape ill-suited to increasingly complex global trading. The consequent retreat to known practices and processes, have, to a significant extent, undermined the competitiveness of the Australian wine industry.

The particular innovativeness of my presented work, came in the form of a radically different R&D structure which I proposed would change the industry's culture and challenge its risk aversion. This structure, based on regional R&D nodes is explained in detail in my article 'Innovation Lock-in: Unlocking Research and Development Path Dependency in the Australian Wine Industry' (Aylward, 2006b). It should be noted that it is also a structure now being proposed by the wine industry itself.

A detailed conceptual history of the presented work

In the early stages of the study the predominant focus was on the existing R&D strategies in the Australian wine industry, their adequacy in addressing regional small and medium enterprise (SME) priorities, and proposed improvements in their extension. Surveys and interviews in these stages focused on very specific questions about access to R&D, participation in the R&D process, type of R&D required, the importance of R&D to firm operations, and current innovation capacity within SMEs. Although the scope of this early research was less ambitious than the research carried out in later stages of the study, it provided a clear 'road map' that enabled me to move quickly in both conceptual and empirical terms towards the examination of the industry's organizational dynamics.

R&D Structures

The next logical step in the conceptualization process was to examine this R&D structure and its concentrated pockets within the industry in terms of cluster analysis. Using common characteristics from Porter (1998), Johnstone (2003), Mytelka and

Farinelli (2000), and to some extent, Feser and Bergman (2000), I divided the industry's productive capacity into three fairly defined cluster models – *innovative* for the most highly developed, *organized* for maturing clusters, and *informal* or *embryonic* for emerging clusters of activity. Mytelka and Farinelli's (2000) cluster models provided an almost perfect fit for the Australian wine industry, with my empirical data clearly highlighting the different levels of innovation and activity within the selected clusters. The data also substantiated the notion of self-perpetuation. There were strong indicators that the more developed the cluster became, the more it continued to attract additional stakeholders and create stronger linkages between innovation and market development. As a result, it developed a competitive advantage over other clusters and the broader industry sector by articulating this activity into a greater capacity for internationalization.

Importantly, these findings reinforced the concept that the extension of R&D, the capacity for uptake of that R&D, and the almost inherent coagulation of R&D within clusters of activity had profound implications for the industry's overall 'innovation profile'. The findings also provided an approximate 'barometric gauge' of R&D pressure points, i.e. the distortion of R&D support; while some regions struggled to absorb higher levels of innovation, other regions were provided with multiple access points from which to gain competitive advantage. Finally, longitudinal findings enabled the inadequacies of a centralized R&D dissemination network to be clearly mapped. As the work's empirical data continued to build and clearer patterns emerged it became apparent that a previously successful and centralized R&D system was now failing to

provide the differentiated service required by its end users. It was this understanding that led me to think in new ways about how the industry is organized.

Organizational Structures

My later papers, examining the structure of the industry and the role that R&D diffusion plays in reinforcing this structure represents the most sophisticated phase of the presented work. By the late 2006 papers (Aylward, 2006a&b) I had begun to view the industry and its position within the global wine industry as both dynamic and organic. It was dynamic in the sense that the international wine environment was extremely fluid and, therefore, demanded analyses that interacted with the subject. It could not be seen as a static or even stable template within which ideas or developments remained predictable. There also had to be an emphasis on its highly organic nature. This would ensure that, in organizational terms particularly, the industry was understood as a multi-faceted, 'living' entity that evolved in accordance with the changing identity of the biological product it traded.

The conceptual framework adopted for its analysis, therefore, was that of organizational ecology, as proposed by such thinkers as Trist (1977, 1983), Astley and Fombrun (1983) and Asheim and Gertler (2005). This framework allowed me to move beyond the orthodoxy of traditional national-set perspectives to view the internationalization of the industry and Australia's place within it as a comprehensive set of connections that traverse multiple domains: a global-set perspective. "From an organizational ecology perspective adaptation... is consciously proactive in that it recognizes and advocates that

groups of like and unlike organizations can work to shape their environments and futures. In this sense, organizations are seen to be active players in their environment rather than external to that environment” (Aylward & Zanko, 2008, p.5).

It was this perspective that allowed the collected work to fully articulate the inadequacies of nationalized wine industries such as seen in Australia. By placing national-set perspectives within an organizational ecology context the tell-tale signs of dislocation and mismatch in nationally-focused industry priorities became glaringly apparent. The organizational ecology perspective provided an essential ‘macro lens’ through which to view the multitude of production and distribution connections that surrounded and contributed to the identity of wine. It was a lens that allowed a clarity of focus unavailable through traditional lenses, and thereby created a picture that I believe is not only a more accurate reflection of current developments within the global wine industry, but also frames these developments within their cultural and even anthropological fabric.

Methodological Approach

Through analyses of both qualitative and quantitative data my work has also attempted to move beyond orthodox theoretical parameters. It has extended the models of organizational path dependency and inertia by establishing a context for analysis at an industry sector level (Brito, 1999). It is at this level that the work provides strong indicators of emerging ‘fault lines’ and differing priorities. The gap between these sets of priorities, it is argued, is nurturing a new inertial domain. In terms of R&D,

knowledge diffusion, production and marketing this continuing and perhaps widening gap in priorities has brought with it a breakdown in communication and understanding between the industry organizations and the wine firms they represent. From an anthropological perspective, there is no longer a capacity to nurture the cultural fabric required for the elevation of wine to a level beyond its 'commodity' status (Bernard, 1995). It is these less tangible aspects of organizational inertia that the presented work explores and develops throughout the second sub-theme.

