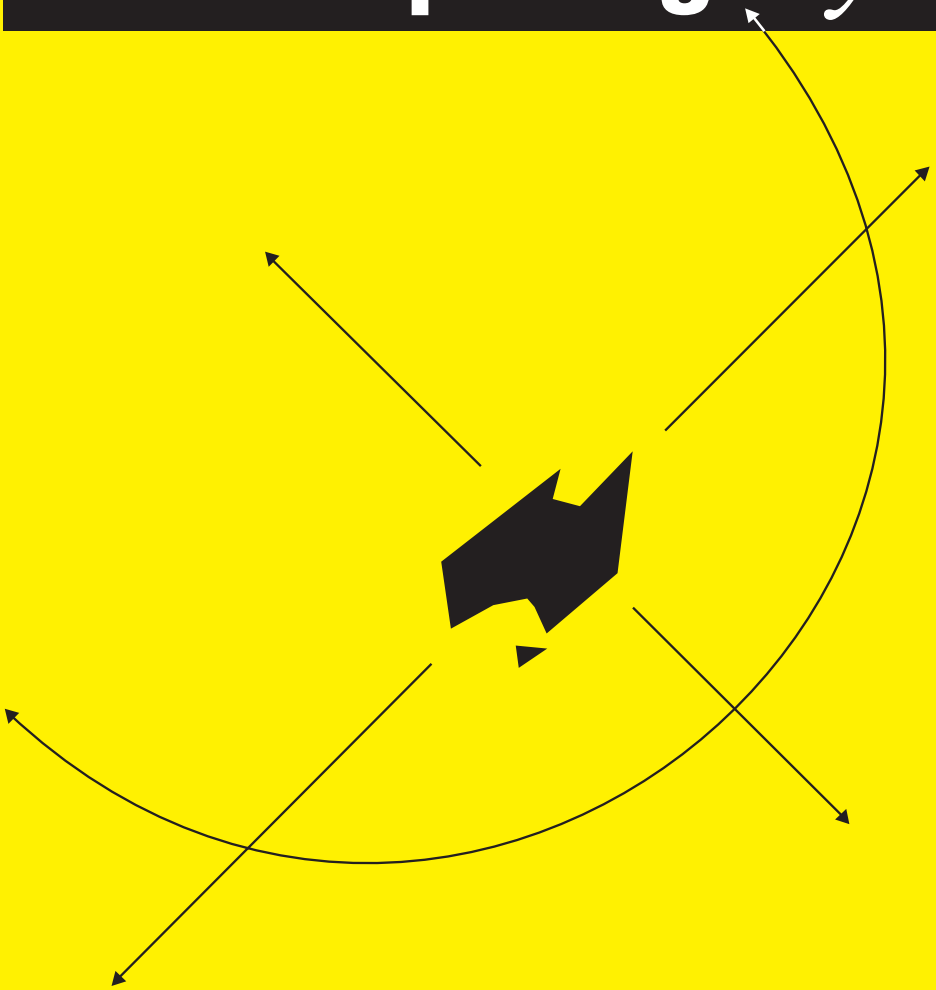
Competing *By Design*

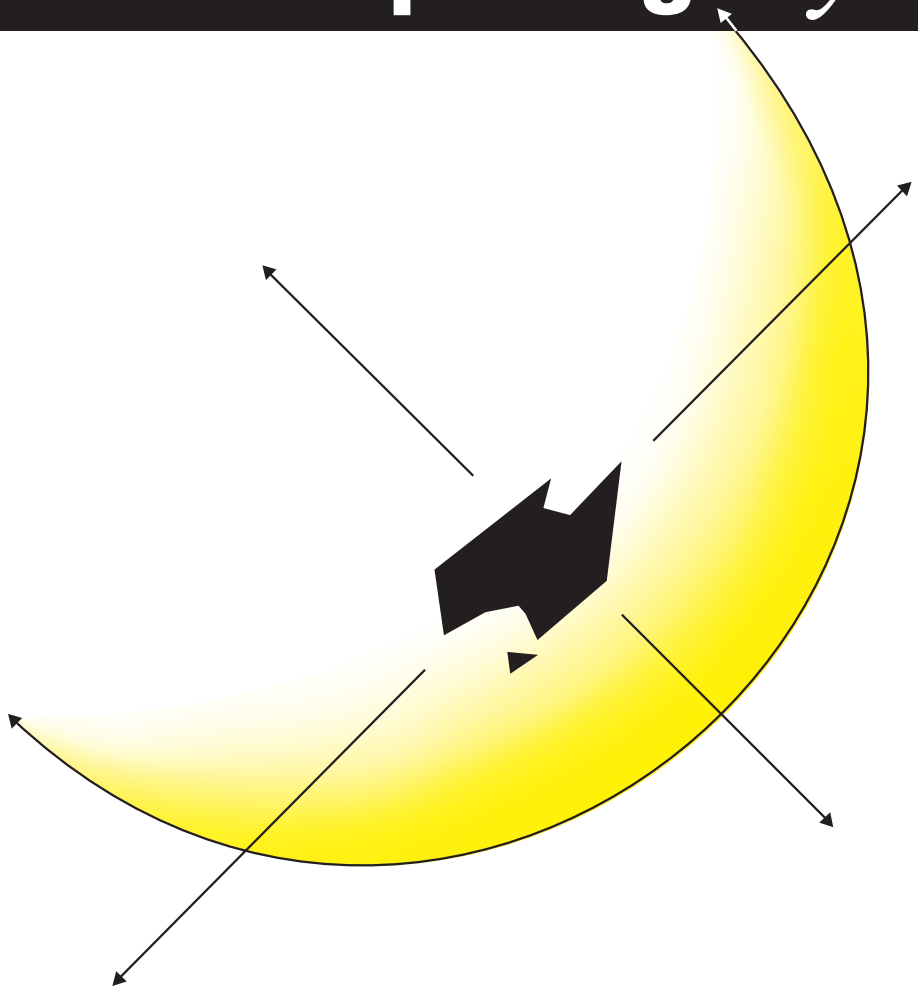


The National Design Review Report

Prepared by the National Design Review Steering Committee through
THE AUSTRALIAN ACADEMY OF DESIGN

March 1995

Competing *By Design*



The National Design Review Report

Prepared by the National Design Review Steering Committee through
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March 1995

THE AUSTRALIAN ACADEMY OF DESIGN

20 March 1995

Senator The Hon. Peter Cook
Federal Minister for Industry, Science & Technology
Parliament House
Canberra ACT 2600

Dear Minister,

I have pleasure in forwarding the Steering Committee's Report on the National Design Review.

The Report provides recommendations for positive action to improve the long term competitiveness of Australian industry through the use of the design process [Design].

A more strategic role for Design is a matter of urgency and fundamental to Australia meeting its national trade challenge. It will assist industry to successfully commercialise innovations that will provide competitive advantage. Design, as a key mechanism in adding value, has a crucial role to play in sustaining and expanding Australia's economic viability and international competitiveness.

Many large companies, having realised that Design is essential for their survival and growth, have equipped themselves accordingly. This Report principally addresses itself to those small to medium sized enterprises that constitute the core of Australia's productive economy.

Design is the cornerstone of all those elements that add value to society: quality, functionality, environmental integrity, visual appeal and service.

The Australian government sought this Report acknowledging the increasing importance of Design to Australian innovation, economic welfare and social values. It recognised that we must place a higher priority on enhancing policies and strategies for Design. This adjustment to Design's new role will enable Australia to more effectively address the competitive, market and sustainability challenges it faces.

As always, such changes will bring with them both challenges and opportunities. The Steering Committee believes that the recommendations and actions flowing from this Report will enable Australian industry to take advantage of Design's essential strategic dimension.

Desmond Freeman
Chairperson
National Design Review Steering Committee

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Section I

Executive Summary

1 Findings
2 Recommendations
3 Actions

1 Findings

1 Design is essential to the process of innovation and a source of competitive advantage to industry. It can improve industry performance, add value, secure market positions, lead to lower product cost and increase revenue and profits.

Broadly, the design process can be thought of as ***the skilled integration of intelligence and resources to meet the requirements of consumers, industry and the national interest.***

Having realised that Design is an essential tool for survival and growth, many large companies are effectively using design. This Report principally addresses itself to those small to medium sized enterprises that represent the core of Australia's productive economy.

2 The challenge facing Australian industry is to exploit its design potential in order to redress an unacceptable balance of trade performance. This potential exists in the way we compete in both export and domestic markets. It represents opportunity for both small and large businesses.

With regard to raising the profile and demand for design within Australian industry and the community, the Review found that:

3 Whilst Australia has strong, capable and innovative manufacturers, service providers and marketers and many consumers recognise good design and this is frequently reflected in their choice of imported consumer products and brands over those produced in Australia:
- Australian industry, in general, lacks a design culture in that much of industry is not generally aware of the role and benefits of design in enhancing competitive advantage
- there is insufficient understanding of how the design process should be integrated into business strategy and planning
- significant gaps also exist in firms accessing designers and their awareness of the management and marketing of design.

To address this, the nation faces a significant and urgent challenge to ensure that Design is encouraged and sustained across all sectors of industry as a basis of our productive culture.

4 The Australian community generally has a poor appreciation of the value and potential of Australia's design capabilities and skills. The challenge is therefore to raise the status and profile of Australian design identity in both local and world markets.

5 Australia is potentially well prepared to meet this demand in terms of its capabilities and quality in research, design and development.

In respect of firms competing through the use of design, the Review found that:

6 Australian industry must be encouraged to utilise Australia's talented and world class design capability. In parallel, the design professions must be encouraged to develop a coherent and strategic view of the design process in industry.

7 Companies competing through design are more likely to succeed both in

Australia and overseas. However too few Australian firms aretargeting export sales through design.

Firms need to be encouraged and assisted to invest in the design, development and marketing of innovative world class products.

8 Australia currently lacks an effective design policy for industry.

9 In contrast, Australia's leading global competitors have major industry and government programs to support their firms to use professional design services. Such support is providing these nations with a significant competitive edge.

Existing local support programs have been largely ineffective. Appropriate programs based on and developed in conjunction with industry are urgently needed in Australia.

In respect to Australian design capability, the Review found that:

10 Design for ecological sustainability is widely supported as a significant strategic economic and social imperative.

11 There is a need to improve the effectiveness and relevance of current design education and management education in design at all levels.

12 Professional standing of designers is a key issue hindering the overall status of the profession and its recognition and use by industry.

13 There is a need to strengthen and facilitate intellectual property protection and its commercialisation and to make access to protection and dispute resolution simpler and less expensive.

14 There is a need to co ordinate and raise the credibility and recognition w of design awards in both the design profession and the community.

15 There is a lack of recognition and support for design disciplines as an important component of university and other research activities.

16 Impediments arising from outdated processes in procurement, project management and accountancy practices inhibit the use of design and innovation.

In respect to deployment of design initiatives, the Review found that:

17 There is evidence that the absence of a broadly based and adequately funded national body for design has contributed to the lack of substantial progress in Australia's design agenda.

Recommendations

Based on the findings of the National Design Review, the Steering Committee recommends national action to:

Recommendation 1

Position design as a strategic discipline essential to the management of Australia's industrial and commercial future.

Action is needed to:

R1.1 Raise the profile and value of design with key decision makers, including:
- boards of directors
- senior management
- educators
- media and community
- retail and industrial buyers
- the banking and finance industry.

R1.2 Undertake well targeted initiatives such as:
- establishing design as an essential competency in corporate governance
- publishing information through the media on adding value through design
- providing buyer and consumer information and data on improving design capability
- offering background information on design value to key decision makers.

R1.3 Establish alliances:
- with graduate management and business schools to develop programs incorporating design awareness.
- with other professionals and business groups to promote the importance of design in our business culture.

Recommendation 2

Position design as a key competency in the continuum of quality, continuous improvement, best practice and innovation leading to sustainable competitiveness.

Action is needed to:

R2.1 Ensure that design is recognised as a central function in policy and programs to enhance Australia's industrial future.

R2.2 Provide on going information to present design as an important consumer issue in a form appropriate to each level of education.

R2.3 Develop specific programs to incorporate design competencies into tertiary and post graduate management programs.

R2.4 Vigorously promote the notion that design competencies should be sought out as a fundamental requirement in structuring the composition of organisational teams in our business enterprises whether the task is operational or strategic, process improvement or innovation.

Recommendation 3

Celebrate Australia's design successes throughout industry and the media to generally lift domestic and international public and consumer awareness as to the benefits of Australian design.

Action is needed to:

R3.1 Develop a consumer process for the recognition and identification of Australian design.

R3.2 Institute widely promoted and credible design awards, including brand identities, for all design professions.

R3.3 Highlight design as a key element in all presentations.

R3.4 Institute inbound and outbound design tours, e.g., to bring the media and influential international personalities to visit successful design locations and out bound travelling exhibitions.

R3.5 Encourage design in industry television series and regular appearances by design professionals on television and radio programs.

R3.6 Disseminate regular media releases and comments on design issues.

R3.7 Broaden the use of design competitions to highlight the value and process of design.

R3.8 Introduce the progressive and continuing promotion of design to build national and international consumer awareness of Australian design and brand identities.

R3.9 Negotiate with the Federal, State and Territory Governments to seek joint funding to establish design resource and information centres in each State and Territory to provide a shopfront for design.

R3.10 Benefit from the unique opportunity provided by the Sydney 2000 Olympics to demonstrate Australia's design, architectural and building skills. Every effort must be made to ensure that all aspects of the event including venue, infrastructure, transport, community presentations, advertising and product design are of a high quality.

Recommendation 4

Develop a body of knowledge on design practice and management in Australia and internationally to provide a significant resource base on design as a value added and competitive strategy.

Action is needed to:

R4.1 Establish Australia's linkages with appropriate international design bodies.

R4.2 Benchmark activities and developments in the use of design by industry and consumer activities.

R4.3 Agree on the Key Performance Indicators to provide competitive and trend data to measure Australia's performance.

R4.4 Exchange information, papers and speakers with international affiliates.

R4.5 Commission research projects with university support and input that assists to develop a comprehensive body of research on design as a value-added and competitive strategy.

Recommendation 5

Direct action to encourage firms to gain competitiveness through design.

Action is needed to:

R5.1 Develop case studies and effective delivery mechanisms as information and learning resources.

R5.2 Develop design discipline management and training material.

R5.3 Promote design in all public activities promoting competitiveness, e.g. Australian Quality Council conferences, industry seminars, post graduate management programs, etc.

R5.4 Provide concepts, training and tools that will help industry use design more effectively.

R5.5 Develop an industry based program to assist firms specify and undertake projects through professional designers.

Recommendation 6

Direct action to benefit and encourage the design profession to be accepted as a broader management and industry discipline.

Action is needed to:

R6.1 Enhance existing professional training and accreditation processes to assist industry to identify competent professional designers.

R6.2 Liaise with Department of Education, Employment and Training, and educational institutions to develop appropriately resourced work experience and internship programs for under graduate and post graduate design students.

R6.3 Provide educational material and information to the design community to broaden its knowledge of the use of design by industry.

R6.4 Clearly define the wider design community so that its many sectors can be understood and accessed by industry.

R6.5 Provide education and information for designers to capitalise on developments in:
- environmental products
- added value products
- process re design
- new information technology standards
- rapid prototyping
- ecodesign
- processes relating to research, design and development incentives.

Recommendation 7

Direct action to remove the barriers to the use of design by industry.

Action is needed to:

R7.1 Address the issues relating to design protection and commercialisation.

R7.2 Develop strategies to aid the use of the law in respect to design and intellectual property protection and the resolution of disputes with a view to simplifying the legal processes involved.

R7.3 Use the outcome of R7.2 to remove the fear and scepticism of investment by industry in design resources and skill development.

R7.4 Review the current processes relating to research, design and development (RD&D) incentives and ensure such processes are quality and outcome driven and, in particular, accessible for small to medium sized business enterprises.

R7.5 Review ways to assist government and industry purchasing policy to accept Australian design as an element outside of strict price consideration.

R7.6 Clarify and publish an agreed accounting treatment of design prospects or investment to maximise the benefit to firms.

Recommendation 8

Direct action to identify the opportunities available for the effective use of design in Australia.

Action is needed to:

R8.1 Develop programs to identify the way design can enhance market access and improve market share.

R8.2 Develop programs to encourage use of design to add value to raw materials and commodities.

R8.3 Demonstrate ways to use design in niche market development.

R8.4 Improve consumer acceptance of environmental issues through eco-design initiatives.

R8.5 Develop ways to use design to enhance the performance of specific major industry sectors.

R8.6 Develop and provide information on design best practice.

Recommendation 9

Ensure that policies and recommendation outcomes are delivered by a coordinating process and are endorsed by industry and the design community.

Action is needed to:

R9.1 Broaden and strengthen the composition of the peak advisory body (the Australian Academy of Design) to attract the commitment and participation of:
- major organisations in the design professions
- individual designers from the Australian Academy of Design and industry
- industry leaders
- other major linked discipline organisations supporting design in industry.

R9.2 Fund and contract the body to initiate and co ordinate policy deployment through industry and the professional design community.

