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Design: Potential for British Columbia's Wood Products Industry

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Introduction

British Columbia's wood products industry is facing many challenges which require it to change and innovate to remain competitive. The traditional laws of markets and competition for this industry are being challenged by global phenomena such as emerging economies, ecological issues and even social sustainability.

The value of international trade in value-added wood products is growing at five times the rate of commodity wood products. The value-added industry must become the engine of growth for this sector. In order for this industry to have greater export and profit potential, it will need to embrace innovation and product design.

It could be argued that knowledge and technology are fast becoming commodities, and that the creative use of knowledge and technology available through the use of design, offers the remaining competitive advantage. While professional product design has the potential to advance the value-added wood product industry by improving products and processes or creating new ones, it has been underutilized to date.

This paper seeks to encourage a broader understanding of design and its potential in the context of the BC wood products industry. It examines the current situation here and abroad in both wood and other industries. Hopefully, this paper will inspire key industry stakeholders to include design in any strategy to enhance industry performance.

Design Backgrounder

The word 'design' is used in this paper to refer to the process of identifying and creating specifications that optimize the function, appearance and value of products and processes in order to generate commercial advantage. Design services can include the determination of the materials, construction, mechanisms, shape, colour and surface finishes for the product, taking into consideration human needs, safety, market appeal and efficiency in production, distribution, use and maintenance. The profession generally associated with this work is industrial design (or product design). This field emerged more than a century ago in response to the division of labour in mass production, where the conception or planning of an object was separated from its manufacture.

The following are some of the unique and rather intangible skills often associated with the design professional.

- The knowledge of materials and manufacturing processes and the ability to research the unknown.
- The ability to understand the context or circumstances of a design problem and frame them in an insightful way.
- The ability to work at a level of abstraction appropriate to the situation at hand.
- The ability to visualize solutions and communicate them through models or drawings.
- An approach to problem solving that involves the evaluation of multiple alternatives.
- An understanding of ergonomics and the ability to translate this knowledge to create user-friendly products.
- The ability to establish purposeful relationships among elements of a solution and between the solution and its context.
- An understanding of aesthetics and the ability to use form to embody ideas and to communicate their value.

The following are some of the tangible outputs of the use of design in a manufacturing situation.

- Products that can sustain a higher margin due to differentiation and originality.
- Access to markets that are more progressive.
- Increased credibility in the marketplace.

- The development of products or services that are carefully aligned with the intended market.
- Sketches, mock-ups and prototypes that concretize new products and can facilitate marketing and sales efforts.
- The development of products that have a high level of user-friendliness, which translates into repeat customers.
- The development of products that have an intent or idea that gives them an emotional appeal that they would otherwise not have.
- A product development process that considers sustainability to ensure that longer-term social, environmental and economic factors.
- A product development process that is efficient and can respond to today's short product life-cycles and consequent need for short lead times on new product introductions.
- Products that are efficient to manufacture
 - standardization to reduce number of parts
 - assembly is foolproof
 - reduced need for high tolerances
- Products that are designed for the ease of servicing.

Typically, mature manufacturing companies fall into two categories with respect to their use of design. They can be described as either having innate design or acquired design. In the former, design is a core competency from the company's inception. In the latter, design has been integrated at some point in the growth of the company when it was deemed necessary.

In the case of manufacturers that have not yet integrated design into their product development process, design activity tends to be led either by the engineering/production department or the marketing/sales department. These approaches are becoming less and less effective in today's competitive, fast-changing markets. Approaching product development from a technological perspective tends to result in highly engineered products that lack differentiation and/or character. When designers interface with engineering, products have a clear intent and this intent is retained through the process of engineering. Approaching product development from a market-led perspective can miss opportunities to capitalize on emergent market needs (sometimes the need creates the product, and sometimes the product creates the need). The creative process of design can generate novel, unexpected solutions which augment the typical marketing perspective.

By integrating design into the product development process, design activities interface between technological issues and the demands of the market by developing product and process solutions that are highly responsive to both. It allows manufacturers to better match market opportunities with manufacturing capabilities, thereby maximizing the impact of product development efforts.

In order to achieve this, designers carefully weigh the various factors involved in product development to arrive at the most optimized and appropriate solutions. For example, designers must find the optimal balance between reducing the material costs of a new product and the almost inevitable resultant loss of durability, or increasing visual appeal at the cost of user-friendliness, and one that is becoming increasingly important, the balance between simplifying and reducing manufacturing complexity and making it too easy to knock-off.