By building upon the recognition and analysis of uneven resource distribution in the first selection of articles, this exploration has made a significant contribution to knowledge of the Australian wine industry's organizational development. Inertial domains have been mapped, underlying causes examined, and alternative pathways proposed. The work has been a necessarily evolving or processual one, necessary because my own understanding of the industry has become more intimate and sophisticated as my research has intensified. It has also been necessary because of the industry's own development and digressions within an evolving international wine industry context. Sometimes parallel, and often contradictory, paths have made the study a fascinating and highly satisfying one.

Such an approach aligns with Dawson's (1997) description of processual research methods, in which 'on-going, in-depth field work', embedded within 'longitudinal case studies', allows for the 'combination of different research data and techniques'. The benefits of this approach involve close interaction between the investigator and the

interview/survey subjects, a relationship that actually feeds into the research, informing its direction, rectifying its deficiencies, and establishing a continuing rigour through self-checking (Küpers 2005, 2008).

In this body of work, each contributing study informed and established a foundation for a subsequent study through on-going practice, building on and refining emerging issues (Dawkins, 2003; Pettigrew, 1985). Thus, a longitudinal and multi-case study approach added to the empirical rigour and logic of my work, and provided a gauge of further research direction and reflection.

The presented work is based largely upon empirical research carried out between 2002 and 2007. Within this period I carried out 10 empirical studies, the results of which underpin my presented articles. These studies included both quantitative and qualitative elements, ranging from closed survey questionnaires of up to 200 wine firms, to surveys including closed and open-ended questions, to phone interviews to in-depth face-to-face interviews. In total over this period I conducted and analyzed more than 1100 surveys and interviews (Küpers, 2005; Bernard, 1995).

As mentioned, the methodological path was a processual one. It was one in which each of my empirical studies contributed incrementally to the exploration and understanding of an industry sector that is confronted by multi-faceted and competing forces. Through these incremental ‘building blocks’ I was able to engage alternative and complementary perspectives that drew upon a progressive interpretation of collected data. Each step

informed the next and provided the necessary framework for the development of a cohesive and context-based narrative.

Both surveys and interviews carried out within the Australian wine industry primarily targeted SME wine firm CEOs, marketing or production managers and wine-makers, high-level representatives from the governing industry organizations, and leading industry thinkers such as Professor Jim Hardie (Cooperative Research Centre for Viticulture), Brian Croser (formerly Petaluma Wines), and Stephen Millar, former CEO of BRL Hardy. In addition, in two comparative studies on innovation leadership and dissemination I surveyed SME firms within other New World wine industries of New Zealand, California and South Africa.

Sample Groups

Survey sample groups usually ranged between 100 and 200 SME participants and included firms from the four leading wine production states of Australia – New South Wales, South Australia, Western Australia and Victoria. In all studies care was taken to include an approximately equal number of SME firms from each of the major wine regions in a particular state for cluster analysis and comparison. Care was also taken to ensure equal representation of wine firm size for comparative purposes. In each survey sample a stratified, randomized survey technique was used (Jain, 1982).

In some studies the sample group was divided between non-exporters and exporters to provide performance comparisons between types of firm and gauge the impact of

internationalization, while in others export-only firms were surveyed, as the study specifically required export-performance components. In all cases, after the original ‘mapping’ through survey samples, a sub-sample of specific characteristics was identified for in-depth interviews. These interviews involved open-ended questions around specific issues that had been identified as critical to the survey respondents. These sub-samples comprised between 6 and 20 respondents, depending upon the size of the original survey sample and the number of firms that fitted the criteria for interview (Denzin and Lincoln, 2000).

Australian geographic spread of my survey samples

New South Wales

Hunter Valley

Orange

Cowra

Mudgee

Canberra Region

South Coast

Southern highlands

Riverina

Victoria

Rutherglen

Yarra Valley

Goulburn Valley

Macedon Ranges

Mornington Peninsula

Grampians

Pyrenees

Murray Valley

Western Australia

Margaret River

Swan Valley

Great Southern

Pemberton

Peel

Geographe

South Australia

Barossa Valley

Eden Valley

McLaren Vale

Adelaide Hills

Coonawarra

Clare Valley

Eyre Peninsula

Sample Building

A critical aspect of the empirical research underlying this presented work is that each study built on previous ones, both conceptually and in practical terms. No one survey or interview regime was seen as an end in itself, but rather, each was a contribution to an evolving study. It was a study that continued to gain in complexity and significance as another layer of data was added. Each survey and interview round created a fluid framework from which the next empirical exercise would emerge. Therefore, the overall study, to a significant extent, tracked and evolved in parallel with the more profound changes occurring in the Australian wine industry's internationalization (Dawson, 2003). It was this parallel development or evolution that created real meaning within the study. There was no single snapshot, but instead, a dynamic reflection and interpretation of unfolding events.

3.2 THE BODY OF MATERIAL

The first two articles (Aylward, 2002, 2003) were to some extent exploratory. Accepted wisdom portrayed the Australian wine industry as *the* new, leading force in the international wine arena. In terms of its R&D, its consumer-driven products, its distribution, and its marketing, Australia was establishing benchmarks that the rest of the wine world would need to emulate.

The reason for the first article, titled “Diffusion of R&D within the Australian wine industry” (Aylward, 2002) was to place this accepted wisdom within the context of a more ‘sobering’ picture of the industry’s structure that was emerging through literature reviews, and more particularly, my field work. In 2001/2002, after extensive research on developments within the Australian and international wine industries I carried out a pilot survey and then in-depth interviews within well-known regional wine areas of New South Wales. These areas were selected to provide R&D user feedback from high profile regions located outside what I perceived to be the industry’s ‘hub’ of activity in and around Adelaide in South Australia. I also confined the study to small and medium wine enterprises as it became apparent from my research that it was the smaller firms that were most disenfranchised in terms of R&D and other critical support.