R9.3 Establish a secretariat on behalf of the key body whose functions will include:
- developing design policy recommendations for government based on consultation with industry and design professionals
- developing effective proposals
- evaluating project and funding requests from the professional design community
- deploying agreed and funded projects through the various design professions and related bodies
- helping to focus and inform the wider design community.

R9.4 Secure commitment from government to contract a secretariat for the peak body. The secretariat needs to be capable of formulating, co-ordinating and delivering initiatives at senior government and industry level. Additionally, it must have support staff for research, media, membership liaison and other key services.

R9.5 Ensure the Government plays a substantial role in the facilitation and funding of the initial period of proposed actions and resulting roll out. It is not proposed that the peak advisory body be an income generator during this period.

Actions

The National Design Review Steering Committee considers that the following activities be agreed and funded by Government during the financial year 1995/96. In this respect the actions are more specific and must occur within a relatively short time frame in order to provide the necessary stimulus and momentum for achieving desired outcomes.

These actions are grouped in a matrix that supports the findings and recommendations drawn from the National Design Review.

Proposed Actions - Recommendation 1

Position design as a strategic discipline essential to the management of Australia's industrial and commercial future.

Actions:

A1.1 Develop a series of modules capable of inclusion in most senior management education programs on the strategic value and application of design. Deploy these to all public and private educational suppliers.

A1.2 Supplement the above material with design diagnostic tools and techniques for use by firms.

A1.3 Establish a series of benchmark and performance criteria for managers and designers to effectively manage the design process.

A1.4 Prepare specific data to show how design adds value and delivers competitive outcomes

A1.5 Prepare specific data to show improved market profile and market share through the use of design. Information to be used for buyer and consumer education.

Proposed Actions - Recommendation 2

Position design as a key competency in the continuum of quality, continuous improvement, best practice and innovation leading to sustainable competitiveness.

Actions:

A2.1 Encourage and facilitate the development of resource kits on design for use at secondary level education as material for courses in
- economics
- commerce
- design and technology
- arts.

A2.2 Provide design packages to industry bodies and to educators to position design in relation to other improvement and change initiatives such as through the Advance Australia Foundation design initiative for schools.

Proposed Actions - Recommendation 3

Celebrate Australia's design successes throughout industry and the media to generally lift public and consumer awareness as to the benefits of Australian design.

Actions:

A3.1 Produce a television series on design in Australia aimed at raising community awareness of Australian design and its role in Australia's future.

A3.2 Revise the evaluation criteria and process to enhance its credibility for the community and buyers awareness and acceptance of Australian design hallmarks and design awards.

A3.3 Contract a media and public relations consultant to provide a regular series of media and background material.

A3.4 Set up a "buyer/consumer" advisory committee drawn from consumer organisations to give their view of design value in the awards process.

A3.5 Field test the concept of a design competition to promote an Australian design culture.

A3.6 Support for the Australian Gold National Designer Brand and marketing network to re enforce the potential of such design led international marketing initiatives.

A3.7 To ensure product quality for the Olympic 2000 event establish review mechanisms for venue structures, fittings fixtures and equipment, infrastructure, visual communication, commercial and communal decoration, advertisements and products.

A3.8 Support for National Design Conferences and linkages with international design bodies as presenters particularly those associated with the Olympic 2000 event and the advent of the 21st Century / Sydney Design 1999 Conference for International Council for the Societies of Industrial Design / International Federation of Interior Designers / International Congress of Graphic Design Associations, and the Royal Australian Institute of Architects / Commonwealth Association of Architects / Union of International Architects 2000 Conference.

Proposed Actions - Recommendation 4

Develop a body of knowledge on design practice and management in Australia and internationally to provide a significant resource base on design as a value added and a competitive strategy.

Actions:

A4.1 Establish formal international affiliations in major markets.

A4.2 Agree on the international design benchmark criteria and measure Australia against three major overseas markets. Publish inaugural findings and commentary.

A4.3 Agree design benchmarks for use by Australian firms and publish the Executive Summary information for discussion and adoption.

A4.4 Initiate a regional meeting of design promotion organisations to exchange strategies and experiences in community/industry design awareness.

A4.5 Development of policies and rationales for the support of national design research.

Proposed Actions - Recommendation 5

Direct selected actions to encourage firms to gain competitiveness through design.

Actions:

A5.1 Document case studies in print, video and multi media format for AusIndustry marketing purposes.

A5.2 Document a Dividends from Design cost/budget analysis to provide commercial evidence and confidence that design pays dividends.

A5.3 Develop guidelines for the management of design for use in firms.

A5.4 Implement a pilot program to assist firms specify and undertake projects through professional designers, such as the Designer Link proposal.

A5.5 Offer scholarships for the study of design management to Australian industry and designers.

Proposed Actions - Recommendation 6

Direct selected actions to benefit and encourage the design profession to be accepted as a broader management and industry discipline.

Actions:

A6.1 Liaise with professional bodies and educational institutions to enhance the process of accreditation of Australian design professionals and courses to reinforce the capabilities of designers and confidence in their use by industry.

A6.2 Facilitate Department of Education, Employment and Training support for a graduate designer internship program in industry and so raise commercial skills and employment of design graduates.

A6.3 Update and distribute existing directories of commercial design service providers to provide industry with effective access to appropriate design services.

A6.4 Enhance technology transfer in the use of design developments including:
- ecodesign
- T40 process re-design
- rapid prototyping
- new information technology standards in design.

Proposed Actions - Recommendation 7

Direct selected actions to remove the barriers to the use of design in industry.

Actions:

A7.1 Liaison by the peak body with Department of Administrative Services and Purchasing Australia and with private industry purchasing associations on design criteria for buyers to enhance major customers demand for design standards and values.

A7.2 Develop accounting standards and treatment for valuation of design and intellectual property.

A7.3 Review the lessons and next steps from the Design Services Australia project 1991 to identify optimum strategies for development of the design service industry.

A7.4 Facilitate workshops on the use of design in commercialising intellectual property and so identify strategies for protection and commercialisation through design.

A7.5 Publish, for small business and design professionals, current rules and processes on R&D tax incentives relating to design investment.

A7.6 Evaluate current price versus quality based selection procedures for government products and services.

A7.7 Encourage financial institutions to consider design investments.

Proposed Actions - Recommendation 8

Direct selected actions to identify the opportunities available for the effective use of design in Australia.

Actions:

A8.1 Take action to direct market information on design opportunities to AusIndustry client firms.

A8.2 Support the Designer Link initiative delivered by AusIndustry and design bodies to assist AusIndustry target firms to access designers and implement design projects.

A8.3 Select four projects in major Australian industry sectors and test pilot a design project to demonstrate added value benefits.

A8.4 Select four projects to test pilot a design project to add value to niche markets.

A8.5 Prepare discussion papers as to the role of design in R&D commercialisation, building relationships with key clients and specifying components for projects.

Proposed Actions - Recommendation 9

Ensure that policies and recommendation outcomes are delivered by a co ordinating process and are endorsed by industry and the design community as well as supported and funded by Government.

Actions:

A9.1 Empower the national peak body of design representing the key stakeholders by providing the essential mandate, co ordination and advice on Australian design.

A9.2 Resource an executive and secretariat service for the peak body of design to provide the key co ordination, project development and management roles.

A9.3 Support a research officer to document design development and application and provide critical information support to the peak body and Government.

A9.4 Provide Government seed funds for the operation of the secretariat and peak body for a period of five years through a performance based contract.

Section II

The National Design Review

4 Background to the Design Review

4.1 *The Australian Academy of Design*

5 Objectives of the Design Review

6 Process of the Design Review

4 Background to the Design Review

"Design should be the basis of everything we create in industry"

Brian Davis
Managing Director, Decor
Launch of the Academy, March 1990

While Australia reviewed its national design needs and supply capabilities in the late 1980s, the speed, extent and impact of global changes in competitiveness warranted a further urgent review of national design strategies, with particular regard to how Australia can enhance the use of professional design services by firms so as to build competitive advantage and sales in key target markets.

Internationally, Design is acknowledged by industry and government as one of the key differentiating functions of successful economies.

The National Design Review arose out of an emergent view proposing the development of a new industry focused agenda which would install Design in an integral role within the process of research and development, production, marketing and sales.

The Commonwealth Government recognised the importance of Design, particularly as it relates to the challenges facing Australian industry, in the white paper, Working Nation (May 1994). The Government reaffirmed this commitment in the cultural policy statement, Creative Nation (October 1994), which recognised "the importance of Design in adding value to manufactured goods, improving export performance, developing elaborately transformed manufactures and succeeding in niche markets". Senator Peter Cook's Innovation Statement (November 1994) further extended the Commonwealth Government's commitment to Design.

Design is an essential element in the continuum of quality, continuous improvement and best practice leading to innovation and it is also a critical value adding and value capturing mechanism with a crucial role to play in sustaining and expanding Australia's economic viability and international competitiveness.

The report provides to government, the design profession, industry and other stakeholders, recommendations for positive action to improve the long term competitiveness of Australian industry.

The National Design Review has been undertaken over the past eight months by a Steering Committee of leading industry and design interests working through the Australian Academy of Design.

The findings based on many submissions and discussions represent the committee's best view of the present state of Design in Australia and flow into specific recommendations on how we might most effectively advance the strategic use of Design within industry.

Implemented successfully, these recommendations have the potential to significantly raise industry competitiveness and sales performance in world markets.

4.1 The Australian Academy of Design

The Australian Academy of Design, the vehicle through which the National Design Review was undertaken, was formed to serve as the nation's peak body and catalyst to enhance recognition and use of Design within Australian industry and the community so as to help realise Australia's industry, economic, social and ecological goals.

The need for such a national coordination and advisory body, and its mission and goals, had been identified through the National Industry Extension Service National Design Forum and the Australian Design Summit in May 1989 which addressed impediments associated with the fragmentation of Australia's design capabilities, professional bodies and portfolio interests.

The Academy, representing a membership of some 300 industry and professional design leaders, was launched by the Prime Minister in March 1990. In 1993, the Academy became affiliated with the Australian Quality Council.

Vision

For Australian business and 'not for profit' organisations to achieve and exceed international competitiveness and world's best practice through sustained application of Design principles and practices for the benefit of the Nation.

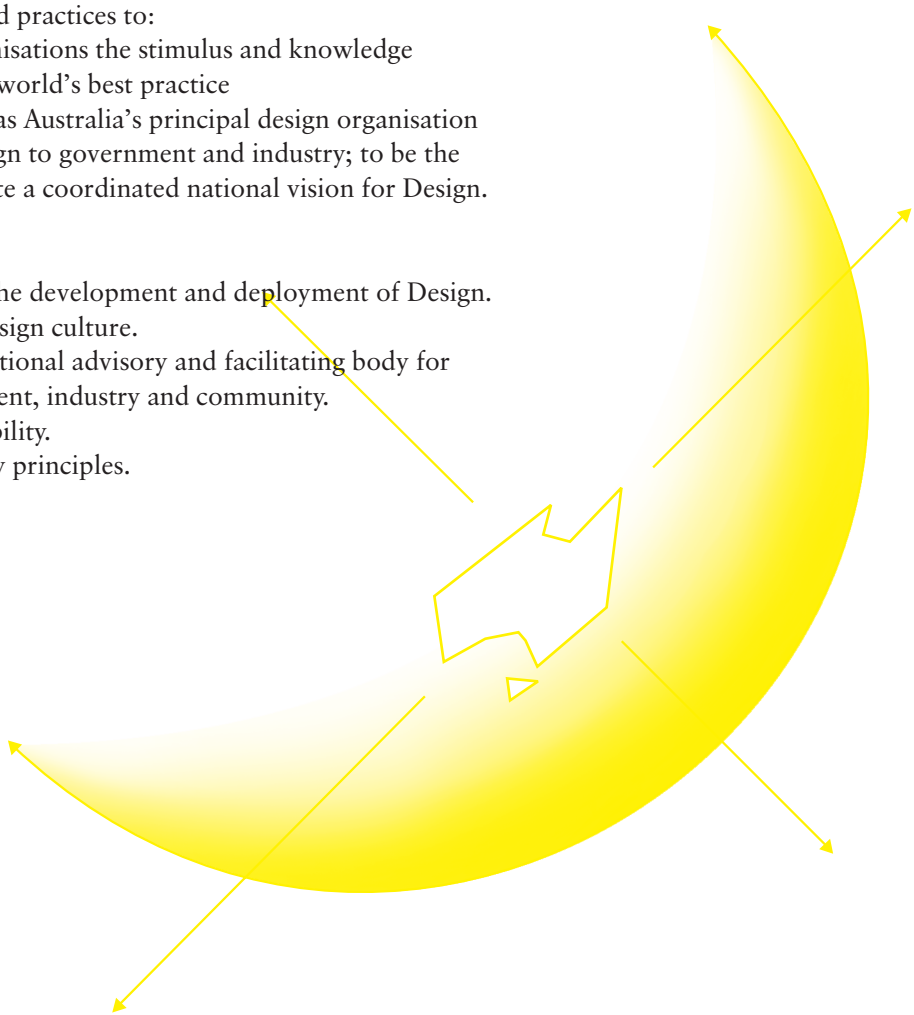
Mission

To develop and deploy a comprehensive and contemporary body of design principles and practices to:

- give Australian organisations the stimulus and knowledge required to achieve world's best practice
- secure the Academy as Australia's principal design organisation and adviser on Design to government and industry; to be the peak body, and create a coordinated national vision for Design.

Key Objectives

1 Focus and catalyse the development and deployment of Design.
2 Foster a national Design culture.
3 Serve as the peak national advisory and facilitating body for Design for government, industry and community.
4 Secure financial viability.
5 Operate with quality principles.



"We need to be a country which makes things, which releases self expression and which can sell an unmistakable identity to the world. For the future really does belong to those who create "

Paul Keating, Prime Minister
Distinctly Australian, 1993

5 Objectives of the Design Review

The terms of reference of the steering committee called upon it to review how Australia might best:

- monitor and respond to leading international developments in Design
- enhance industry use of and international competitiveness through Design
- raise the profile of Australian Design within industry and markets worldwide
- realise the potential in its significant professional design capabilities and skills.

The Academy, in elaborating its terms of reference, raised a number of specific, but not prescribed, issues focusing on firms and how their use of Design could be enhanced:

- competitiveness and the impact of design on the customer
- awareness and demand for design services
- investment and links with strategic planning
- management of design and whether in house or outsourced
- the design service market and how outsourced services are utilised
- relationships between industry and the design professions
- design education and the training required to provide design services
- intellectual property, its value and its protection
- brands and market position and the market impact of Design
- design's relationship with other major competitiveness improvement strategies.

6 Process of the Design Review

The National Design Review was undertaken by a Steering Committee of senior representatives from industry and the design professions operating through the Australian Academy of Design.

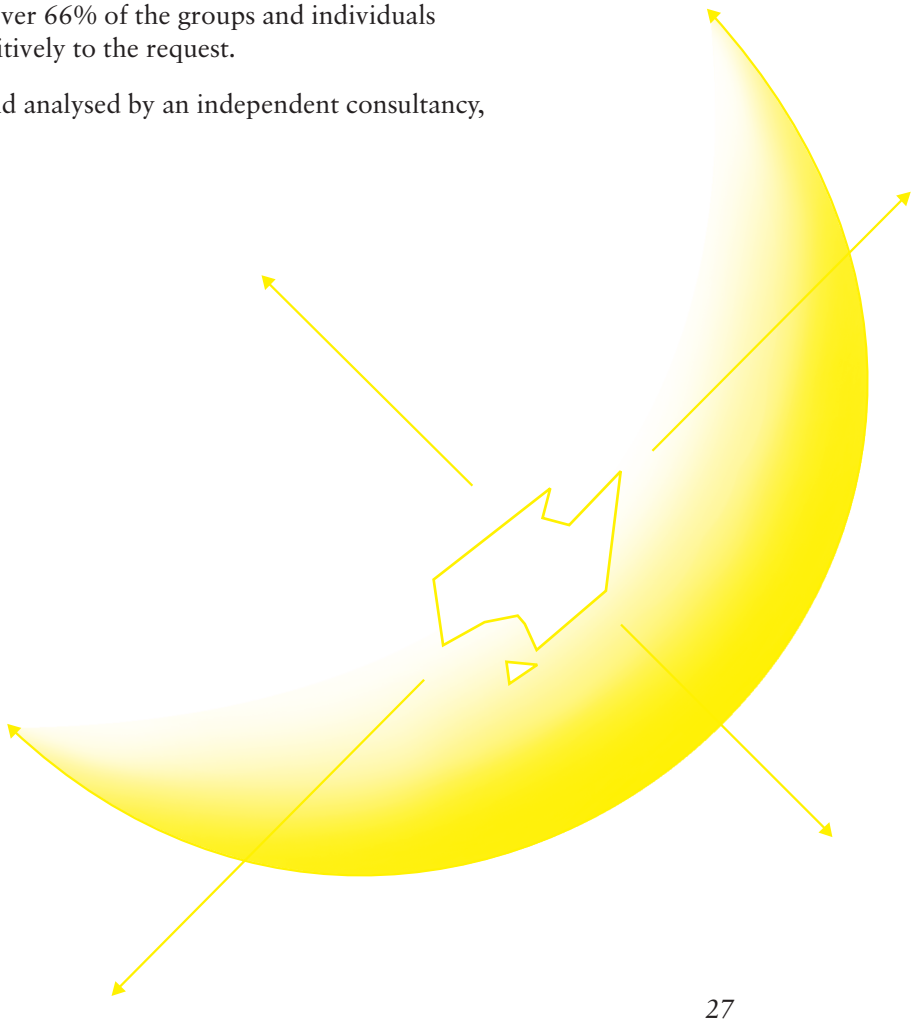
The review process involved a number of phases including:

- liaison with key industry, design and other stakeholders on the National Design Review's objectives
- invitations for industry and public comment and submissions on design developments and needs and directions for the decade ahead
- research and discussion through industry focus groups throughout Australia to identify priority needs and actions
- the independent analysis of this input and research
- the preparation of a consultant's report on the review findings to the steering committee to assist it in recommending appropriate action to government
- the preparation of a steering committee report of findings and action recommendations.