Design thinking and procedures are also valuable at the strategic level to businesses. Design acts as an efficient tool to inspire and manage change and innovation, and it also encourages cross-disciplinary communication.

Proof of the Benefits of Design

The economic benefits of design are difficult to quantify since its effects are hard to define in isolated terms. As a result, its benefits have been difficult to prove and, until recently, advocates of design have relied mainly on qualitative case-study exemplification. Recently though, increased interest in the design industry has led to studies that provide quantitative evidence of the benefits of design. The three studies outlined below provide some of the most convincing data.

The World Economic Forum's 'Global Competitiveness Report 2001-2002' provides a very compelling case for design as it indicates a clear, linear relationship between the overall competitiveness of a country and its effective use of design. The basis of the report is a suite of indexes that measure a range of factors including the use of design (broken into extent of branding, capacity for innovation, uniqueness of product, product process sophistication and extent of marketing) as an input to business that influences competitiveness. All top 25 countries scored high in design and all countries but one that scored high in design were in the top 25.

The Design Council in the UK has also recently completed a study done over the past ten years (1994-2003) which showed that companies identified as effective users of design outperformed the UK FTSE 100 index by 200%. The authors of this study believe that it offers the 'first conclusive evidence for the relationship between the effective use of design by corporations and an improved share price performance and therefore greater shareholder returns'.

The National Agency for Enterprise and Housing commissioned the **Danish Design Centre** to conduct a survey with the aim of identifying and documenting the macroeconomic effects of design, i.e. examine the given economic effects of employing professional designers by Danish companies. This survey was conducted over a five-year period and was based on 1,000 phone interviews with private Danish companies. The study concluded that "there is a marked correlation between the use of design and the economic performance of companies and subsequent macroeconomic growth. Furthermore, it is apparent that companies where design is a core issue and which purchase design services both internally and externally perform better." Specifically, Danish companies that purchased design registered a total increase in their gross revenue that is 22% above the average growth in gross revenue.

The Global Perspective

Several nations and regions have been proactive over the years in promoting the use of design. Those countries or regions which have invested heavily into the promotion of design are now reaping the economic rewards through competitive advantage. The strategy employed by these regions to capitalize on the use of design in business provides us with examples of the benefits of design, and methods to encourage better use of design. This section looks at industry wide design promotion and then at design promotion and activity specifically in wood product industries.

Design Across Industries

The global interest in design has risen dramatically in the last 5 to 10 years. The factors contributing to this include; intensified competition, proof of the benefits of design; more demanding consumers; and increased environmental awareness.

In most advanced economies of the world, design has recently been moved to the mainstream of policy agenda, and many countries have very involved national design policies. These policies look at design promotion in a very broad sense. 'Design' tends to include, but is not limited to, graphic design, interior design, architecture and industrial design. These policies are quite similar in many ways, emphasizing design as a strategic tool for economic progress and improved competitiveness, as well as its role in improving the quality of life. They are mainly funded by government, although industry, educators and researchers play a crucial role in planning and implementation. The formation of design policy and design promotion is affected by the history, political orientation and culture of the country in question. The targets of design promotion are the general public, and the public and private business sectors.

Summaries of design policies from Finland, Sweden, Denmark, Norway, Estonia, Italy, the United Kingdom, Germany, Ireland, Australia, New Zealand, USA and Korea, can be found in **Appendix I**.

The chart below describes typical design policy objectives and ways of achieving those objectives.

Objectives	Methods of Implementation
Economic <ul style="list-style-type: none"> improve business competitiveness make the design sector internationally competitive 	<ul style="list-style-type: none"> promotional, educational, or financial efforts targeting industry and businesses
Educational <ul style="list-style-type: none"> improve the quality of design education and design services improve the integration of design into business 	<ul style="list-style-type: none"> professional development for the design community design management education for managers and engineers
Creating a Cultural Identity <ul style="list-style-type: none"> create and brand a national image 	<ul style="list-style-type: none"> national and international exhibitions
Improving the Quality of Life <ul style="list-style-type: none"> improve environmental design use design for social value for the general public 	<ul style="list-style-type: none"> promoting and rewarding environmental solutions promoting the use of design in public spaces and services

Quantitative Results of Design Promotion Efforts

- According to the **British** Design Initiative, the income of design consultancies from overseas fees rose during 2002 from £1 billion to £1.4 billion.
- The **Korean** government's efforts have resulted in high quality consumer electronics which are enjoying international success. Samsung was ranked 5th in the world in generating new patents (behind IBM and Canon) in 2001.
- In **Denmark**, between 1997 and 2002, the number of companies who used external design consultants in developing and designing new products increased from 30% to 50%.