This sample of 41 firms provided interesting preliminary indicators. The indicators suggested that there was a landscape in which an uneven distribution of R&D, training, export and other critical support structures were fuelling concentrations of innovation

activity within relatively few areas while the broader industry remained somewhat dislocated from these supports. This finding supported the 1992 Committee of Inquiry's concern that the benefits of national R&D may not be flowing through to regional operators. The concern was again reiterated in December 2007, when John Harvey, Executive Director of the Grape and Wine Research Development Corporation admitted that "*...over the past five years or so the GWRDC had not taken enough responsibility for the way in which research was delivered to growers*" (Daily Wine News Website, 2007). Of more concern is that 15 years after the first Inquiry, the industry still appears to be plagued by the same problem.

It was argued throughout my first article that while 'innovative leadership' remained a mantle of the Australian wine industry, these portals of resource concentration, coexisting with numerous, relatively depleted regions and operators, was undermining the industry's sustainability. In terms of knowledge diffusion, funding of the industry's R&D, collaborative activities, and personnel training, small and medium regional operators in this study believed that their priorities remained peripheral to those of the industry's governing organizations. They were also peripheral to the larger wine corporations who represented the main clientele of these organizations.

The article, set within the context of knowledge diffusion and uptake, established the premise from which I would extend my examination of innovation and organizational structures within this very fluid industry. It also represented a rudimentary 'map' of the increasingly complex landscape I would be investigating.

The subsequent article was titled “New wine in old bottles: a case study of innovation territories in New World wine production” (Aylward & Turpin, 2003). This article was used to investigate the perception of Australia’s innovative leadership within a *national systems of innovation* (NSI) context. For this purpose we drew comparisons between Australia’s innovative capacity and those of other New World producers such as South Africa, New Zealand and California.

The article was an attempt to extend the NSI concept to one of regionality and clusters of innovation. Although I was not entirely satisfied with the outcomes and revised my thinking to place greater emphasis on geographically defined clusters, the article provided a useful ‘stepping stone’ in what was to be an evolving examination of the industry. It was based on a perception survey of small and medium wine firms from each of the above international operating regions and applied the findings to an ‘innovation territories’ framework. This extension of the cluster model into *economic and cultural spaces* borrowed from Marceau’s (1995) and Basri’s (2001) exploratory concept of the complex interface between global and local innovation systems. It also highlighted a first step towards the critical role that a cultural acceptance and promotion of the product played in the industry’s capacity for competitive advantage. Both the global/local interface and the cultural dynamic became cornerstones of future empirical articles in which I blueprinted them as a seamless operating paradigm for a 21st century wine industry.

The article was important for a number of reasons. First it helped clarify my future direction in researching the wine industry by highlighting the interdependence of economic, social and cultural spaces within innovative activity. This provoked a natural evolution in the way I thought about the industry and the complex landscape upon which its production, distribution and marketing depended. Second, although utilizing a relatively small sample group, it was the first time (of which I am aware) that a New World empirical analysis had been carried out to provide indicators of wine innovation and export leadership. Third, it applied common traditional theories of innovation to a unique industry in which the product is commonly grown and produced within a highly localized environment. Such an environment dictated that any examination must be developed within a regional innovation framework - one that remains fluid enough to accommodate less orthodox concepts of innovation territories and their effect on behaviour.

The next tranche of articles extended this approach significantly. For example, a published article in 2004 (Aylward, 2004) was based upon an empirical examination of innovation and export linkages within different levels of wine industry clusters.

“Innovation-Export Linkages within Different Cluster Models: A Case Study from the Australian Wine Industry” (Aylward, 2004a) applied Mytelka’s (2003) cluster model, in which industry clusters are categorized as embryonic, organized or innovative. Working within these models selected core indicators of innovation and export activity were used to explore levels of integration among firms within the Australian industry. For the study 100 SME wine exporters were interviewed, being divided equally between what were

empirically identified as the innovative cluster of South Australia and less developed clusters in New South Wales, Victoria and Western Australia.

The proposition was one which postulated that industry clusters provide competitive advantage to the firms they host. The more innovative and integrated the cluster, the more competitive the firms operating in that cluster. This competitiveness was determined by perceived levels of innovation and export activity and, as importantly, the articulation between the two sets of activities. It is this articulation that theorists such as Saimee, Waters and Dubois (1993) point to as a key indicator of competitive advantage. They argue that the potential interdependence between innovation and export in these clusters can be so intimate that one cannot be measured reliably without the other.

For my purposes, the perceived articulation of these activities among interviewed SMEs provided indicators of their cluster's capacity to internationalize both the product and the infrastructure that supports it. In the innovative cluster of South Australia, for example, over 77% of SME wine firms were involved in exporting, compared to an average of 42% for the less developed clusters. The ratios were similar for export intensity (export sales as a percentage of total sales). While the less developed clusters averaged 27% of total sales, the South Australian cluster averaged 41%. The articulation between innovation and export activities was also more pronounced within the innovative South Australian cluster, in which 66% believed there was a strong link, compared to 41% for other clusters. These ratios align with Roper and Love's (2003, p.1) contention that "product innovation...has a strong effect on the probability and propensity to export".

The immediate value of the approach taken in this and several subsequent articles was the emerging map of clustered activity within the Australian wine industry. It was a map that exposed the contours of innovative behaviour among wine SMEs while also providing a resource for further assessment of direction that needed to be taken and the industry's capacity to take those directions. The next of my nominated articles, titled: "Global pipelines: profiling SME exporters within the Australian wine industry", (Aylward, 2006a) placed these innovative contours within an internationalizing, global context. The article was innovative in that it set out to provide a template of successful export strategies for SME wine firms. The industry relevance of this approach was recognized by stakeholders such as the Australian and New Zealand Grapegrower and Winemaker (professional) journal who requested a shortened version of the article for their journal.

Specifically, the aims of the article were to empirically assess and profile wine firm internationalization activities, to create a 'best practice' exporter model and then to develop a set of common characteristics of successful exporters. Underlying these aims was the proposition that a key characteristic of export success for SMEs was their inclusion within innovative industry clusters. The theoretical framework underlying the assessment primarily drew on Enright's (2001) export sustainability within industry clusters thesis and Malmberg & Maskell's (2002) localization and knowledge diffusion theory.