The research phase was designed to solicit and ensure input from all organisations and individuals considered to have an interest in the design profession: as suppliers, practitioners or users of design services.

The report is based on information from more than 120 formal submissions; 11 focus groups convened to cover a range of sectoral interests, a survey conducted of 42 industry groups and detailed discussions with designers, users, industry leaders and stakeholders. Over 66% of the groups and individuals invited to participate responded positively to the request.

The review data was documented and analysed by an independent consultancy, Barraclough & Company.



Section III

The Design Environment

7 Research, Design & Development
7.1 *What is Design?*
7.2 *Research, Design & Development*
8 The strategic context of Design
8.1 *Obtaining strategic advantage*
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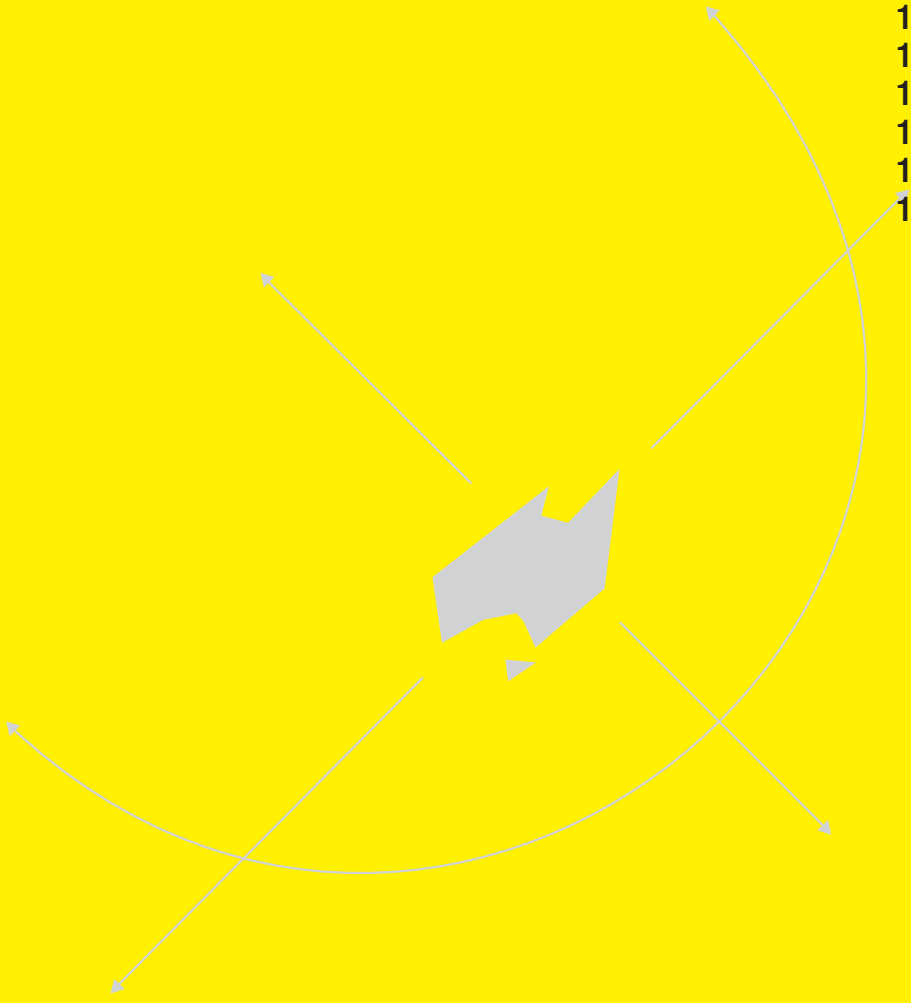


7 Research, Design and Development

7.1 What is Design?

"If Design is understood to mean the shaping and fashioning of the physical world for a conscious human purpose, then there are very few environments in which we live and work which have not been influenced by Design and all human artefacts are by definition designed. Although this is not a common meaning given to Design, it is useful to begin with such a definition because it helps to make clear that Design is not an esoteric activity ... but an activity with which all humans are actively involved and which fundamentally influences every person's life."

Professor David Yencken
Landscape Architecture and Environmental Planning University of Melbourne
In Design In Australia

Design is about the way things work as well as how they look. The outward manifestations of Design tend to be tangible and to have impact and possess both visual appeal and functionality.

The solution developed may equally be a simple household object or a complex electronic system. All require design. All can be made more effective and more humanly satisfying through Design.

The Japanese propose that the significance of Design can be disaggregated into four substantial areas of human attainment:

- improving national life
- creating demand and stimulating the industrial economy
- creating a "life culture"
- fostering creativity.

The definition adopted by the Steering Committee for the purposes of this Report is that ***Design involves the skilled integration o f intelligence and resources to deliver effective solutions which meet the existing and future requirements of consumers, industry and the national interest***.

"Where manufactured goods are concerned the best, innovative and ground breaking research and development in the world will not succeed without good design."

John Brown, former Councillor
Australian Academy of Design
Submission to the Research and Development Industry Commission

7.2 Research, Design & Development

It is accepted that there is a clear relationship between the research and development activity of firms and their innovativeness. Research and development is central to Australia's innovative capacity and it lies at the heart of our ability to develop and maintain an internationally competitive industrial base.

Design is the "missing" third component of research and development. It has tended to be considered very much as a peripheral activity.

The position of Design is not secured firmly in the research and development milieu and this could help explain why many innovations are conceived, but not commercialised, in Australia. Failure in the innovation process in Australia occurs largely at the commercialisation stage.

Design is, in reality, a core element of research and development, a key part of the continuum, not merely a support activity, and this is worthy of recognition by industry and government. The research and development process is more correctly described as research, design and development.

This redefinition has obvious implications for design industry policy, practice, financing, taxation and research funding.

While the Department of Industry, Science and Technology has accepted design as an important element in innovation, the linkage to research and development is not so well enunciated.

Theme papers prepared by the Department for a forum on Innovation in Industry, when identifying aspects of technological innovation, positioned design as an incremental rather than a competitive or strategic influence:

- technology diffusion and uptake
- incremental improvement of old and new technology, including design, adaptation and 'informal' research and development
- research and development
- protection of intellectual property.

There is a requirement for Design to be elevated to be a core element of the technological innovation process and, therefore, to emerge as a major source of business innovation and competitiveness.

"Design must be seen as the inevitable central activity linking research to development. Accordingly research and development must become research, design and development and design must benefit from schemes similar to those currently available for research and development."

D Radcliffe,
Chairman National Panel on Engineering Design
The Institution of Engineers, Australia Submission to the National Design Review

Dividends from Design 1

IMPORT REPLACEMENT AND EXPORT THROUGH DESIGN INNOVATION

Manufacturer

St George Appliances

Designer

Schremmer Crick Industrial Design

Innovative product design transformed a struggling manufacturer with falling profit margins, a technically outdated product range which was losing market share, into a sector leader in domestic sales and successful exporter, now producing more stoves and cooktops than all imported brands combined. The designers worked closely with St George throughout the development process which culminated in the successful new product range, and are involved in continual generational developments which effectively secures the brand's premium position.

8 The strategic context of Design

8.1 Obtaining strategic advantage

"Design excellence is an essential prerequisite for future national well being, economic security and the achievement of new technological eras. It is also the essential component in the development of a clear national product identity"

D Radcliffe, Chairman
National Panel on Engineering Design
The Institution of Engineers, Australia

"The international paradigm is now the pragmatic recognition that design should enhance functionality and provide the opportunity for real competitive advantage."

Toni Black, National Manager
Standards Australia
Submission to the National Design Review

"If there has been a single recurring theme at conferences and symposia on design over the past decade, it must certainly be the complaint that design is not integrated into corporate strategy and design does not share equal status with marketing and engineering in the product creation process."

R Blaich
In Managing Design in a Global Economy

The notion of the value chain developed by Professor Michael Porter hypothesises that actions impacting positively on any element of the chain (i.e. research, design, production, marketing, delivery, after sales service) enhance product and service value.

Competitive advantage occurs where there is ability to enter a market and to 'win the existing game' based on advantages in cost, value, time or client relationships. Competitive advantage typically requires modification and change within the existing value chain.

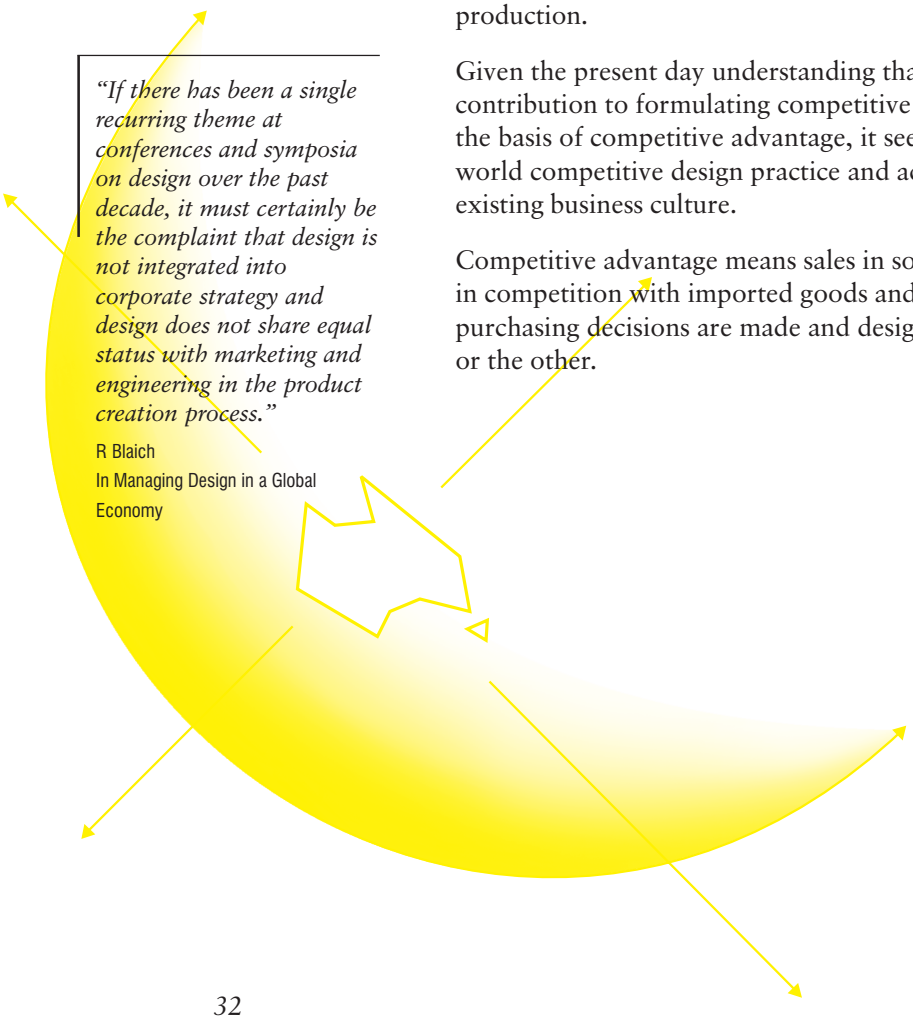
Strategic advantage occurs wherever there is the ability to redefine industry structure or an element of the industry through an appreciation of the resources available to the organisation. That is, strategic advantage typically changes the industry value chain.

Design activity is becoming increasingly central to innovative cultures as it spans the continuum from maintaining competitive position to developing strategic advantage.

The relationship between design and adding value is said to be well understood by Australian industrial designers but, it seems from anecdotal evidence, that it has not been focused on to the same extent by industry managers. Yet, it was submitted to the Review, European experience has demonstrated that return on investment in design is 2-3 times greater than return on marketing or production.

Given the present day understanding that design can make a major contribution to formulating competitive advantage, and that it is in many cases the basis of competitive advantage, it seems essential that Australia encourage world competitive design practice and accept it as an integral part of our existing business culture.

Competitive advantage means sales in sophisticated markets including our own in competition with imported goods and services. At the point of sale purchasing decisions are made and design helps drive these decisions one way or the other.



How Design can add value to most business imperatives including key elements of production, innovation, competitiveness and sales is illustrated below:

VALUE ADDING CAPABILITIES OF DESIGN

Desired outcome	How Design can add value
Innovation	Design is often the key practical means through which innovation is undertaken, focused and realised
Quality	Design production processes to minimise variation and defects, to maximise functionality, to meet established customer needs
Productivity	Design of production processes can achieve cost efficiencies, waste minimisation and just in time benefits
Sustainability of production and competitive positions	Minimisation or elimination of adverse environmental impacts through effective ecodesign strategies
Global products	Design of product, corporate and national brands
Product differentiation	Design of specific product variants to address niche market needs
Value add	Design of product and services based on generic commodities materials
Consumer allegiance	Design of product identities, brands and supporting customer services
Translation of R&D investment into commercial success	Design of products and processes to commercialise developments
Good client relationships	Often based on provision of tailored design services
Access to market opportunities	Role of Design in specifying components for major projects
Price competitiveness	Design as a means of improving durability and function and lowering cost

In the past, the development of Design as a strategic pursuit has been hampered by:

- a fragmented policy approach that saw it only as a facilitator of other functions rather than being both a highly focused function in its own right as well as a critical team competency
- a perception of Design as augmenting rather than being integral to need
- a predisposition to familiar (conservative) solutions.

Design professionals have the capabilities to:

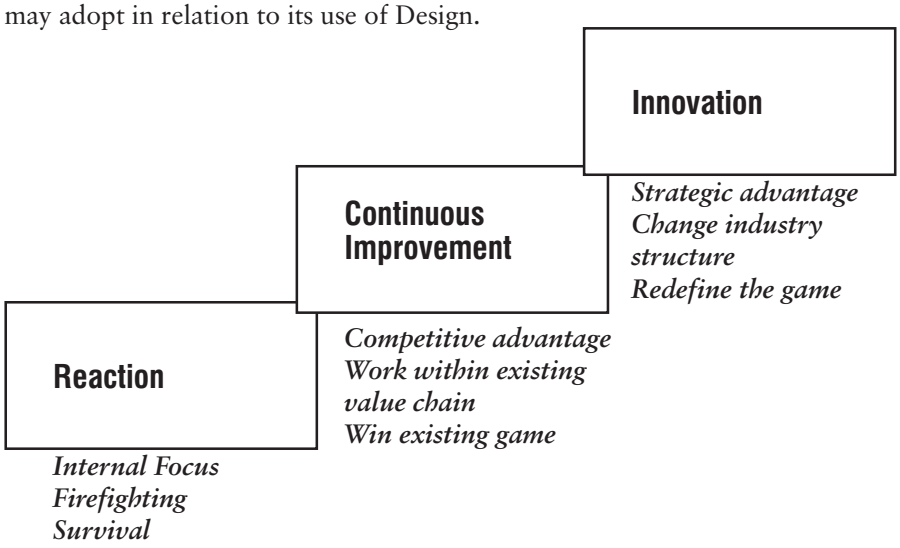
- translate existing technical and market intelligence into innovative marketable solutions
- provide functionality and durability to products and services, thereby enhancing product quality and customer loyalty
- differentiate products in areas such as appearance, feel, character and enhanced customer self image, thereby providing market advantage
- raise product awareness and acceptance through the application of design skills in areas such as packaging, advertising and merchandising
- improve the cost competitiveness of products to minimise material usage, minimise component quantities and expedite assembly manufacturing
- create new intellectual property through patents, brands, trademarks and copyright
- improve business understanding of Design thereby leading to the design of more innovative products
- provide proactive solutions for recycling, product disposal and environmental management where quality of life and ecological considerations form an important element in consumers' determination of value.

8.2 The competitive continuum

There are three basic positions escalating in complexity and strategic value that a business can occupy in relation to the design process.

- It can position itself so as to react to the marketplace.
- It can position itself so as to continuously improve (and gain a competitive advantage).
- It can position itself so as to redefine or innovate (and gain a strategic advantage).

This diagram shows the relationship between the three discrete positions a firm may adopt in relation to its use of Design.