Core measures employed were:

- Internal and external export drivers (an initiative measure developed by Saimee *et al* in 1993)
- Export intensity (export sales as a percentage of total sales)
- Increase in exports over time
- Number and geographic spread of international markets
- Export-innovation linkages (a measure assessed in detail by Malmberg & Maskell (2002)
- Management attributes and attitudes

The findings of the paper built upon those of my previous papers by demonstrating that the successful internationalization of wine SMEs is intricately linked to the developmental level of their host cluster. The paper showed that the competitive advantage of firms in terms of export intensity, sustainability, geographic spread, market penetration, and increase in sales correlates approximately to the cluster's innovative capacity. It was a theory that aligned closely with the overriding theme of my collected works – that of regionalization and differentiation as key organizational instruments in responding to rapidly changing international requirements.

Although my understanding and focus had been evolving through these first four papers, that paradigm shift became obvious with the next group of articles. The value of this study at a personal level was that I gained an understanding that in this industry, particularly, regional clusters and their anthropological influence on the product were

critical elements of differentiation. It was an understanding that would lead to an increased focus on organizational structures within the industry and how they influenced future operational capacity.

This became clear in the next two articles (one published earlier but actually written later) titled “Extending the Grape Vine: Innovation and Knowledge Transmission within the Australian Wine Industry” (Aylward, 2005a), which dissected Michael Porter’s (1998) cluster model to assess the uneven distribution of resources within the industry and “Global landscapes: A speculative assessment of emerging organizational structures within the international wine industry” (Aylward, 2005b).

Here, it was argued that the two-dimensional operating model of the 1980s and 1990s was being colonized by a new paradigm in which global production, distribution, technology transfer and marketing demanded different configurations. Such configurations, as alluded to by Morris (2000) in his assessment of the Mendoza (Argentina) wine region, transcended national boundaries. They tended to lock local regions of production into specific requirements of global supply chains, where individual wine ‘stories’ were becoming a lucrative antidote to the blandness of the commodity sector. President and owner of Ceja Vineyards, Amelia Ceja (Brenner, 2007, p.47) encapsulates this differentiation when stating that “*Anyone can make wine, really – but not everyone can make wine that tells a story*”.

In particular, this article provided an historical context to the emerging paradigm. It traced the modern wine industry from its monopolization by European producers through the rise of New World operators to the recent rationalization of the industry. Integral to this analysis was an assessment of the profound implications for the production, distribution and marketing of the wine product. In assessing these implications the article further clarified the development of international trends and provided an appropriate framework for their further analysis. It also helped to identify the changing wine landscape, a theme that would dominate later articles.

The article concludes with a strong recommendation for the reconfiguration of industry policy in the Australian wine sector. It suggests that within the current R&D framework, for example, support is based upon national rather than regional priorities. It is also based upon a levy system (dollars per tonne crushed) that favours the largest wine producers, many of whom are owned by overseas interests. While in recent years stakeholder pressure has resulted in increasing rhetorical support for regional SME producers, actual financial and program support has not followed. Support is still flowing without interruption to the country's largest producers whose interests align with national, non-regional production, marketing and identification. In a global wine environment, in which national boundaries are largely being dismantled, industry policy that continues to support broad national agendas does not contribute to the long-term health of the sector (Zhao, 2003). My article takes the position that as more sophisticated consumers search for greater differentiation in their product, the distillation of their interests will occur more and more at regional levels, where clear identification and

points of difference will favour the small and medium producers. Industry policy must not be held hostage to past successes.

The industry's organizational framework

As I continue to emphasize through the remainder of my work, the international wine landscape is a phenomenon that possesses an array of tangible and intangible qualities. The characteristics of this landscape can be witnessed in the obvious cycles of supply and demand, the shift in production geography, increasing size and influence of distributors and global marketing campaigns. It can also, however, be detected in the improving education of consumers as it can in the emergence of *terroir* as a concept in the New World, the belated realization that “the absence of defects is not the presence of virtues”, and as Hugh Johnson points out, the notion that wine cannot be separated from the anthropology of place (Harding, 2005; Johnson, 2006).

My next article, titled “Innovation lock-in: unlocking research and development path dependency in the Australian wine industry” (Aylward, 2006b) extends the notion of the global-local nexus in R&D, production and marketing. It places this nexus very much within a new, multi-dimensional wine landscape in which an emerging niche market sector parallels the growing lake of commodity-style wine. The paper builds on previous work by using empirical findings to substantiate a theory of organizational and innovation inertia within the Australian industry.

These inertial concepts are examined through an R&D lens that focuses on a dislocation between the industry's nationalized innovation system and the region-specific extension required by Australia's 1,950 wine SMEs. Such a dislocation can be partially explained by the traditional organizational theories of DiMaggio and Powell (1991), Brown (2002), and Genschel (1997), among others. There is a need, however, for an elaboration of these theories to include the innovation lock-in framework adhered to by commentators such as Ditter (2005), and Foxon and Pearson (2006). My article used responses from 165 micro and SME wine firms (using data from my 'innovation perception' survey) to provide empirical substance to the notion that 'firms, organizations and entire industry sectors can be prone to a condition whereby previous innovation success creates habitual pathways'.

As Ditter (2005) points out, by failing to deviate from these entrenched pathways an industry can only service a homogenized clientele. Such a strategy implicitly fails to recognize and cater to those firms who strive for a differentiated approach. Empirical findings upon which this paper is based certainly confirmed Ditter's hypothesis. For example, of the 165 firms surveyed 91% believed regional identity was critical to their operations but only 33% believed the industry's governing organizations recognized this importance. Further, only 21% of respondents believed appropriate R&D extension for servicing of such regional differentiation was being undertaken. The vast majority argued that there was a clear mismatch between what the industry offered in terms of R&D and what the stakeholders required. Brian Croser (2006) states that it is in regional differentiation and higher quality wines in which an industry's reputation is made. Yet,

as is argued throughout this and my remaining articles, the reluctance by the governing institutions to deviate from established R&D paths undermines Australia's pursuit of regional identity and points of difference within the market.

A proposed R&D model

The truly innovative component of this article - 'Innovation Lock-in: Unlocking Research and Development Path Dependency in the Australian Wine Industry' (Aylward, 2006b) - I believe, is its proposed R&D model of extension. It points out that a key component of regional differentiation is the R&D that feeds into that region's production and supply chains. It is impossible to create a unique R&D/production match within a nationalized R&D framework. The article therefore proposes to reconfigure this framework substantially while still adhering to its basic funding levy structure.

The model would be based upon a 'hub and spoke' extension. The industry's major research body – the Australian Wine Research Institute (AWRI) – would continue to receive R&D funding from the Grape and Wine Research Development Corporation as is currently the case, but would re-allocate those funds directly to regional winemaker and grape-grower associations, rather than allocate from a central pool. The allocation would be determined by the region's wine operator population, perceived R&D need, the type of research being required, the strength of the cluster and its branding, and the perceived capacity of the firms to absorb the R&D (Aylward, 2006b). The allocation would also include resources for R&D personnel, infrastructure and education. In effect, these regional sites or associations would become nodes of the AWRI and would be

responsible for the regional R&D governance issues as well as the supply and demand equilibrium of R&D. The specific benefits of this model would include:

- The closer alignment of a region's R&D with the interests of subscriber firms
- Less duplication in R&D type as nodes would operate in accordance with the region's specific requirements
- Greater flexibility and responsiveness of R&D extension as intimate collaboration between nodes and subscriber firms would allow for continual adjustment
- A decentralization to regional node level that would enhance R&D 'ownership' by subscriber firms and create 'interactive' decision-making
- Greater efficiencies in R&D delivery
- Enhanced R&D planning capacity
- Most importantly, R&D nodes that support much higher levels of regional branding and identity

As stated in the article, "the primary objective of such a model and the measure of its success would be a realignment of governing organization and firm imperatives" (Aylward, 2006b, p.4) for a more flexible response to global requirements. This theme was continued in my next article titled "Innovation and inertia: the emerging dislocation of imperatives within the Australian wine industry" (Aylward, 2007a). This paper used the same survey responses but divided the analysis into two distinct phases. The first phase provided a quantitative assessment of user perceptions and their experiences

within different cluster models in order to further demonstrate the correlation between cluster development and firm activity. The innovative phase of the paper, however, was the second section, in which I used qualitative feedback from firms to focus on the gap between providers and users of R&D. This article followed closely on previous ones but the qualitative feedback provided an insight into operator concerns and responses that other studies have failed to uncover.

Within a theoretical framework of organizational inertia at the industry level, the findings of the second phase reflected deep misgivings among firm operators over current R&D extension programs, scientific imperatives undermining user needs, dislocation of imperatives, and the need for urgent response to a changing international landscape. The personal accounts in this article provided a level of meaning that is essential in understanding the impact of industry-level policy decisions on those operators attempting to compete in global markets.

Importantly, the in-depth interviews also highlighted the increasing disenfranchisement among SME wine operators. These operators comprise the major population of the Australian wine industry. They are often responsible for product innovation, experimentation, niche marketing and quality reputation. Yet their perception is that their needs for support, for appropriate R&D extension, for accommodation within the industry's overall strategy, are being ignored in favour of the country's largest producers and their homogenized approach to wine-making. In short, the industry no longer serves

their purposes, nor represents their interests at a national and more particularly, international level.

As is evident from these later articles, there is a consistent thematic thread but it is investigated from various angles and in increasing depth. My focus is galvanizing on an erosion of the industry's capacity to service the diversity of its stakeholders and, therefore, meet an increasingly diverse set of international challenges. Throughout these articles an urgent reconfiguration of the industry's organizational components is proposed in order to shift emphasis from a single, mass production approach to parallel streams of commodity-style products and regionalized wines of distinction.

The industry's current status and the need for reconfiguration is examined through a more theoretical lens in my article titled Fault Lines: Emerging Domains of Inertia within the Australian Wine Industry (Aylward, 2007b). In part, the article serves to build upon the theoretical foundation of the previous paper (Aylward, 2007a) which examines the developing dislocation of imperatives within the Australian wine industry.

More importantly for the validity of this work, however, the paper contrasts this framework with the organizational boundaries provided by Hannan, Polos & Carrol (2004), DiMaggio & Powell (1991), and Genschel (1997). In the context of what it terms *Domain Inertia* the paper avoids the organizational case study analysis in which individual entities are measured in relation to their environmental interaction, human resource policies, change strategies and risk management. Instead, it continues to assess

structural causes at an industry sector level in which inertial tendencies are the result of gaps between imperatives of governing organizations and those of the industry's end users – the wine firms. Such gaps, it contends, not only create operational voids between production methods and marketing initiatives, but perhaps more importantly, create conceptual voids. Different stakeholders are thinking about the industry and its future in very different ways. It is these dislocated 'visions' that are contributing to a paralysis in policy.

The paper draws on empirical findings to substantiate these claims. Based on respondent feedback to issues such as branding, identity, R&D extension, and responses to shifting consumer sentiment, the paper establishes clear demarcation lines within the industry and demonstrates the inherent strategic weaknesses resulting from these. It also sets a clear framework for the following two papers, in which alternative operating paradigms are explored in some depth with suggestions that continued sustainability depends heavily upon an 'ecological' rather than domain-centered understanding of the global wine environment.

The industry's governing organizations must view their sector within a fluid international landscape rather than as an autonomous unit within that landscape.