The National Design Review's survey of 42 Australian business firms indicated that they defined themselves as having progressed from 'reacting' to 'continuously improving' while one third described themselves as 'redefining'.

8.2.1 The reactive organisation

Reactive organisations imitate the design efforts of others, do not invest in new design and innovation and are responding constantly to the initiatives of rival firms, often using price cutting as a primary means of competition.

There is little to be done by way of strategic positioning if an organisation is locked into a reactive rather than a planning orientation unless there is some other way of maintaining price competitiveness through cheaper factor costs or through, efficient process design.

Reactive organisations need to be exposed to the benefits of Design, strategically employed, in an effort to raise their awareness and understanding.

8.2.2 The continuously improving organisation

The application of design skills, particularly in process design and in a culture of continuous improvement, represents a significant opportunity for Australian business.

Competitive advantage occurs through continuous improvement where there is the ability to participate in a market and 'win the existing game' based on advantages in one or more of the client measures of cost, value, time and the effectiveness of the relationship.

Activities under continuous improvement may be either customer led or the result of incremental changes internal to the firm. As a result, they tend to be lower risk and involve relatively short timeframes.

Continuous improvement flows from developments within the organisation's existing value chain. These typically aim at outcomes such as changing production processes, maintaining or enhancing market share, improving productivity in an existing process or improving product consistency to enhance customer satisfaction,. That is, they are focused on maintaining or enhancing competitive advantage. Design is a critical element in planning continuous improvement.

8.2.3 The innovative organisation

Strategic advantage occurs through innovation where there is the ability to redefine the structure of the industry or the product category. It typically changes the nature of the value chain rather than developing within the existing value chain as occurs with continuous improvement.

Design is central to commercial innovation in that it is often a key enabling function through which innovation is successfully realised.

Those countries that are experiencing real change and restructuring are tending to focus with more rigour on the major strategic role to be played by Design.

Australia, disadvantaged by a relatively small manufacturing base and a small domestic market, and lacking the financial and technical resources of major international players, can especially benefit from an emphasis on innovative design. It is an area of potential competitive advantage that is clearly within our capabilities as a nation.

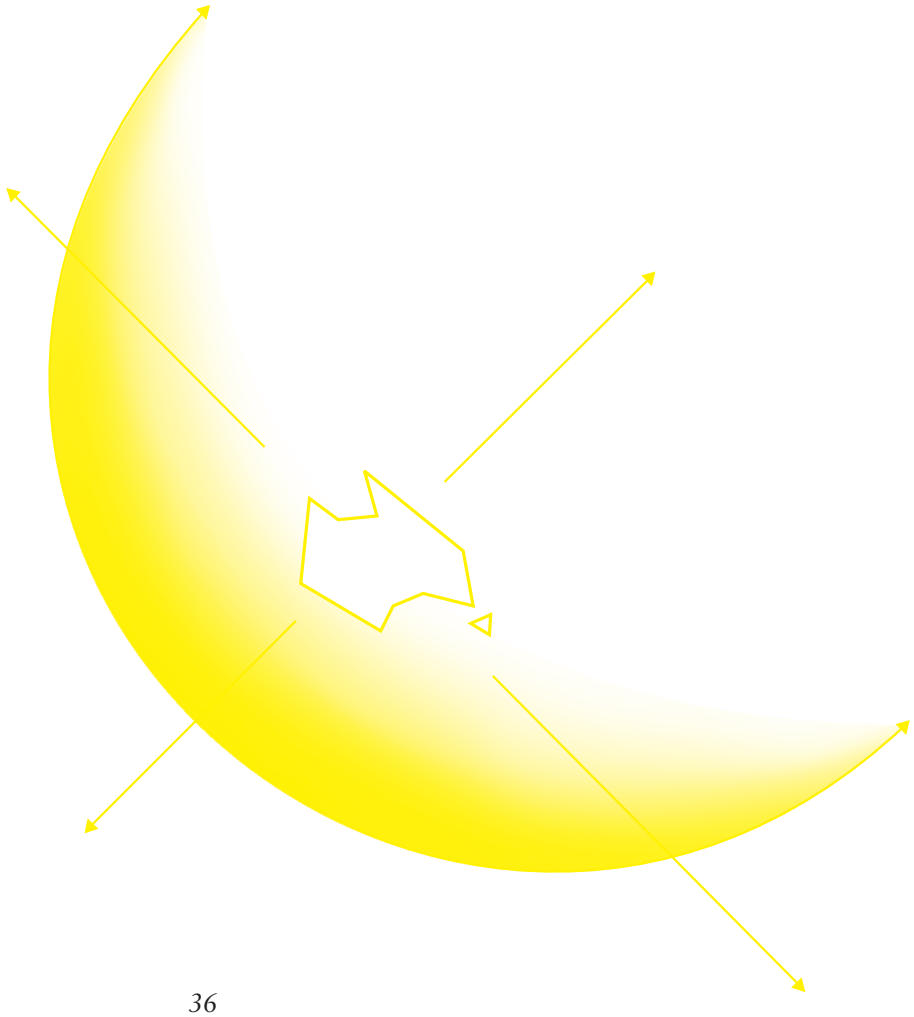
"Every management decision is a design decision that circumscribes the nature of what is designed. Design in this way is inscribed in the basic organisational structure, market assumptions and commodity forms at the core of economic activity The review needs to reposition the logic of its exercise. Rather than posing the question `how can the economy, with help from government, better use design?' the question of `how can the economy be transformed by design?' needs to be put and examined."

Dr Tony Fry,
Director
EcoDesign Foundation Incorporated
Submission to the National
Design Review

Design provides the discipline through which demands and technical opportunities for change can be translated into solutions that successfully address production and market realities, needs and desires. It is an innovative process that requires an understanding of what might be, not what is.

Design plays a critical role in each of the four core elements of the innovation process:

- securing global market identity, premiums and demand through brand strategies
- development of strategic vision and testing of conceptual alternatives to change
- commercialisation of research and development and translation of technical advances into new products or processes and the creation of new advances and new intellectual property
- redesign of production processes to enhance quality, speed and productivity
- improving the quality of the built environment.



9 Design & the commercialisation of innovation

9.1 Design & innovation

As world markets become increasingly competitive, industry leaders are focusing on innovation to maintain their competitive advantage and their sales. The basis of breakthrough innovation strategy is new technology and Design.

While innovation clearly involves many factors, Design is often the key practical means through which various inputs, functions and influences can be translated into viable products and marketed effectively to consumers.

The focus on Design within innovation strategy is paramount since Design is critical to the successful commercialisation of innovation, whether it be in:

- developing strategic vision and testing conceptual alternatives to change
- commercialising research and development and translating technical advances into new products or processes
- redesigning production processes to enhance quality, speed and productivity
- using brand strategies to secure market demand and product identity premiums.

Without Design, many potentialities good ideas, demands for change, market aspirations and the opportunities and potential competitive advantage they can represent will mostly fail to be realised.

Consequently, any strategy to enhance industry performance through fostering innovation must address the opportunities, needs and impediments affecting the enabling design function.

Apart from being a major enabler of innovation, Design is also central to the commercial success of innovation investments due to its effects on:

- commercial sales
- financial risks and returns
- the cost of innovation
- national returns on research and development investments.

"The state of a country's, and a company's design says a great deal about what sort of a country and what sort of a firm it is."

John M Legge,
Research Associate
School of Management
Swinburne University of Technology
In Value - Created By Design

"Design must be seen to be an on going process, not a capital cost incurred only at the beginning of the product cycle."

Stephen Coates Submission to the National Design Review

Dividends from Design 2

WORLD MARKET LEADERSHIP IN WATER FILTRATION SYSTEMS

Manufacturer

Memtec Limited

Designer

Nielsen Design Associates

This $46,000 investment in professional design directly enabled development of innovative water filtration systems which now dominate a world market niche valued at well in excess of $100 million, translating technical advances into new products. Ecodesign benefits are realised with the superior performance of the equipment contributing to improved water quality, and minimisation of parts replacement through design for efficient component service and reuse. Clever design also reduces plant downtime dramatically.

"The shift (over the last 10 to 15 years) to quality driven markets is a shift away from cost as a determinant of `desirability' to other more complex issues of reliability and emotional response. The issue of competitiveness now relates to the degree to which a product has meaning for consumers."

Professor Chris Ryan, Director
National Key Centre for Design
Royal Melbourne Institute of Technology
In The Practicalities of Ecodesign

9.2 Commercial sales

Design strongly influences how innovative products are perceived by the market. Design, along with price, often governs point of sale decisions by customers, so contributing to the success of a new product.

Innovation strategies must take account of these commercial realities:

- success is influenced by customer appeal at point of sale
- appeal, a key ingredient in product selection, is a function of Design
- Design is central to the commercial success of an innovation.

9.3 Financial risks & return

Design is evolving as a critical element to the financial viability of all commercial investment in innovation.

The financial risk of innovation and new product development is increasingly becoming commercially prohibitive as a result of:

- generic products saturating the market and the impact of this on diminishing product life cycle
- substantially increased overhead costs of technology and innovation.

Dividends from Design 3

MANUFACTURER MARKETS DESIGN TO ACHIEVE DRAMATIC GROWTH
Manufacturer
Keycorp Limited
Designer
Design and Industry
Individual customer focused design gives the fundamental product and service differentiation for this manufacturer of electronic data entry products, which has resulted in their sales growing to $30 million pa to markets worldwide and 1047% rise in their share value over the past 3 years. Large sales contracts are often clinched at prototype stage by demonstrating design excellence.

Commercial priority in innovation has had to emphasise minimising risk by focusing on strategies that can raise the odds for success and lower the financial exposure and costs of innovation.

Design provides products with a much higher chance of market success and sales longevity. Over 80% of professionally designed products achieve profitability within 12 months. In contrast, only 2% of all new products succeed commercially.

Design is able to substantially reduce the financial risk of innovation through its role in:

- lowering production costs and market response lags
- securing market access, acceptance and enhanced sales of new products
- commanding price premiums relative to generic competitive products
- reinforcing sources of sustainable competitive advantage for products

These design strategies can be expected to replace traditional product development approaches in which products are developed speculatively for assumed open competitive markets and promoted on the belief that they will sell.

In addition to minimising risk, such design strategies are fundamentally altering the role of the designer as both the focus for intelligence on specific niche market requirements and as the means to access such market opportunities.

9.4 Cost of Design in innovation

Professional design generally saves , rather than incurs, net costs in innovation relative to the overhead costs of existing product development practices. Poor design can impose prohibitive flow on costs.

While professional designers charge fees, these need to be examined in the context of the hidden costs of non professional, "silent" design. Professional design is much more likely to result in major and rapid cost savings, as the Titan nails case study reported elsewhere in this document reveals.

The cost of professional product and process design represents a small outlay, generally 1 2% relative to the total cost of new product development, production and marketing.

In successful innovation, it is critical to begin with an effective design. The costs and financial consequences of poor Design can damage a firm's profitability and its credibility in the market.

9.5 National returns on investment

Australia's innovation policies have focused primarily on fostering investment in research and development and the nation currently commits over $5 billion a year to this area. To date, however, the national returns from such investment have been modest.

It is recognised that these returns will continue to be modest unless the ideas, technologies and opportunities arising from research and development can be translated into product and process advances. Existing policies and strategies for assisting industry to realise commercial dividends from this significant investment, however, have not achieved the desired results.

Design is a critical element in enabling commercial translation and the realisation of financial returns from research and development.

Realising an acceptable return on the R & D investment is being impeded, however, by the lack of appreciation of the role of Design and the lack of support for firms to access and use Design.

Australia will not benefit fully from its research and development investment until:

- it recognises the role of Design in innovation and in the commercialisation of research and development
- it addresses impediments to the enhanced commercial use of professional design by Australian firms.

Australia can no longer afford to disregard Design as a core element of its competitive strategy for commercialising innovation and for securing a realistic return on its investment in research and development. We should no longer allow our competitors to use our considerable design skills as a "free" source of ideas.

If our design capabilities are to become a core element of our national innovation strategy, Australian industry must be assisted to overcome those structural impediments to using Design.

"In the beginning, the designer is a key player in ensuring the new and enhanced products, as they are developed, deliver adequate value to their target customers ... Once the product is on the market, and when later versions of it are being introduced, the designer is called upon to preserve a common image, a thread that links the old and the new, and serves as an assurance to customers that their original purchases were members of an evolving family and not an eccentric mistake."

John Legge,
Research Associate
School of Management
Swinburne University of Technology
Innovation By Design Conference

10 International developments in Design

"The Taiwanese design revolution has been a masterful strategy of setting goals, building on industrial and technological strengths and recruiting the resources to enhance those strengths through design"

Robert & Janet Blaich
In Design Management Journal

"The Japanese, Germans, Italians and Swedes haven't always been as successful as they are today. But they have taken the trouble to understand their market and to minimise risk and maximise profit by using good design and we all know how good they got at it"

Brian Davis,
Managing Director
Decor
Launch of the Academy, March 1990

10.1 A new mood in Design

During the last two decades, the rapid industrial development of the Pacific Rim has been a key stimulus to increasing global competition. Continuing pressure to improve quality and reduce costs has narrowed the gap between many competing products and differentiating factors, such as speed and responsiveness, have provided competitive advantage.

In the United States, Europe, the United Kingdom, Japan and the so called "tiger" economies of Asia, there has been considerable investment aimed at developing the manufacturing infrastructure and technological base through strategies aimed at accelerating the uptake of Design.

Among the key recent features of international development in Design are:

- government support and promotion has characterised the advancement of Design in most globally competitive economies
- the "tiger" economies in particular have fully recognised the key role of Design and initiatives in Taiwan, Singapore and Malaysia are providing them with what could be a long term competitive edge
- the radical renewal of the Design Council in the United Kingdom established since 1944 flags a new urgency in response to the international Design challenge.

10.2 Japan

For more than thirty years, there has been a clear understanding of the importance of Design in achieving export sales from manufactured goods at all levels of government and industry in Japan. Considerable financial resources have supported programs to enhance understanding of Design and to encourage industry to use Design as a strategic means of achieving global market penetration.

The extent of this commitment is well illustrated by initiatives in Japan's third largest city, Nagoya, that has a population of 2.4 million. In the mid 1980's, industry, government and design leaders agreed to a master plan for Design in Nagoya including:

- the establishment of the International Design Centre in the city
- the marking of 1989 as Japan's Year of Design
- hosting the World Design Expo in 1989, an event which drew 15 million visitors
- hosting of the 1989 congress for International Council for the Societies of Industrial Design involving 3700 delegates
- the initiation of a wide range of industry programs aimed at increasing design awareness and the use of professional designers.

The International Design Centre, which was provided with initial capital equivalent to $180 million, is now under construction and will include 45,000 square metres of space with offices, shops, exhibition facilities, design libraries and design data resources. An important objective of the Centre is to attract commercial involvement in permanent and temporary exhibitions and in design related retailing.

The philosophy of the Centre is to emphasise the end users of Design rather than creating a one dimensional museum of excellence in Design. The Centre will demonstrate what Design means to the consumer and highlight the benefits to industry.

Comprehensive design promotional programs of similar scale also exist in Tokyo and Osaka.

10.3 Taiwan

The current six year plan defines how Taiwan will transform itself into a producer of sophisticated products based on a mastery of the key technologies of the information era. Within this plan is the government's strong strategic commitment to Design.

In order to nurture its design base in manufacturing, the government is contributing some $US170 million over the six years through three related strategies:

- to improve Taiwan made products
- to upgrade the quality of industrial design and the resources available to it
- to transform the made in Taiwan image.

The strategy is seen at work in its most tangible form with planning underway for the establishment of Taiwan Design Centres in Dusseldorf, Paris and Milan.

10.4 Singapore

In the early 1980s, facing increasing competition from other industrialising less developed countries with far lower wage rates, Singapore instituted policies to accelerate the shift of the manufacturing sector away from labour intensive industries towards capital and skill intensive industries.

The government actively promoted Singapore as a centre for the use of design services in the world's fastest growing region.

The Design Council operates at ministerial level. Assistance schemes, design referral services, seed funding and a national award program, have promoted Singapore as a centre for Design in the South East Asian region. These factors have also probably contributed to the establishment in Singapore of research and development headquarters of several trans national corporations.

10.5 Malaysia

As an exporter of raw materials and assembled manufactures mainly textiles and electronics based on cheap labour, the Malaysian government had recognised the need to develop a Design consciousness in its small company manufacturing base.

The Standards and Industrial Research Institute of Malaysia has been provided with $US18 million to promote Design in small to medium sized businesses.

Malaysia has also established a major new educational institution to provide undergraduate and postgraduate professional design education to meet anticipated industry demand for design expertise.

10.6 Germany

Germany exports a greater proportion of its gross national product than Japan and integral to this success has been a passion for engineering quality, combined with the application of Design to many aspects of business, commerce and government.

The Germans have nurtured the consciousness of Design to a point where it has become embedded in business and in society as a routine ingredient of understanding how the world is shaped. Leading German companies such as Daimler Benz, Siemens, Krups, Lufthansa and many others have pursued consistent policies over many years to create both improved attitudes to Design and a new attitude to business practice.