The framework is extended in an empirically-based article titled: "Differentiation or path dependency: A critical look at the Australian wine industry" (Aylward, 2007c).

This article applied the empirical findings (from a 2006 survey) to policy-driven solutions, particularly in the area of R&D extension. Under the heading of 'Rebuilding

competitive advantage' I advocate clear strategies for disaggregation of the industry's operational platform in order to create more representative, region-specific responses to global requirements. From the levy collection system, to board restructures within the major industry organizations, to R&D nodes, and marketing the paper is designed to provide an initial template for progression from a national operating paradigm to one that is infused with the responsiveness demanded by multi-dimensional and directional pathways.

The final article is titled "Reconfigured Domains: Alternative pathways for the international wine industry" (Aylward & Zanko, 2008). The global environment was the focus of this study.

My previous papers demonstrate an increasing need to view the Australian wine industry's organizational structures within an international or 'ecological' context in order to engage in a meaningful discourse. For my own analysis, it also became imperative that I move beyond assessment of a national industry within a global context to provide a detailed commentary on the global context itself. This enabled me to exploit the organizational ecology framework by following Trist's (1983) lead in viewing the "organizational field (as being) created by a number of organizations whose interrelations comprise a system at the level of the field".

The paper followed historical and emerging structures in both Old World and New World wine industries, contrasted them, provided views on their deficiencies and

advantages, documented their emerging inter-connectedness and arrived at a ‘model in progress’ that embraces the multi-dimensional configurations and demands of a truly global environment. It also ‘invoked process and structural explanations about the significance of life in a global wine community’ (Aylward & Zanko, 2008). In many senses the paper represented a high point in my understanding of the wine industry’s intricate, complex and very fluid dynamics.

The elasticity of this ‘model in progress’ and its capacity for highlighting links between endogenous production communities and global distribution pipelines provides a deep insight into the structural but also the anthropological landscape of wine. It provides a holistic viewing lens through which stakeholders and their behavioural patterns are examined not within static communities but as part of a complex organic system. Most importantly, the lens has the capacity to evolve and change according to changes within its focal environment. In other words, it interacts with its viewing environment.

The other crucial aspect of this article (Aylward & Zanko, 2008) is the role of the stakeholders themselves. Central to an organizational ecology framework is the notion that stakeholders’ successful participation within the wine industry depends upon their ability to understand the evolving dynamic in their relationships. This, in turn, requires their distillation of global trends within the local production environment. As the article points out these global trends are now moving towards complementary streams of commodity and niche production and it is in this latter mode that a new paradigm becomes evident. It is a paradigm in which it is imperative that stakeholders understand

the cultural and anthropological fabric into which their tradable product is woven. It is not a simple commodity they are trading, but rather an experience that encapsulates history, culture, identity, and importantly, expectation. Learning to recognize two radically different streams of production and distribution and more importantly, their complementarity, is a key element to viable participation in the new wine landscape.

3.3 LATE DEVELOPMENTS

For the first time in a number of years the September 2007 export figures showed the decline in price-per-litre exports has begun to plateau (Just-Drinks, 2008). The industry's governing organizations acknowledge that this is in direct response to the ongoing drought and the consequent reduction in grape supply. The concerning aspect of this development, however, is the complacency and level of relaxation that is again featuring in industry statements. It would indeed be a mistake for the industry to rely on deteriorating climate to reduce production and raise quality rather than commit itself to including these aims within an ongoing remedial strategy.

In May 2007, the industry admitted that its current strategies were no longer solely relevant and that a radical shift in focus was required. Yet with the first signs of a drought-induced price rise we are already witnessing a wavering commitment to the shift. The lack of commitment was further reinforced in a news item dated 12 November, 2007, titled "New Greater Australia appellation will kill regionality" (Decanter.com, 2007). This relates to the proposed extension of the South East Australia

appellation, which already covers territory from the Hunter Valley in New South Wales to the South Australian border, two states away. The Greater Australian appellation now proposes that the territory be extended right across to Western Australia in order to create a more even distribution of grape supply.

It is becoming apparent that while the rhetoric is moving towards regional differentiation, practice remains firmly rooted in generic approaches. The 2007 report from the World's largest wine producer – Constellation Brands – suggests that the Australian wine industry must now produce more than simple rhetoric. It states that the growth of super-premium and iconic US brands *“is indicative of the trade-up trends we’ve been seeing for the past several years”* and *“The branded wine market in the UK and Australia(their Australian arm) reflects ongoing competitive challenges and continued pricing pressure”* (Sands, 2008, pp.3-5). Long-term sustainability of the industry demands that this type of risk aversion is finally removed from both the policy and practice agenda.

3.4 FUTURE RESEARCH TRAJECTORIES FROM THIS COLLECTED WORK

Specific insights from this collected work

Conceptual insights

1. The illumination of natural cluster development tendencies within the industry.

In a sector in which the product is grown and manufactured on the one or

proximate sites, the concentration of resources, activities and attendant organizations leads to the development of industry clusters. While this factor has been noted previously, and generic cluster models have been attributed to wine industries, there has been little specificity. Through empirical research and analysis this presented work used three specific cluster models that can be attributed directly to the Australian wine industry.

2. Linking the industry's centralized R&D and infrastructure with emerging organizational path dependency. Again, through a number of empirical exercises involving small, medium and large firms within the Australian wine industry, the presented work established clear associations between centralized and successful R&D structures of the 1980s and 1990s and the industry's current inflexibility in a rapidly changing and complex environment. Risk aversion among wine industry associations and a reliance on the commodity price-points of the wine market were highlighted as critical factors in the industry's deteriorating responsiveness to international requirements. Exposing R&D structures as a trigger for continuing organizational behaviour was the innovative component of this research.
3. The exploration of ways in which the industry could change its perspective and its treatment of the wine product. To this end, anthropological and cultural qualities of wine were highlighted and insights provided into the way these qualities could achieve greater recognition within the Australian wine environment. International comparisons were drawn, and alternative R&D paths explored, and finally, a number of propositions put forward.

Policy insights,

1. Linking R&D structures to organizational behaviour led to further work on the need for the Australian wine industry to organize itself differently around its product, and as part of this re-organization, to think differently about that product. There was growing evidence that many of the Australian wine industry's problems related to the way it thought about its product. There was little recognition of the product's cultural or artisan value, but rather, a scientific determinism that relegated the product to a mass-produced, commodity status.
2. The creation of disproportionate pulls on industry resources as a result of cluster development and the attendant problems arising from such resource models.
3. My presentation of a new R&D model for the industry. Such a model devolved current structures into a 'hub-and-spoke' framework, in which the central hub would remain in the industry's primary cluster in Adelaide, South Australia, while R&D nodes would be established in each of the main wine regions across the country. These nodes would be region-specific, with regional priorities, regional wine specialists, and regional funding distribution. It was a model that was intended to initiate cultural change in the way the wine industry resourced and prioritized its R&D and therefore, influence the organizational behaviour of industry associations.
4. The flaws in operating systems based on high volumes and price-competition within an artisan-based sector such as the wine industry.

Future trajectories

Based on these conceptual and policy insights there are a number of future research trajectories that warrant investigation.

Further research into the degree to which the industry's organizational behaviour continues to affect its international standing is required. Specifically, comparative analysis should be undertaken to investigate the organization of operating systems within what are now considered the more 'successful' wine regions in both New and Old World sectors. Lessons may be drawn from their approach to a multi-dimensional operating environment and the methods they use for branding the artisan qualities of their product.

Secondly, and integral to this investigation, is further research into alternative R&D funding systems which decentralize decision-making, and importantly, remove the funding premium from the industry's largest operators. Feasibility studies would be suggested to investigate long-term viability of region-based, rather the firm-based R&D levies. While it is anticipated that region-based levies would provide more appropriate, more targeted research and development, it is important to model the longer-term effects of such a funding change, and how the industry might be organized to accommodate these changes.

Thirdly, further research is required to investigate and highlight the disparity between price and product competition and the organizational implications of each within the

industry. Such research will further inform policy decisions for a transition of the Australian wine industry towards higher price-points. The research will inevitably focus on product differentiation, process quality, and *terroir*, as critical factors of investigation. Moreover, this will also provide a step towards an understanding of the wine product's cultural value. Using my research as a foundation, future researchers may seek to 'unpack' the cultural connotations of the wine product, its relationship to 'people, place and identity', and its impact on the economic future of the industry.

3.5 RECOGNITION AND IMPACT

The impact of my presented work has been demonstrable at two levels and over the entire period of study. The first level is the scholarly impact that the presented work has had. This includes a contribution to wine industry debate through my multiple journal articles as listed in Appendix 3. In addition there have been the following requests and acknowledgements:

- After the very first presentation of my work in 2001 at an Australian International Development Assistance Bureau (AIDAB) conference in Indonesia, I was approached by the European Editor for the Prometheus Journal requesting that I resubmit what he believed was an extremely interesting paper to the Journal for publication. The paper was published by Prometheus in 2002.
- Numerous academic requests including:

- Approach by Frank Columbus, President and Editor-in-Chief
Nova Science Publishers, Inc., 400 Osier Avenue, Suite 1600
Hauppauge, NY 11788 on 25 December, 2007 to contribute to a chapter
in his book on globalization and to edit another collected work in the
same area.
- Approach by Michael P. Allen, Professor, Department of Sociology,
Washington State University (September, 2007) to provide input and help
for a study he is carrying out on organizational structures and the fine
wine industry.
- Approach by a Russian PhD student in 2004 to provide guidance and
some of my articles for work he was conducting on industry clusters.
- Contacted by an Italian academic in 2005 to provide Australian examples
of industry clusters in the Australian wine industry for a comparison he
was undertaking between wine clusters in Italy and other wine industries.
- Approach by a New Zealand professor in 2006 who was planning a new
research direction into industry clusters and industry organizational
boundaries. He requested my contribution to a current paper and
continuing input on future work.
- Approach in August 2007 by a Mexican Professor at Facultad
Latinoamericana de Ciencias Sociales, México to provide articles and
other input into work she was undertaking in wine industry clusters and
organizational frameworks.

- Approach by an MBA student from Anglia Ruskin University in Cambridge, UK for assistance with wine cluster analysis.
- Approach by a research student at Gazi University in Ankara in December 2007 requesting information and advice on wine clusters.
- Approached by a researcher (David Raftery) at ANU (22 Jan, 2008) requesting time to visit and discuss the future of the Australian wine industry, specifically Clare Valley.
- I have been a reviewer for:
 - Research Policy Journal 2007
 - International Journal for Innovation Management 2007
 - Journal of Enterprising Communities 2007
 - International Journal of Technology and Globalization 2006
 - ABBSA conference 2006
 - Regional Science Association conference 2006
 - ANZAM conference 2006
- In 2004 I was awarded an Honorary Fellowship in the Faculty of Commerce, University of Wollongong for my contribution to the Faculty's research.
- I was offered membership in the University of Wollongong Commerce Faculty's Centre for People and Organization, based on my research experience in 2007.
- In 2008 I will be awarded an Honorary Fellowship in the University of Technology Sydney's Faculty of Humanities and Social Sciences for my

contribution to the Faculty's research profile. I have also been offered membership in two of the Faculty's research centres.