A Siemens executive, quoted by John Heskett in ID, has said that Design is important not only in terms of "the role a company played in its markets, but also in the role it played and was seen to play in society and how it defined and proved its cultural responsibility".

One hundred years ago, there was great concern in Germany at the poor reputation of German goods in world markets. As a result, a coalition of government officials, industrialists, educators, designers and journalists emerged advocating that machines should be used to create a new national culture typical of its time.

The German model demonstrates that, over time, a core of committed companies supported by governments and professional bodies can establish a critical mass to change how Design is applied and perceived, and that the process is more powerful if the community is regarded as an indispensable participant.

10.7 United Kingdom

"Only by becoming involved in design for export, with all the legislative and technical requirements that involves, will UK manufacturers ever develop the type of products they will need to defend their home markets successfully."

Ivor Owen,
former Executive Director
British Design Council

The mission of the restructured British Design Council has two central objectives:

- to help manufacturing companies develop better products through the total design process
- to support the development of design education and training, and the role of Design in education and training to produce world class professional designers.

With a 1994 budget of 12 million pounds (including a 7 million pounds grant in aid from the Department of Trade and Industry and S million from sponsorship, publications and government programs), the Council focuses on delivering assistance to key sectors of British industry. The selection of sectors is based on company size, the significance of Design to the industry and the problems generated by import penetration.

A new government direction entails the establishment of a network of Business Links offices across the United Kingdom which offer a range of services including advice on Design.

The Open University's design innovation group, which surveyed 220 small to medium sized firms that had taken part in a government funded product development scheme, reported that two thirds of the products went into production, 90% made a profit and 78% of the firms recovered their total investment in less than two years.

Half the projects had involved product design, one third engineering design and the rest packaging, literature or product related graphics.

The report concluded that companies failing to employ designers for product development could forego sales, new markets, reduced costs, higher profit margins and a better external image.

10.8 United States

The US Congress is considering the establishment of a Design Council, signalling a major change in the attitude of the United States towards government involvement in the national and international promotion of its design resource.

The Design Council will promote three broad based design initiatives:

- a strategic design initiative to foster collaboration between designers, manufacturers and investors in key areas of innovation
- an urban design initiative to restore cities and towns and to create new and sustainable communities for the 21st century
- an inclusive design initiative to develop design standards that remove barriers to participation in government and promote access to the civic realm.

"As the Design Council never tires of saying at its industry directed seminars and workshops, the bulk of the UK's trade gap in manufactures is with high wage, high technology economies - over half of it with Germany, the US, France, Japan and the Netherlands. Cost is not primarily what these imported products compete on, just as no amount of promotion or cost cutting will persuade consumers abroad to buy the UK's exported products unless they actually like or need them."

Quoted in the journal Design

Section IV

Competing by Design

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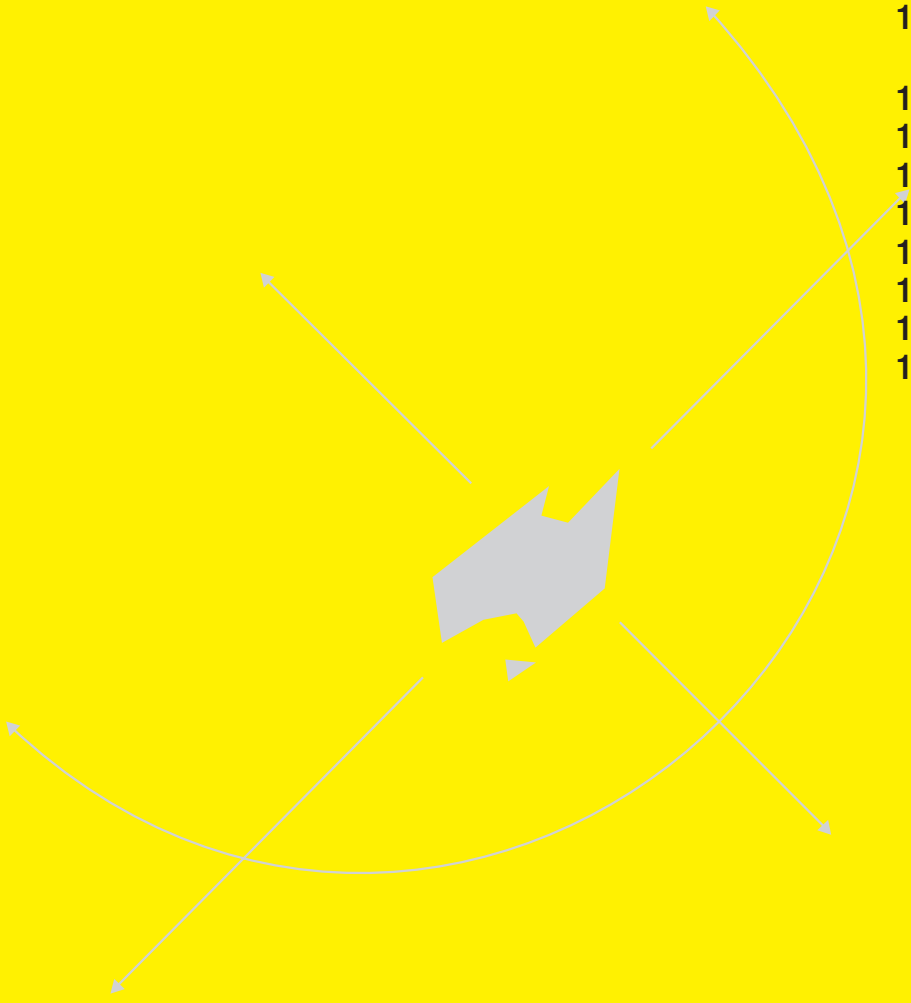


11 An Australian Design culture

11.1 The culture of Design

"Unfortunately when Australians see the Made in Italy or Made in France label they automatically think it is inherently superior to the Made in Australia equivalent. An extension of cultural cringe, this is design cringe. It is a disease that is stopping our designers from reaching their full potential and could stymie the best efforts o f our industry to capture new market share for their products"

Susan Ryan,
former Chief Executive
Plastics Industry Association
In Design - A Manufacturing Perspective

"Shabby production engineering, poor ergonomics and inappropriate aesthetic design will not generate sales no matter how smart the technology."

John Brown,
former Councillor
Australian Academy of Design
Submission to the Research and Development Industry Commission

Dividends from Design 4

GRAPHIC DESIGN ESTABLISHES OPTIMUM MARKET POSITIONING

Manufacturer

Southcorp Wines Pty Ltd

Designer

Emery Vincent Associates

A leading design consultancy provided branding advice and eyecatching graphic design which has enabled this group to restructure and precisely market position its 16 brands and 400 labels, to become the 8th largest wine producer in the world.

Design is crucial in offering industry a strategic advantage. It is a practical means for providing organisations and nations with increased sales internationally and domestically and with sustained market share.

Design is a core enabling means through which firms can:

- take advantage of their understanding of the marketplace
- demonstrably put the customer first
- facilitate and provide winning solutions
- keep ahead of their competitors.

Effective design impacts positively on customers at point of sale and its influence is sustained thereafter as the functional benefits continue to be felt by the customer.

Design is integral to the development of an innovative Australian production culture in which industry finds better ways of doing things that contribute to its and the nation's competitiveness.

It was remarked that, in general, Australian industry:

- lacked a clear understanding of the role of Design in enhancing competitive advantage
- did not appreciate the potential benefits to flow from the application of professional design skills to business processes
- was unappreciative of the added value to be derived from consumer acceptance of products and services offering design quality
- tended to subsume the contribution of Design to business within the range of operational functions and rarely acknowledged it as a distinct entity.

While the explanation for these apparent weaknesses may lie more in a failure of communication between industry and the design professions rather than some inability of industry to "understand" Design, there is still room for concern.

Certainly, the Review received a great deal of information suggesting that, for whatever reason, Australian industry lacked a design culture and that this was working against industry and national competitiveness.

Design culture is evident not only in the development of new products but also in how companies define their commercial persona and how they build and maintain identity, brands, relationships and sales in the marketplace.

This general failure to recognise the quality of Australian design is what is referred to as the lack of a Design culture.

Australian design capabilities, achievements and international recognition have been outstanding. But the use of Design by Australian industry has been marginalised by previous lack of government and industry recognition of the role that Design plays in competitiveness and innovation.

This lack of recognition is in direct contrast to the appreciation and use of Design by our competitors.

11.2 Championing Design

There is a strong perception that poor public awareness of the benefits of Design is a key contributing factor to the less than optimum use of Design by industry.

A critical task facing the design professions and industry is the creation of an environment in which industry, community and government understand and are committed to the value of professional design, accept Design as integral to our business culture and seek to advance industry competitiveness through Design.

Pivotal to this is the need for a national coordinating body in Design, to enable it to work with and support the existing design industry. A champion of Australian Design.

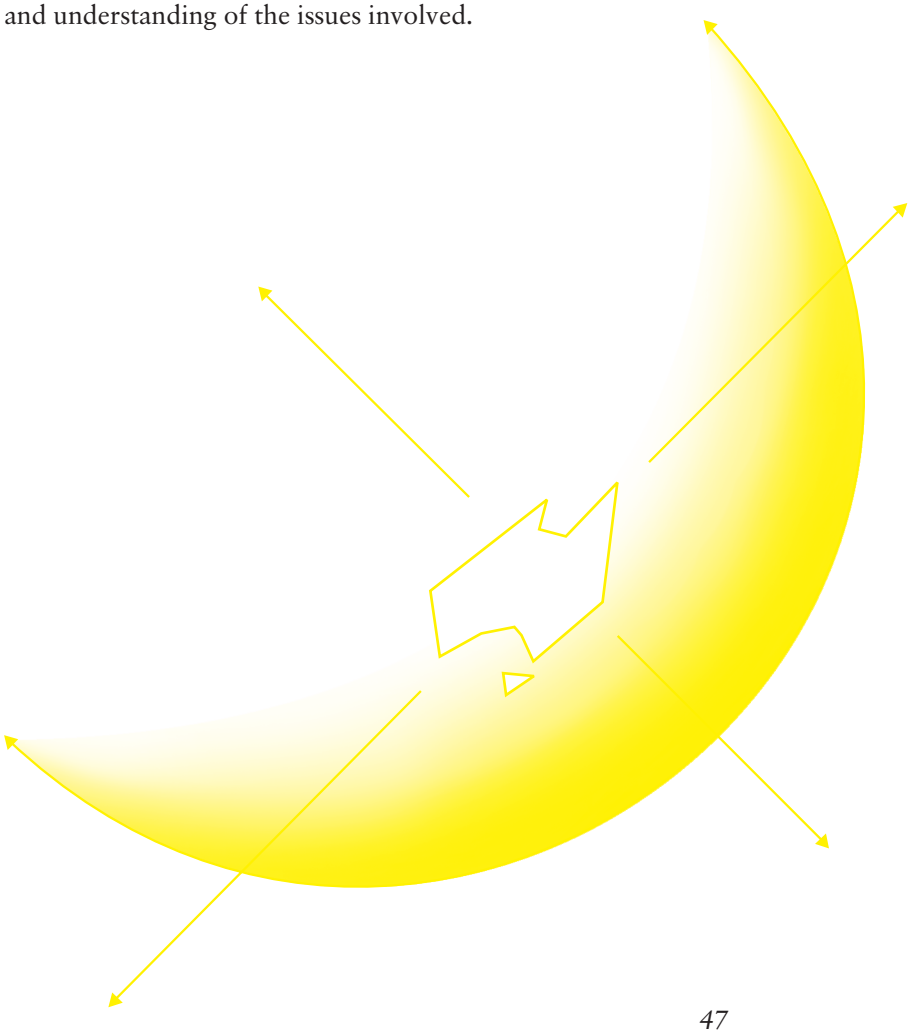
Its role, in addition, should involve the marketing, publicity and promotion of Design. Showcasing the benefits of Design, through a design centre, would both assist to inform industry about the benefits of Design and help create market demand.

This Review has discerned a need to enhance community awareness of Design and, in particular, Australian Design. Not because the community is antipathetic to matters relating to Design (design awards, for example, attract favourable public response) but that the community is insufficiently exposed to Design and to its attendant issues.

Strengthening the marketing of Design whether through awards, permanent or mobile exhibitions or other forms of publicity and exposure would do much to build community awareness and understanding of the issues involved.

"The lack of a design culture leads inevitably to a lack of status for designers. Increased status is essential if designers are to be more productively employed. It is needed in industry, government and teaching and research institutions. This status has, however, not just to be claimed. It has to be earned. This requires new forms of collaboration between different branches of the design professions and between designers and decision makers."

Professor David Yencken
Landscape Architecture and
Environmental Planning
University of Melbourne
In Design In Australia



12 Intellectual properly

"Having designed an innovative product, no-one in industry would be willing to proceed with the costly investment that will follow unless there's a good chance that the product in question cannot legally be copied. Effective intellectual property protection is a most important factor in the design process."

Harry Sebel
Principal
The Harry Sebel Consultancy
Submission to the National Design Review

12.1 Design as innovation

As innovation and Design grow in importance as determinants of competitive advantage and success in global markets, Australia finds itself potentially well placed in terms of its world calibre capabilities in research, design and development.

New designs are innovations in every sense of the word, particularly in their ability to enhance competitiveness, to generate wealth and to define new bodies of intellectual property. Indeed, it is clear that Design provides a short route to the creation of new intellectual property.

Designers create and thereby invest in intellectual property as they operationalise client briefs, respond to the marketplace or innovate for greater efficiency and effectiveness.

To industry, creation without commercialisation is barren and counterproductive. Design can not exist in creative isolation but must be an enabling function for successful product and service commercialisation. Design is thus both innovative in its own right and a facilitator of innovation throughout the production process.

Whether or not such innovation actually leads to companies capturing the potential benefits, therefore, depends on commercialisation strategies and the effectiveness with which intellectual capital is protected can play a key role in such strategies.

12.2 The economic argument

The creation of a new, commercially attractive, design represents the creation of a new economic resource.

When the Industry Commission asserted that "design is not inventive" because it does not expand the productive capacity of the economy (Draft Report on Vehicle and Recreational Marine Craft Repair and Insurance Industries), this exposed a core misunderstanding of the function and value of Design.

Design enables increased revenues to be earned from the same physical volume of output, thereby increasing the productive capacity of the economy.

There are, it needs to be stated, variant views especially among economists on the desirability of protecting intellectual property as distinct from liberating it.

There is a body of opinion that regards intellectual property protection (at least in Design) as a form of acceptable social cost to reward creative endeavour but holds that any legal rights beyond this must be limited by the need not to restrict competition. At its extreme, this view would make it difficult to obtain intellectual property rights and place severe limitations on their extent.

The countervailing view recognises the importance of innovation in bringing about economic growth and seeks a consistent and coherent intellectual property regime offering appropriate rewards to innovators while providing safeguards against excessively broad or long lived rights.

12.3 Protecting Design

Australia has a well developed intellectual property protection system and effective protection is recognised as vital to the encouragement of innovation. Supportive legislation has either been reviewed or is currently subject to review. New patent legislation was introduced in 1990 and new trade mark legislation will be introduced in 1995 together with reviews of the Designs Act and the Petty Patents Act.

The continued success of many Australian manufacturers in world markets depends upon the maintenance of a strong intellectual property regime in which Design is in many cases as important as any other single intellectual property element.

The dual challenge for Australian industry is both to generate and legally protect intellectual property and to assist industry develop and implement strategies for realising its benefits. This challenge intensifies as intellectual property becomes a core basis for competitive advantage and as technological change alters the relevance of current protective laws.

The protection of the intellectual property in a design is a matter for the law of each country. These laws vary in scope and terms of protection as well as in the strength of their enforcement provisions. Each body of law, however, has essentially the same objective: to protect the unique qualities conferred on an article by the design.

The recently concluded international agreement on trade related aspects of intellectual property rights (TRIP) requires all member countries of the World Trade Organisation (formerly GATT) to strengthen legal provisions over the protection of intellectual property.

Many Australian companies have suffered from their intellectual property rights being usurped by firms in other countries and the reciprocal recognition and enforcement of such rights is one of the key parts of the new WTO treaty.

The valuation of intellectual property in Design has become a major international issue. It is unlikely that the global marketplace in Design can be captured successfully without Australia's intellectual property in Design being protected more effectively.

That said, there is difficulty in ensuring effective protection of intellectual property in new product design. No holistic law covers intellectual property and it can be difficult to segregate patents, designs, trade marks, trade secrets and copyrights.

The Australian law for the protection of designs is the Designs Act 1906. The Australian Law Reform Commission has been working on a review of the Act since 1992. This review believes that any changes made to the laws relating to the protection of intellectual property in Design must not act as a disincentive to Australian companies wanting to invest in innovation.

Intellectual property protection must be made more accessible to Australian companies.

There is a view that the Designs Act is not the problem so much as the whole area of handling intellectual property. The Australian legal system, it was pointed out, is more related to consumer than corporate protection. It is up to designers to involve themselves more actively in issues relating to intellectual property protection and to work to strengthen the law through mechanisms like the Australian Law Reform Commission.

"Design is uniquely reliant on intellectual property laws, since there is no possibility of protecting designs through trade secrecy or through reliance on technical features which might deter imitators."

John M Legge
School of Management
Swinburne University of Technology
Letter to the National Design Review

"Design protection cannot be considered in isolation because it overlaps with patent, copyright, integrated circuit and trade mark protection. There is a very broad spectrum of users of design protection and many have incompatible demands on the protection available under the Designs Act."

P M Conrick
The Australian Manufacturers' Patents, Industrial Designs, Copyright and Trade Mark Association
Submission to the National Design Review

"Success for most exporters starts at home, and only when the Australian home market offers world class protection of designs is it reasonable to expect Australian products to be developed to world class standards of design as well as production."

John M Legge
School of Management
Swinburne University of Technology
Letter to the National Design Review

"Most artists and other creators are aware that the commissioning of a work does not affect the ownership of copyright in that work. Few would be aware that a contrary result currently occurs in relation to the design, rights in that same commissioned work."

Libby Baulch
Executive Officer
Australian Copyright Council
Submission to the National Design Review

"It is to be hoped that the outcome of the review will be the strengthening of the Act, in particular the provisions relating to the infringement of registered designs."

Bryan Dwyer
President
The Australian Manufacturers' Patents, Industrial Designs, Copyright and Trade Mark Association
Submission to the National Design Review

12.4 The complexity & cost of protection

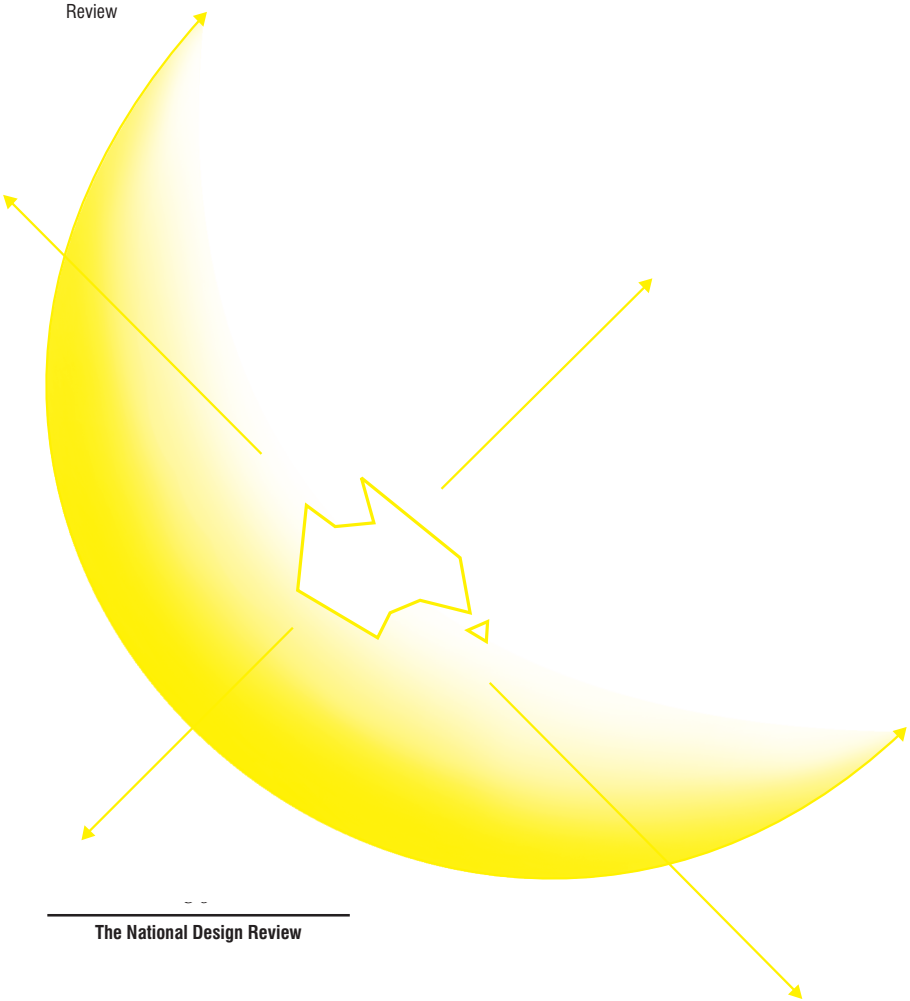
The field of intellectual property protection in the design area is complex and tends not to be well addressed by teachers of Design, by designers themselves, by many organisations seeking to commercialise designs and, it is perceived, by organisations seeking to deliver protection.

It is generally recognised that there is a need to increase the awareness of intel-lectual property protection, particularly among small to medium size enterpris-es; the Australian Industrial Property Organisation and National Industry Extension Service are currently developing programs to address this.

Where small to medium sized design enterprises are aware of the importance of protecting intellectual property, it seems that the cost of protection (in terms of retaining lawyers, patent attorneys et al) is often an inhibiting factor.

As an alternative to protection, these organisations frequently rely on their ability to quickly commercialise and profit from the product or property and then to generate new designs.

Australia's many small to medium sized enterprises do not have the cash flow, employee numbers or know how to achieve maximal protection outcomes independently. This suggests a need for the development of a group legal capa-bility and the establishment of an information or network base to support this.



13 Education

13.1 Issues in Design education

Education and training for Design take place across a broad range of learning institutions including secondary schools, technical and further education colleges, many universities and tertiary colleges and an increasing number of private institutions. Tertiary courses vary in length from two to four years and they also vary greatly in quality.

A 1991 report to the Australian Academy of Design identified the main issues in Design education. Thev are summarised below.

"I believe that Education is the most pressing issue facing the design professions - education of the design professionals, of the politicians, of the entrepreneurs, of the end users, of the educators and, indeed, of the citizens of the world!"

Donald Bailey,
Architect
Iconoclast Consultants
Submission to the National Design Review

ISSUES IN DESIGN EDUCATION

Issues	Impacts
Status of Design	Division between "arts" and "technology" leads to territorial definitions and inability to raise status in community or with government
Research	Design not a traditional research area leading to grossly inadequate investment in design research and post graduate training
Funding	Too much of design funded according to traditional notions of 'design as styling' leads to inequities in other areas
Staffing	Lack of part time professionals in teaching. Difficulties in attracting and retaining staff when salaries are not competitive with industry
Gender	Some Design areas have unbalanced staff and student gender ratios
Access to technology	Critical to success but often a real hardship because of lack of funding
Environment	Ecodesign, a major new area, presents problems flowing from a shortage of expertise, curriculum content and training resources
Regional v national needs	Lack of standardisation in terms of response to needs
Specialisation v interdisciplinarity	Inertia tending to lock Design into specialisation compared with the growing international mood of integration and interdisciplinarity
Professional & industry links	Design education not setting direction for industry
Bridging culture & technology	Specialisation tends to make it difficult to do this
Pre-tertiary links	Design does not exist in schools except as discrete sub disciplines

From Design Education in Australia for the 1990's and beyond: a report to the Australian Academy of Design by C Ryan, J Broadbent, D Healy G Byrne (1991)

There are too many design courses at TAFE and university levels. Generally, these are not provided in conjunction with the design profession and they are producing graduates in such numbers that only about one in five can be employed as designers.

Although the Design Institute of Australia (DIA) is establishing a course accreditation procedure throughout Australia, it has advised strongly against the proliferation of courses.

The Design Institute of Australia and the Australian Graphic Design Association share the view that there needs to be one, and only one, champion design course in each capital city and that the number of graduates should be adjusted to real market requirements.

There will inevitably be a competitive process to identify and support centres of international excellence in Design regardless of where these be.

Given the often significant lags in introducing change within tertiary education programs and current professional practice, design educators need to anticipate future demands early enough to provide timely educational responses.

These demands are likely to be substantial as the design profession seeks to adjust to a vast global shift driven by technological change, economic efficiency and environmental degradation.

While the vertical integration of Design with other stages in the production cycle is vitally important for competitive reasons, a more fundamental change, driven by the same forces, is the integration of Design activity across the Design disciplines and also with contiguous non Design disciplines such as management, law and environmental and social sciences.

Not only can Design not remain immune from these broader processes of change but it is likely to play a central role in facilitating them. This paradigm shift will need to be reflected in both educational processes and curricula.

"It should also be clear that only a small proportion of the existing design schools (or parts thereof) will survive in the medium term, as tertiary education is transformed by the information age. My guess is 10-20%."

Dr John Broadbent
Letter to the National Design Review

"This development has the potential to generate a design culture in young Australians by promoting design awareness and by producing a significant group of students who graduate from schools with higher order design skills. If the curriculum direction can be sustained, these students will not be confined by the traditional design disciplines but will understand the application of design across such fields as agriculture, media, home management, biotechnology, business management, the trades, etc."

Bob Staples,
Inspector NSW Board of Studies
Letter to the National Design Review

13.2 School education

Over the past four years, Design has been given a significant emphasis in curricula developed for Australian schools. With the support of the Australian Academy of Design, design activity and design processes have been included as a central focus in the Statement and Profile on Technology for Australian Schools. Similarly, Design is prominent in the Statement and Profile on Arts for Australian Schools.

Currently, education systems around Australia are moving to adopt the intent of these documents that were developed collaboratively by the States and the Commonwealth.

Design processes, design principles and design activity are becoming a mandatory aspect of learning for all students in primary schools and for the majority of students in secondary schools.

Effective implementation of the new curriculum will require support from education systems, the design community, industry, government and the tertiary education sector. It has major implications for the training and retraining of primary and secondary teachers and for tertiary vocational education and training in Design.

It will exacerbate the urgent need for articulation between the school education sector, the university sector and the TAFE sector. It will generate the need for research in design education.

It has been suggested that the teaching of Design and technology in secondary schools would be enhanced by the inclusion of design discipline graduates with additional formal teaching qualifications. This approach has long been accepted in Mathematics, the Sciences and Arts teaching training but is unusual in Design. The demands of the emerging design and technology curricula indicate the wisdom of this approach.

"Given the newness of the development of design as an aspect of school curriculum, it is understandable that there is a lack of educational research into `how students learn to design' and into 'how students learn by engaging in design activity'."

Professor Desmond Freeman,
Deputy Chair Design & Technology
Syllabus Committee
NSW Board of School Studies

13.3 Technical & Further Education

Most technical and further education courses are aimed at students undertaking entry level training. The State TAFE systems offer a wide range of design courses from certificate to diploma levels. The majority of courses provide students with opportunities to explore the design process through project based activities and to develop and apply design skills across a variety of mediums.

These gaps in the provision of vocational education and training were highlighted:

- small business skills and knowledge (eg, financial management, marketing, law)
- new and developing technologies
- project management and communication skills
- occupational health and safety
- vocational education and training in basic design for people who have had no formal design training who work with design/graphic software
- improved access and equity for people from target groups to undertake design education and training and to influence Design more broadly.

There is very limited training available for practitioners who are already in the workforce and who wish to access further training through continuing professional education.

"Overall, in the mid to late nineties, demand for design services, and the recognition of the key role of design, is likely to strengthen. Our future international cultural contribution is contingent upon an ongoing commitment to education and training to support the growth and international competitiveness of Australian design industries. Relevant, industry driven vocational education and training is critical to ensuring this growth and competitive edge. "

Kate Doyle,
Acting Chief Executive
Arts Training Australia
Submission to the National
Design Review

13.4 University education

Tertiary education and training is provided predominantly by universities which offer award courses from bachelor to doctorate levels.

There is a view that Design is handicapped by discipline specific universities that do not regard it as a discipline. Nor is there recognition or understanding of the integrative aspect of Design as part of the art science spectrum although it has been suggested that this debate is over.

There is a view that much design teaching is "extraordinarily narrow" and also that a place for design management education in university teaching programs is long overdue.

"The social and environmental context (of design) is often inadequately taught so that skills are developed ... which may meet the limited client brief very well but may be very destructive to the larger public realm."

Professor David Yencken
Landscape Architecture and
Environmental Planning
University of Melbourne
In Design In Australia

"A major illustration of the likely disadvantaging of design in research is seen in the standard categories used to describe research ... much design is transdisciplinary (and this) approach will cut across the discipline based categories used as the main basis for categorising research applications, and will be likely to be seen and treated as a misfit."

Susan Coldicutt, Head, Department of Architecture, The University of Adelaide Submission to the National Design Review

"Unlike many other fields, (design does) not have the empirical tradition of research funding from ARC sources and it is almost impossible to break into the established science/ engineering paradigms of the grant awarding organisations."

Cal Swann, Associate Professor School of Design, Faculty of Art, Architecture & Design, University of South Australia, Submission to the National Design Review

"As a result of its mis-placement in the Department of Education, Employment & Training discipline profile and lack of identity, design is generally accorded a discipline indice of between 1.5-2.0 where the science and technology disciplines operate at not less than 4.0. In effect design, as a nationally strategic discipline, operates at less than 50% of the resource level of most of the other so called ... strategic disciplines ... enshrined in federal education policy."

Assoc. Prof Tony Russell, School of Design, Centre for Teaching and Research in Design, Curtin University of Technology, Submission to the National Design Review

13.4.1 Research

A major design research challenge faces our universities. It is acknowledged widely that Design is inappropriately recognised in university research culture. In addition, industry support for research is difficult to obtain due to lack of Design awareness.

A commentary on this point offered the view that this was because of the absence of a coordinated strategy within universities, backed by industry, to develop a compelling case for greater spending on design research.

The design challenge universities face in part arises from difficulties in the definition of design research: design being seen as a way of doing research rather than as an object of research.

There are also difficulties ascribed to the methodology by which research funds are distributed.

It has been submitted that responsibility for this confusion rests not only with the government and universities. It has been attached to the design profession itself.

13.4.2 Funding

There is a widespread view that the weighting of design education funding in the total spectrum of university resourcing is inappropriate.

Among the outcomes of this situation were said to be:

- inability to attract and retain the most suitable staff
- excessive staff workloads resulting in more competent staff moving to professional appointments
- design courses having difficulty keeping abreast of technological and contextual developments
- under resourced teaching staff
- low post graduate numbers in design
- weakening effect on design research.

There is a danger that the lack of adequate funding will see teaching for design studies fall below industry requirements.

13.4.3 Educational structure & content

The demands and expectations placed on the education system to deliver what Design wants are wide ranging and burdensome and produce contradictory views from educators and industry.

There is, for example, anecdotal evidence that design graduates are not meeting the industry expectation that they contribute immediately on employment.

Design education in universities is said to be:

- too specialised
- not well integrated
- educational rather than vocational
- comprised of too many courses
- needlessly duplicating each other in the same cities.

Meanwhile, new disciplines are developing at the design interfaces: multimedia design, ecologically sustainable design, design management.

There was also divergent opinion among design educators as to the most appropriate educational methodology for Design.

Then there are vexed issues attendant to the basic training model adopted in Australia. National competency based training is an issue; according to some its standards do not reflect industry's needs.

And there is said to be conflict between the university and vocational sectors on competency based training.

"The place of design in the Australian contemporary moment needs to be registered as both the context of design education and its referential frame. This means a linking of understandings of
(i) cultural changes within the nation and its Asian reorientation;
(ii) the impact of environmental imperatives upon production, products, consumption and value systems (and) economic and technological change;
(iii) the need for new modes of relational organisation. These understandings should not be seen as additions to the curriculum but rather as means of its transformation."

Dr Tony Fry, Director
EcoDesign Foundation
Submission to the National Design Review

13.4.4 Teaching quality

There appears to be some difficulty in filling design teaching positions with Australians and there are reported difficulties in attracting good part time and full time professionals to teach design due to higher wages in the professions.

There is disagreement about whether this is receding as a problem as more graduates come through the education system and move into teaching positions. Some educators say it is; the design profession believes the situation is getting worse, not better.

"The major limitation I see in the national strategy of design education is the problem caused by the government's endorsement of competency based training (CBT). CBT is an outdated method of training that has been abandoned in most other countries. Modern educationists in Britain and the United States in particular have endorsed the principles and models of cognitive skill development which are supported by the modern research base. At a time when Australia is struggling to be internationally competitive, the CBT system does not capitalise on Australia's traditional creative strengths as a 'clever country'."

Dr Napier Roffey Mitchell,
Dean The KvB College of Visual Communication
Submission to the National Design Review

"The Design Institute of Australia is aware of major concerns in all capital cities about teacher/lecturer/ departmental head quality and especially the lack of success or experience in private practice of many teachers at university and TAFE levels."

Roger Simpson,
President
Design Institute of Australia
Remarks to the National Design Review

"Within design education, locally and internationally, we see the further emergence of design courses which aim to develop closer links with industry. We are seeing the integration of engineering, marketing, production, enterprise development and business management into the design process, to nurture new breeds of entrepreneurial designers who are capable of integrating user and designer objectives within the overall commercial realities of organisations or new ventures."

Sandy Walker,
School of Design
University of South Australia
Submission to the National Design Review

"A major obstacle to the establishment of better links appears to be lack of understanding of the value of good design by professional managers in industry and the support for good design by buyers for Australian retailers. In the longer term this should be overcome by the introduction of design into management education but this would take five to ten years to realise."