- I was awarded Best Paper for Aylward, D. & Glynn, J. (2005), Assessing SME Innovation within Different Cluster Models: Lessons from the Australian Wine Industry, *SEEANZ Conference*, Armidale, NSW, September
- A citation by Mueller and Sumner in their conference paper titled Clusters of grapes and Wine (2006) presented at the third International Wine Business conference in Montpellier, France, p.1.
- I have been cited in the BLPES International Bibliography of Economics, volume L1, 2002, p.65 for my work on R&D.
- In 2007 I was invited to be a co-Chief Investigator on an Australian Research Council (ARC) Linkage application on supply chains within the Australian wine industry, because of my recognized expertise.
- In 2008 I was again invited to be a co-chief Investigator on an ARC Linkage project at the University of Technology, Sydney

The second level of impact is the very important dissemination within the wine industry sector itself. I take pride in the fact that my work has generated so much interest in this sector. This, I believe, is a reflection of my work's relevance to the industry, its practical application and the accuracy of its findings. Publishers of professional journals within the sector, as well as heads of industry associations, governing organizations and individual wine operators have commented on numerous occasions on my knowledge of

and expertise in the wine sector. Some examples of my reputation in this industry include:

- Numerous professional, industry journal publications – especially Australian Wine Industry Journal and Australian and New Zealand Winemaker and Grapegrower. Four successive editors of the Australian and New Zealand Winemaker and Grapegrower have continually requested articles from me (including to the prestigious Annual Technical Issue each year – in 2007 I had two articles appearing in this edition) and congratulated me on the style, written quality and relevance of my contributions. The Editor-in-Chief has also recommended to these editors that they accept my work. Contributions include:
 - Aylward, D. (2007), Flawed perfection: Has R&D helped undermine our wine industry's competitive advantage?, *The Australian and New Zealand Grapegrower and Winemaker*, December, pp. 96-98
 - Aylward, D. (2007), An industry in ferment: Reconfiguration in the international wine industry, *Australian and New Zealand Grapegrower and Winemaker*, 35th Annual Technical Issue, pp. 100-104
 - Aylward, D. (2007), Differentiation or inertia: A critical look at the Australian wine industry, *Australian and New Zealand Grapegrower and Winemaker*, 35th Annual Technical Issue, pp. 110-114

- Aylward, D. (2006), The road to innovation: experiences in the Australian wine industry, *The Australian & New Zealand Grapegrower and Winemaker, Annual Technical Issue*, June, pp. 119-125
- Aylward, D. (2005), What makes a successful SME exporter within the Australian wine industry, *The Australian & New Zealand Grapegrower and Winemaker, 33rd Annual Technical Issue*, June, No. 497a, pp.122-127
- Aylward, D. (2004), Wine Clusters Equal Export Success, *The Australian & New Zealand Grapegrower & Winemaker*, No. 487, pp. 105-107
- Aylward, D. (2003), Mapping Australia's Wine Exports, *Australian and New Zealand Wine Industry Journal*, Vol.18, No. 5, pp.68-72
- In 2005 a request by the Associate Editor of California's Practical Winery and Vineyard, to submit an updated article after they read my article in the Journal of Wine Research.
- A request by the editor of *Enology* (Argentina) to submit an article (listed below) after reading it in the *Australia and New Zealand GrapeGrower and Winemaker Journal*.
 - Aylward, D. (2007), VÍAS DE INNOVACIÓN:EXPERIENCIAS DE LA INDUSTRIA VITIVINÍCOLA AUSTRALIANA, *Revista Enologia*, May-June, No. 2, pp.1-11
- A second acceptance of an article appearing in *Australia and New Zealand GrapeGrower and Winemaker* journal in December 2007 for translation to appear in *Revista Enologia*. This was:

- Aylward, D. (2007), LA PERFECCIÓN DEFECTUOSA:
¿HA COLABORADO LA I+D EN LA DEBILITACIÓN DE LA
VENTAJA COMPETITIVA DE LA INDUSTRIA VITIVINÍCOLA
AUSTRALIANA?, *Revista Enologia*, Nov-Dec, No. 4
- Three citations by the CSIRO in ‘Inquiry into pathways to technological innovation: House of Representatives Standing Committee on Science and Innovation, April 2005, p.14
www.aph.gov.au/house/committee/scin/pathways/subs/sub32.pdf
- A Request by the Australian Wine Education Council to extract text from one of my published articles to publish on their own website, 2005
- A Request by the Director of Research at the Grape and Wine Research Development Corporation to provide all GWRDC board members with copies of my article on wine diffusion, 2006
- A Letter from the Chief of R&D at Grupo SOGRAPE, Portugal, stating that he found my articles very interesting and requesting more information, 2006
- A citation by Dilanchian Lawyers at the Australian Business foundation in 2000, that being:
 - Aylward, D. (2004), Working together: innovation and export links within highly developed and embryonic wine clusters. *Strategic Change*, Vol.13, pp.429-439
- In July 2006 I was interviewed as an expert on the Australian wine industry by Australia’s Business Review Weekly for their article on the future of the Australian wine industry.

3.6 REFERENCES

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Aylward, D. (2007a), Innovation and inertia: The emerging dislocation of imperatives within the Australian wine industry, *International Journal of Technology and Globalization*, Vol. 3, Nos. 2/3 pp.246-262

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PART 4

APPENDIX 3

4.3 FULL LIST OF PUBLICATIONS

Refereed journal articles

Aylward, D. & Clements, M. (2008), Crafting a local-global nexus in the Australian wine industry, *Journal of Enterprising Communities*, Vol. 2, Iss.1, pp.73-87.

Aylward, D. & Zanko, M. (2008), Reconfigured domains: alternative pathways for the international wine industry, *International Journal of Technology, Policy and Management*, Vol.8, No.2, pp.148-166

Aylward, D. (2007), Differentiation or path dependency: A critical look at the Australian wine industry, *Strategic Change*, Wiley, Vol.16, pp.385-398

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Aylward, D. (2007), Fault lines: Emerging domains of inertia within the Australian wine industry, *Prometheus*, Vol.25, No.1, pp.85-98