Harold Medd, Director Artists and Industry, Submission to the National Design Review

13.4.5 Accreditation

Throughout the research process undertaken by the National Design Review the issue of designers' credibility with the generality of end users emerged constantly. It has been proposed that this question of professional status and acceptability is driven, at least in part, by the unevenness of the training and qualifications of designers.

There are many ways of becoming a designer, one of which is to gain the title by sheer weight of experience, but, if the profession is to gain the acceptance it requires, more formal benchmarks must be established for the education and accreditation of designers.

One submission proposes that there should be a base level four years design qualification to earn the title 'designer'. This would be recognised by the award of a Bachelor of Design or an equivalent combined degree.

Where three year degrees were offered, they would not be described as Bachelor of Design but as, say, a Bachelor of Arts (ID) or Bachelor of Visual Arts. This qualification would be entry level to a further degree or to a professional training period.

13.5 Private providers

While vocational education in design is provided mainly by TAFE and universities, there is a significant level of provision by private institutions, particularly in NSW, although their quality is judged to be variable. Courses tend to concentrate in graphic design, advertising and fashion design.

13.6 On the job training

The provision of accredited, structured, on the job training has been limited in the design industry. It has tended to take the form of experiential learning in the workplace following the provision of formal vocational education and training.

13.7 Industry involvement

The involvement of industry in design education is regarded by professionals and educators as a vital issue, although there tend to be divergent views on the current state of development of such linkages in Australia.

One view is that design education in Australia has remained relatively responsive to the practices of a more traditional industrial and manufacturing culture but there is no general agreement on this.

The Design Institute of Australia has been pressing universities to include realistic work experience components into their courses and has offered to assist with placement.

14 Ecodesign

14.1 The role of design in ecologically sustainable development.

Among the great changes occurring in Australia, some of the most significant are driven by community concern for the environment. This is posing an enormous challenge to industry as consumer attitudes shift and purchasing behaviour is influenced. It is clear that environmentally aware companies are beginning to adopt an holistic approach to their business. Governments, also, are introducing more prescriptive legislation related to environmental issues.

Ecodesign design for an ecologically sustainable future is becoming a source of competitive advantage and is joining service and quality as a major factor influencing consumer behaviour. Design firms without environmental policies can hardly expect to be taken seriously by clients with well developed policies.

It now seems certain that global market forces will require Australian industry to adopt ecodesign and that, if there is not an appropriate response, future exports are likely to be affected significantly. As a result, a clear imperative for action exists in ecodesign. That said, ergonomics, appropriate materials and recyclability all part of ecodesign have long been included in Design's tools of trade.

We find that there is an acute awareness of the strategic importance of ecodesign amongst Australian environmental practitioners and academics but little apparent recognition by the manufacturing sector, small business and government.

There has been an uneven take up of ecodesign principles by industry and, while some leading companies have received some government support in ecodesign, in general its importance has not been recognised.

One reason for this is that ecodesign remains an uncomfortable fit across government ministries involving, as it does, environment, industry, education and arts and culture leading to fragmentation, competition and the lack of a unified view.

The main impediments to change are the lack of information about the benefits of ecodesign, the issue of short term returns and the lack of understanding of the need for culture change in this area.

Professor Chris Ryan submits that an examination of activity in the European context (and to a certain extent in the United States) suggests a significant reorientation of industry towards environmental problems and the idea of sustainable development.

This involves active development of new business strategies which place 'reducing environmental impact' at the core of innovative and competitive success. It is a change that has been described as "representing a substantial paradigm shift towards a new industrial ecology".

Professor Ryan comments on the "growing evidence of the internationalisation of this European `paradigm shift' through the effects of competition in the international market, through the promulgation of (multinational) company environmental policies and through the diffusion of research and innovation strategies.

"(Design is moving) towards something far more holistic, integrative and socially dynamic"

John Broadbent
In Post Industrial Design and its Educational Needs
Unpublished Paper

"Issues of environmental impact and sustainable development herald an enormous and significant reorientation of systems of production and serious implications for Australian industry and design services, research and education."

Professor Chris Ryan,
Director
National Key Centre for Design
Royal Melbourne Institute of Technology
Submission to the Design Review

"The nation's designers can play a critical role in improving industry's environmental record and they will do so at all stages o f the manufacturing process"

Susan Ryan,
Former Chief Executive
Plastics Industry Association
In Design - A Manufacturing Perspective Design Across the Training Curriculum Conference

"A number of major companies (in the USA as well as in Europe) have been investing substantially in new research, development and design programs aimed at `competitive repositioning' with respect to the environment. Perhaps the most important feature of this company activity is the progressive move from redesigning products for improved environmental quality to the redesign of the whole `product system'."

Elsewhere, Professor Ryan comments that "the redesign of manufactured products is just the first phase of an industry response which is moving towards some significant realignment of production, with implications for industry policy, design services, research and innovation strategies".

While much has been achieved internationally; Australia is said to be already significantly behind in ecodesign and this could lead to our companies being precluded from offshore markets if their products do not meet increasingly exacting requirements for environmental quality.

One explanation is that since, in general, Asian markets are not yet concerned about ecodesign, Australia has tended to lag. But, as Asia adopts appropriate environmental standards to enter and maintain European markets, Australia's clearest interest lies in accelerating an understanding and promotion of ecodesign.

Ecodesign issues are multidisciplinary and require often sophisticated teamwork. This can be difficult for small to medium sized businesses as networks do not exist in this area and mechanisms for consultation are poor. No real mechanisms exist to bring together expertise in ecodesign and information, resources and support are required.

The issue of specification of materials and systems in the light of eco design demands, is an ethical one. The responsibility for correcting misuse and abuse of the environment lies clearly with the specifiers. The rights and wrongs of the use of rain forest timbers, of toxins, of high energy in use systems and so on are clear, particularly given the availability of advice sheets and research data, eg. the RAIA now has environmental notes available to all its members to provide readily accessible material.

There is a need for each industry sector, through its relevant professional associations, to develop information and resources on materials and practices for its members benefit.

There is equally a need and a responsibility for design professionals to anticipate these trends.

The issue of responsible specification must be taken up by design professionals and not left to eventual enforcement by law.

15 The industry linkage

15.1 Linking supply & demand

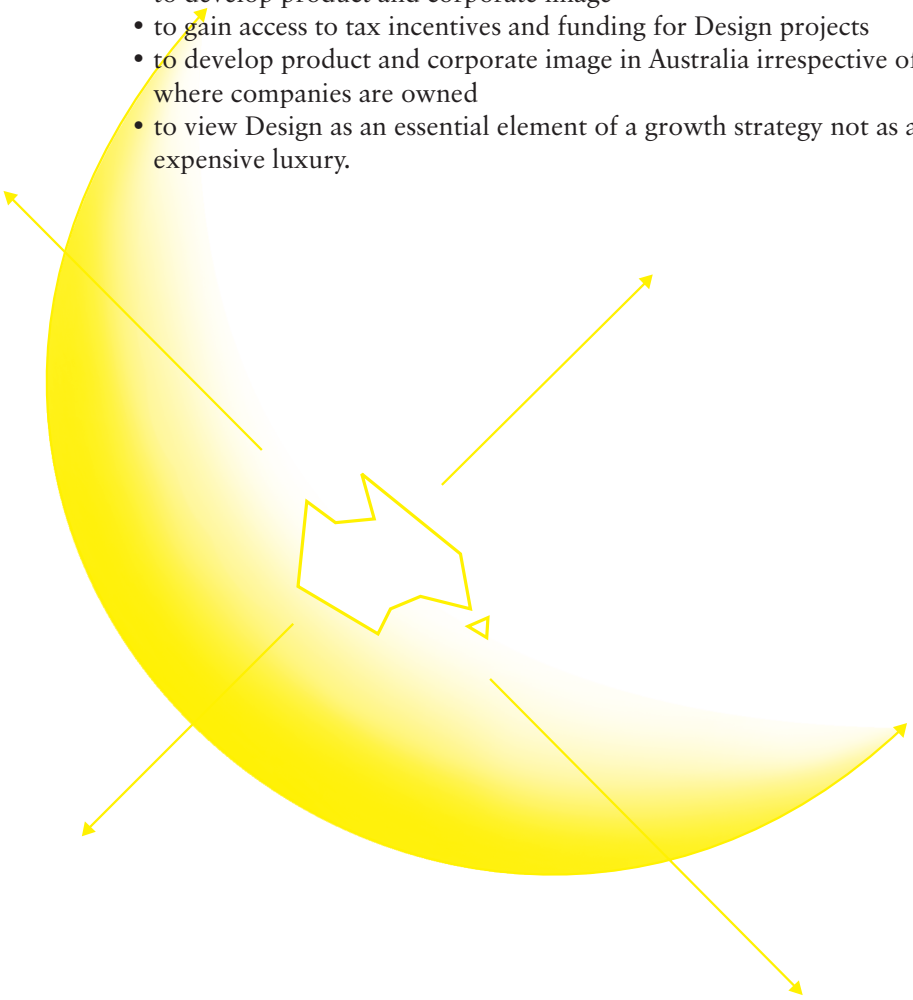
As the pace and intensity of international competition grows, there is increasing recognition that innovation underpins competitiveness both at industry and national level. The most significant management challenge is to create an environment in which innovation will flourish and be sustained.

The Australian Manufacturing Council and McKinsey & Co report The Wealth of Ideas (1994) found that Australia's "most successful and innovative firms use a range of linkages with customers, suppliers, research and development providers and other firms in their industry to enhance their performance and gain access to ideas".

Design is the basis of using the intelligence gained from these linkages to enable industry to translate the ideas into dollars.

The Victorian Department of Business and Employment has described a number of barriers to growth in industry demand for design services. It has identified a need for companies:

- to become more aware of the commercial benefits flowing from the strategic use of graphic and product design
- to understand how to strategically manage design of the product range and corporate image to ensure business goals are met
- to develop functional management structures allowing the design process to be fully integrated with normal business activities thus enabling fast and fully informed decision making
- to get to know customer attitudes, motivation and buying behaviour
- to develop knowledge of competitors' products
- to develop product and corporate image
- to gain access to tax incentives and funding for Design projects
- to develop product and corporate image in Australia irrespective of where companies are owned
- to view Design as an essential element of a growth strategy not as an expensive luxury.



"If our manufacturing industries are to be internationally competitive in the 1990s, then we must place design at the centre of development, production, management, distribution, services support and marketing. This means our designers will be as integral to the success of a product as the raw materials going into the production process and the workers operating the machines. "

Susan Ryan, former Chief Executive
Plastics Industry Association
In Design - A Manufacturing Perspective

Dividends from Design 5

BREAKTHROUGH DESIGN REDEFINES PRODUCT SECTOR

Manufacturer

Titan (BHP Wire Products)

Designer

Design Synergy

Rather than simply redesign existing cardboard cartons, exciting new recyclable, reusable plastic packs redefined the retail presentation of a generic product sector, resulting in 30% increase in market share for the manufacturer. Even after for tooling amortisation, the interlocking plastic packs are cheaper that the cardboard cartons they replace. As is often the case with breakthrough design, the designers identified the opportunity through their analysis of the marketplace in response to the brief, the client demonstrated confidence to support an extension of the brief and the resultant development process.

15.2 Manufacturing

Most successful manufacturers display six consistent criteria for success: entrepreneurial leadership, capital availability, strong marketing skills, excellent management, good teamwork and the use of Design.

It was submitted to the review that:

- few benchmarks exist for the design function in manufacturing
- the cost of design in manufacturing tends to be small when compared with the costs of product development, marketing and support
- effective design decreases risks for manufacturers
- design in manufacturing is an implicit and not an add on value.

There is evidence, derived from the views of both marketers and designers, of a lack of marketing knowledge among designers and a lack of understanding of Design by marketers and manufacturers. At one level, Design can provide an important marketing edge and, at another, marketing offers opportunities for Design through promotion, publicity, branding and corporate identity.

Despite this promise, there is a view that there is some mistrust, and a lack of well developed relationships, between designers, marketers and manufacturers.

Designers and manufacturers have high expectations of each other. Expectations that, perhaps, are voiced too infrequently. One result is a proliferation of communications and awareness problems between the pursuits, and these are much commented upon. Small to medium sized enterprises tend not to understand how to access design services and tend not to understand the difficulties in the design process. Nor do some manufacturers know what they want to achieve through Design.

Often the designer is not involved early enough in a process to provide benefit or for long enough to generate worthwhile outcomes. If Design is not linked closely with the production process, the manufacturer's desired outcome may be compromised.

Some designers are not familiar with the 'language' of commerce and with emerging management techniques. Design is impossible without an understanding of financial data and without an awareness of the functioning of a company. For a well designed product to emerge, there should be an understanding of Design, the financial aspects of the company and the processes of the company.

There is a strong call for manufacturers to be more aware of the design function and for designers to be more aware of commercial reality.

"There are excellent manufacturers in Australia... We need to develop closer links between good industrial designers and these manufacturers. In our company, it starts with the design input. Our designers bave equal footing with the commercial manager (and) production and marketing teams. How else can it be done properly?"

Arthur Carr,
Chief Executive Officer
Sebel Furniture Ltd
Comments to the National Design Review

Dividends from Design 6

AUSTRALIAN DESIGN INNOVATION ADDS VALUE

Manufacturer

Philips Electronics Australia Limited

Designer

Blue Sky Design

This multinational company used Australian design skill to create identifiable television product benefits which successfully appeal to consumers in direct competition with cheaper generic options. This Australian design team have had a long association with Philips in the development of their product range whilst working in the Philips Singapore Research Design and Development Headquarters. The designers have been key members of a multi-discipline team including electronics, engineering, marketing specialists.

The enhancement of Design in Australian manufacturing was said to face these difficulties:

- some manufacturers do not know what they want to achieve through the design process
- a lack of appreciation of the substantial benefits that can flow from design
- difficulties in selecting the right designer for the job
- designer not involved early enough to provide the most benefit
- communications problems between designers and manufacturers
- cost of design as an impediment
- fear of failure.

Manufacturers also report problems in relation to:

- government regulation inhibiting design.
- slow lead times inhibiting the use of new design
- cloning detracting from opportunities for innovation
- the bureaucracy being perceived as an enemy of design innovation
- Design being fragmented and not customer oriented
- reluctance to involve the community and other stakeholders in Design thus isolating designers from a more meaningful role.

The Government presumably sees its role as catalytic: as a facilitator of information flows and linkages but not as a participant in any role related to a commercial investment decision.

Government support, it has been suggested, would thus be restricted to:

- providing information and raising awareness
- transforming information in a tangible way through demonstrations etc
- facilitating access and linkages
- assisting to build efficient coordination and industry cohesion.

15.3 Services

The services sector is increasing its share of global exports (from 18% in 1985 to 21% in 1991) and represents an area of considerable potential for increases in export volumes and future job growth for Australia.

The sector now accounts for 20% of Australian exports and 70% of gross domestic product is a growing part of the economy.

Service exporters are typically small, innovative and flexible. The more successful tend to take a strategic and longer term view of their business and markets.

The main issues for the service sector in relation to Design were identified as:

- better information and education in the sector about the role of Design and designers
- more support for Design through investment in the form of seeding funds and grants
- greater acceptance of Design by the service sector through designers attaining appropriate qualifications and accreditation.

"There is a disconnect between the motivations of many providers of product design services and the aspirations of most manufacturing companies. For example, many product design professionals are not cognisant of team based concurrent engineering approaches to product design (involving everyone in planning to get the process right). There is a perception among many small to medium manufacturers that product design professionals add little value beyond "art" in the product development process. The industrial design community has a poor image with regard to design for manufactured assembly issues."

Ian Haynes
Queensland Manufacturing Institute
Submission to the National Design Review

"While many manufacturing companies recognise the need for industrial design and wish to utilise it during new product development programs, they find that it is not readily funded by the existing taxation relief or innovation programs. For Australia to benefit from research and development, equal emphasis must be placed or, commercialisation and maximising market acceptance of new product development. Government must develop programs which enable our manufacturers to achieve export success. To do this industrial design must be recognised as a funded activity."

John Brown, former Councillor
Australian Academy of Design
Submission to the Research and Development Industry Commission

15.4 Information technology

One of information and communications' newest forms is summed up in the term 'interactive multimedia': digital technology that integrates within the same system photography, text, graphics, voice, sound, video and animation. Together with the internet, virtual reality, interactive television and other innovations, multimedia is creating a whole new industry for Design.

A new information industry is emerging. Just as CAD/CAM was important to the manufacturing industry in Australia, 3D modelling, animation, digital imaging and multimedia authoring tools will be of equal importance to the booming information technology industry.

The Australian software industry is made up largely of small entrepreneurial companies who tend to ignore the risks associated with property protection; thus ensuring innovative behaviour. (Although, it should be added, because of software protection difficulties, some companies do not innovate but use old software methods.)

Australian software developers tend to be technology focused and inward looking, a trend that is exacerbated by the information technology software field becoming more complex as content and delivery mechanisms converge.

The issue of impending international information technology standards CALS (Continuous Acquisition and Life Cycle Support) and STEP (Standard for the Exchange of Product Data) is vital to the design professions and warrants a separate initiative. Both standards are vital elements in the development of electronic commerce. Australia has a unique opportunity if it is able to pick the best proprietary computer aided systems and processes and then standardise their application, instead of remaining with the present proliferation.

Leading automotive and whitegoods product manufacturers internationally have rationalised their systems, facilitating reduced product development time and cutting costs by 20% to 30%.

International corporations some years ago realised the shortcomings of haphazard computerised design strategies and decided to limit the number of computer systems within their organisations. They also decided to use only proprietary products, not create unique new ones that require translation.

There is evidence that many design professionals and teachers in Australia are not able to keep up with this rapid pace of innovation and change. Because of the rate of advancement of new information technologies, there is a real lag in the capacity of design professionals and universities to keep abreast of these rapid changes.

There is a need for greater collaboration between industry and educational institutions for continuing training and awareness. This is a high priority area for catch up in order to ensure improved competitiveness.

"New tecbnologies are transforming not only the design activity itself but also the relationships between that activity and other parts of the production cycle."

John Broadbent
In Post Industrial Design and its Educational Needs

"Our companies frequently mention two major obstacles to local design, viz, the use of different computer assisted design systems which are not able to exchange data between car manufacturers and suppliers; and the long lead times, about double overseas benchmarks, for the design and production of tooling."

R J Copley, Executive Officer
Federal Chamber of Automotive Industries, Submission to the National Design Review

Dividends from Design 7

DESIGN IS FUNDAMENTAL TO STREAMLINING OPERATIONS

Manufacturer

Ford Motor Company Aust.

Designer

Ford Design Division

Ford has placed an enormous reliance on its internal design resources to radically streamline its manufacturing operations, improve quality, and dramatically upgrade their car range. A clear demonstration of their new commitment to design, was Ford's decision to relocate design, production and assembly together in the same building. Standardisation of computer aided systems and enhancement of multi-disciplinary team approaches were include in the overall redefinition of design in the Ford Australian Division

If Australia is to take advantage of, and be a force on, the infobahn, it is imperative that we support the new generation of designers who will be the pioneers of this form and the creative force driving Australia's economic future.

Among the problem areas identified in educating for the application of information technology to Design:

- lack of teaching expertise on new technologies
- lack of equipment to enable colleges to keep up with constant hardware and software changes
- students requiring more access to equipment
- more teaching emphasis on the new technologies that are essential in the rapidly transitioning information industry
- overseas exchange programs or scholarships for students of Design.

15.5 Transport

The transport group, assembled to advise the National Design Review, attributed the Australian transport industry's international competitiveness primarily to leading edge design and the capacity to identify and develop niche markets.

The group identified the lack of 'patient' (le, stable, long term) capital as the greatest single impediment to fully maximising their high design capabilities and their established reputations for producing world class products in terms of quality, competitive costs and establishing close relationships with customers. The revitalisation of Australia's manufacturing base would not be achieved so long as investors and financiers remained fixed on short term profitability.

15.6 Building & construction

There is a view in the architectural profession that, while local councils, planning authorities and developers of housing estates are increasingly demonstrating concern and responsibility in the quality of design of subdivisions, infrastructure and landscaping, the design of the most important elements, the houses, is left to project builders and drafting services. Only 3% of Australian homes are designed by architects and, overall, the profession is involved in the design of less than 40% of Australian buildings.

The real responsibility for the state of our cities and towns does not just lie with architects. The planners administer development regulations; the architects and engineers interpret their client briefs; but the real decision-makers are the building owners as they set the brief of time, cost and quality for any given function. In this light, the direction of design education must embrace the property developers and building owners, for these are the clients and hence the most potent decision makers.

The design process in the built environment is complex. Most central business district buildings involve multi disciplinary skills more than six different engineering skills, architects, urban designers, landscapes, interior designers, acoustic specialists, traffic planners and so on. Building financiers expect and demand supplementary expert checks and it is not uncommon for more than a dozen firms of design consultants to be involved. As a result, new groupings of multi disciplinary professionals have been formed to represent and coordinate professional development. The Australian Council of Building Design Professionals is one such body.

"I have been running seminars and lectures for the Australian Graphic Design Association on multimedia since 1991. The series was aimed at design professionals to inform them of the coming changes that are now becoming a reality. My observation of the reaction is scepticism; that they viewed, in general. that multimedia would not be part of their business. Therefore, I see that we must support the young blood of the design profession. They are vital to the future of this new industry. "

Wayne Rankin,
Director
Rankin Bevers Design
Letter to the National Design Review

"The design objectives for housing are centred on construction profitability and kerbside appeal, rather than sustainable development, energy conservation, orientation and occupier and community amenity."

Michael Peck,
Chief Executive
The Royal Australian Institute of Architects
Submission to the National Design Review

Dividends from Design 8

PROCESS ENGINEERING - ADDED VALUE BUILDING

The T40 Research Team comprising Fletcher Constructions, SJPH Design Partnership, CSIRO, BHP and CSR demonstrated that a reduction of 40% of project time and associated costs can be achieved through a methodology which is based on agreed common goals, unified task allocation, partnering with local government, a workforce commitment through empowering and new tender processes.

"There is a reliance on overseas patents and designs instead of the incentive to invent a unique Australian design. If the Australian housing construction industry is to secure overseas markets, a new approach to design will be essential. The product will need to suit the particular markets. It is the design process that will enable this to happen."

Heather Howes, Executive Officer
Australian Council of Building Design Professions
Submission to the National Design Review

"Superior design can significantly facilitate Australia's occupational health and safety performance. Design specifications should always be developed with health and safety as one of the criteria. This will enhance our quality of life and boost our market position."

Anne McLean,
Senior Project Officer
Industry Development Branch
Worksafe Australia
Submission to the National Design Review

The newer disciplines of project managers and design managers undertake interpretative roles between clients and designers and add further complexity to the design process. The issue of professional responsibility becomes blurred as the traditional roles are diluted with part services and joint consultancies. The liability of professionals is being reviewed and, with the passing of the Professional Standards Bill in New South Wales, the application of limited liability for professionals is now in place.

There is no regulatory requirement for buildings to be designed by architects. Local authority controls are aimed more at technical procedures and conformance rather than issues related to quality of Design.

Although the performance orientated Building Code of Australia has been a valued contribution to reform, additional research is still required. The new private sector based Fire Reform Centre, for example, is researching further reform and added efficiencies in construction. Centres of key research need to be funded to advance a continuum of reform.

Current government funding of research and development in the design professions and construction industry tends to exclude design consultancies, the rules of application favouring larger corporations. Government tendering procedures for design consultancies are inefficient in terms of the cost and time involved in preparing proposals and can stifle rather than encourage innovation.

Design must be seen as an investment. Project financing provisions must allow for a level of design input which will see the project fulfilling all of its objectives, not only capital cost but energy and maintenance performance.

Design and technical documentation add value. Design and documentation take skill and time which must be recompensed. It is inefficient to encourage tender competition which results in inordinately low consultant fees which end up at a level precluding excellence in Design.

Competitions are a recognised source of innovation and Australia has achieved important cities and buildings through this process (eg, the design of Canberra, the Sydney Opera House and the new Parliament House in Canberra). At Commonwealth and State levels, governments need to review their policy on building procurement and to expand the competition process.

Governments worldwide recognise the importance of Design through the development of national design strategies. The Royal Australian Institute of Architects has proposed such an approach, based on the Dutch model, to the Commonwealth Government.

15.7 Occupational health & safety

Best practice in Design can only exist if it focuses on people and builds in health and safety considerations.

Design initiatives and health and safety issues are facing a similar challenge in that both have been seen as separate from the day to day operations of business, rather than as integral components of sound management.

Managers who do not think strategically do not plan effectively and the organisations they manage will not be in a position to realise their full potential.

Section V

The Design Challenge

16 The design challenge

16 The Design challenge

Australia faces a very simple but fundamental challenge to its economic and social prosperity.

It must sell more of its goods and services in both domestic and export markets or risk losing control of its economic sovereignty and future.

Sales can be achieved only through the development of new products and services that excel in meeting changing market needs and have a competitive advantage relative to the products of competitors.

Maintaining best practice production capabilities may not be enough to meet this challenge as our competitors move in the same direction but often with lower cost structures, larger scale or other advantages that provide them with a competitive edge.

Australia needs to secure strategic advantage through providing innovative solutions to the needs and desires of customers here and overseas.

Design will be fundamental if Australia is to meet this national trade challenge because, as detailed in this Report, it is Design that provides the commercial basis for creating and adding value, for enabling the successful commercialisation of innovations and, ultimately, for providing competitive advantage.

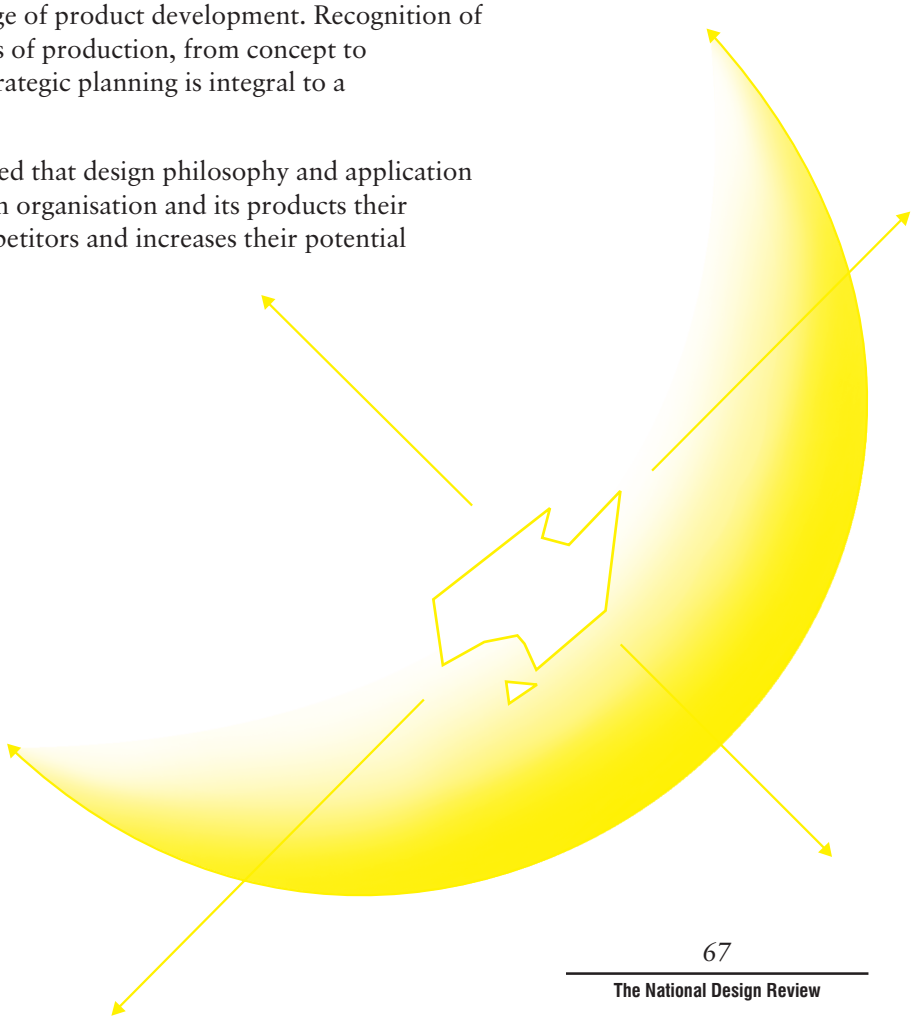
If Australia is to meet this economic challenge, designers and industry need to work together in productive partnership. The integration of Design into every aspect of the creation of a product or a service is central to this.

Innovation is necessary within company structures and integrated from the conceptual to the manufacturing stage of product development. Recognition of the importance of Design at all levels of production, from concept to realisation and from shop floor to strategic planning is integral to a comprehensive approach.

In business it is increasingly recognised that design philosophy and application is an essential ingredient that gives an organisation and its products their signature, sets them apart from competitors and increases their potential marketability.

"One of the major economic and industrial challenges facing Australia is to make its products and services competitive in world markets... It is crucial that we move towards developing value added or skill based products and services if Australia is to avoid having a seriously reduced capacity for economic growth and prosperity. Design, being a key mechanism in adding value, has a crucial role to play in this process of sustaining and expanding Australia's economic viability."

Kate Doyle, Acting Chief Executive
Arts Training Australia
Submission to the National Design Review



Section VI

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18 Submissions to the Design Review

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Alcatel Australia, P M Conrick
Aptech Australia Pty Ltd, Carlton Wright, Senior Consultant
Arts & Industry Ltd, Harold Medd, Director
Arts & Industry Ltd, Valerie Austin
Arts Training Australia, Kate Boyle, A/Chief Executive
AusIndustry
Austrade
Australia Council for the Arts, Michael Lynch, General Manager
Australian Chamber of Manufactures, Robin Russell
Australian Commercial Galleries Assoc Inc, Geoffrey Legge, Hon. Secretary
Australian Consumers' Association, Norm Crothers, Technical Development Manager
Australian Copyright Council, Libby Baulch, Executive Officer
Australian Council of Building Design Professions Ltd, Heather Howes, Executive Officer
Australian Graphic Design Association, John Nowland, National President
Australian Information Technology Society, L W Riches, Secretary
Australian Institute of Landscape Architects, John Phillips, Executive Director
Australian Institute of Landscape Architects, Michael Spackman, President (NSW)
Australian Manufacturing Council, Michael Whitehead, Senior Project Officer
Carroll O'Dea Solicitors, Noric Dilanchian, Intellectual Property Department
Coates, Stephen
Codan Pty Ltd, Bob Potter, Customer Service Manager
Crafts Council of South Australia, Sue Avery, Executive Director
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Curtin University of Tech. - School of Design,
Centre for Teaching and Design, A/Prof Tony Russell
Department of Business & Employment, Caroline Harris, Manager - Design Programs
Design & Industry, Murray Hunter
Design Centre Consultancy, Gary Cleveland
Design Editorial Pty Ltd, Colin Wood
Design Institute of Australia, Jill Stansfield, President Victorian Chapter
Design Institute of Australia, Roger Simpson, Federal President
Dixon Design & Development, Michael Dixon
EcoDesign Foundation, Dr Tony Fry
Engen Institute Inc., William Hollier, Director
Enterprise Skills/Information Strategy Planning, Ros Verity/ John Legge
Fashion Industries of Australia, Amanda J Brettargh
Federal Chamber of Automotive Industries, R J Copley, Executive Officer
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Furnishing Industry Association of Australia, Rodney Sheaves, Director
General Motor Holden's Australia, Philip Zmood
Harry Sebel Consultancy, (The), Harry Sebel
Housing & Regional Development, Ministry for
Housing Industry Association Ltd, Bob Egan, Director Major Projects
Iconoclast Consultants, Don Bailey
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International Specialised Skills, Carolyn Bourne, Director

Inventors Association of WA Inc, R D Mengler, Hon. Secretary
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KvB College of Visual Communication, Dr Napier Roffey Mitchell, Dean
Litter & Recycling Research Association, Susan Crick, General Manager
Madden, R G
Metal Trades Industry Association, Peter Morris, Chief Economist
Museum of Contemporary Art, John Reid, Chairman
National Association of Visual Arts, Anna Ward, Executive Director
National Printing Industry Training Council, John Jarvis, National Executive Director
National Safety Council of Australia, Diane Speakman
PHD Development Pty Ltd, Paul S Huxtable, Managing Director
AMPICTA, Bryan Dwyer, President
Queensland Manufacturing Institute, Ian Haynes
Rankin Bevers Design, Wayne Rankin
Retail Traders Association of NSW, Bill Healey
Royal Australian Institute of Architects, Michael Peck, Chief Exec. & National Director Practice
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University of Melbourne, School of Environmental Planning, Professor David Yencken
University of South Australia, School of Design, Faculty of Art, Architecture and Design, Professor Cal Swann, A/Professor & Co ordinator of Post Graduate Studies
University of South Australia, A/Professor Cal Swann
University of Sydney, Department of Architecture, Dr Keith Billings, Chairman Undergraduate Program Committee
University of Western Sydney, Department of Design Studies, Tim Marshall
Victorian Guild of Furniture Manufacturers, Graeme F Cock, General Manager
Victorian Textile Clothing & Footwear Ind. Training Board, Gay Gallager Executive Officer
Walker, Sandy
Warren Centre for Advanced Engineering, Professor T W Cole, Executive Director
Watermark, Richard Smoorenburg
Wise Technology Management, John Wise
Worksafe Australia, Industry Development Branch, Anne McLean, A/G Senior Project Officer

The Competing by Design Review was commissioned by the Government through AusIndustry. Enquiries regarding national policy response to the Review should be made to AusIndustry.

The Australian Academy of Design was formed in 1990 to assist Australian enterprise in developing world class products and services through promoting the application of the design process. In 1993 the Academy formed an association with the Australian Quality Council which provides management and administrative support for the Academy's activities.

The Dividends from Design case studies which appear in this report are based on papers presented to the Innovation by Design Conference in October 1994. Further details on these case studies may be obtained from the Australian Academy of Design.