- In **Ireland**, between 1999 and 2003, there was an increase in revenue from design consultancy from IR £230 million to IR £500 million.
- By applying a design-focused strategy within an environment made conducive to innovation by government policies, **Finland's** Nokia has grown to be the world's largest supplier of mobile phones with a share of nearly 40% of the world market.

Salient Points from the Data on Global Design Efforts

- Design efforts bring value in two ways; at the industry level, as improvement of commercial outcomes; and at the societal level.
 - Most nations focus on measures that use design as a tool to make business more competitive but some countries, like Denmark and Sweden, also stress measures to improve quality of life and welfare through design. These countries believe that to be successful, design policy needs to be thought of first and foremost as a cultural endeavor, and that once a reputation for cultural distinction has been established, national economic benefits will flow.
- Most countries see design as an important tool for business success, but some nations (most notably the UK) include efforts to promote the design industry itself as an export service.
- Some countries, like Ireland, actively encourage using design to create a 'unique and distinct' national image that can be branded. In other countries, the act of explicit cultural branding seems to be less of a policy issue. It is understood that this will continue to happen in a less self-conscious manner for those nations with established design cultures (i.e. Scandinavian Design).
- Nations which have had long-standing design policies (Denmark, UK) focus significant effort on improving design capability through advanced research. Design, a relatively new field, can benefit immensely from such research.
- Where design policy resides in government varies, sometimes it is within ministries of culture, in trade and export offices, in the area of business development, but there is a trend for design to move to R&D and innovation strategies.

Good Practices from the data on Implementing Design Policy

- In order to successfully implement a design initiative, strengthening coordination and cooperation is needed first. Design initiatives are most successful when business, the design community and government are all equally invested.
- There is a distinct correlation between efforts put into design, at the national level, and the economic benefits that come from it.
 - All nations or regions that have developed a significant 'design culture' have also had large scale 'campaigns' to promote the use of design.
- Successful policies tend to involve a sustained and significant effort. They tend to have long-term goals that are about 5 years in scope. After 5 years, the policies are re-evaluated and re-worked to reflect the current context.
- The two areas of design that provide the most immediate economic advantage are Industrial Design (or product design) and Graphic Design (design of promotional materials).
- It is important to focus actions on communities of enterprises rather than single enterprises.
- Activities that allow companies to 'touch' and 'try' design rather than talking about design are more successful.

- Design strategies are more successful when design capabilities are viewed as being integral across the entire value generation cycle as opposed to an 'add-on' to style a product. Design 'applied' to business will not be successful.
- Design promotion efforts work best when they simultaneously address the importance of design management and the use of a design professional.
 - Resolving when and how to use design is a decision that is rarely made by designers; it is usually up to managers, but very few managers are trained to manage the design process. Since the main decision-makers in the design process are non-designers they need at least a basic understanding of the potential of design and how to get the most out of design efforts.
- The role that design can play in facilitating innovation in R&D and commercialization of R&D is being recognized. If design is introduced at an early stage in R&D, cutting edge technology is more likely to succeed in the market. Integrating a design perspective will assist in:
 - identifying and bringing to life many possible applications for a new technology;
 - connecting applications closely to the needs of end-users and markets or generally 'humanizing' technology;
 - demonstrating the potential of new technology, thereby providing credibility for investors, customers, suppliers and manufacturers;
 - anticipating future markets and trends.
- Design strategies are more successful within an environment made conducive to innovation by government policies.

Design in Wood Product Industries

Design, as it relates specifically to wood products, is a relatively new area of interest. Design is more readily embedded in newer industries such as IT (Information Technology) or the automobile industry. In fact, the gap between the wood products industry and design has been notoriously large. A study done in Norway in 1996 compared various industries on their use of design in product development and discovered that the metal product industry was three times more likely to use design in their product development than the wood product industry.

However, several nations with sizable wood and/or furniture industries have begun to address this issue by including design in their technology and/or marketing based wood products organizations. These organizations either draw on the expertise of existing design organizations through strategic partnerships or integrate design expertise into their own organizations. Much of the activity is specific to the furniture sector, since this sector is more obviously tied to fashion and consumer preferences. However, the benefits of design in more industrially oriented sectors are also starting to be recognized, where design activities focus on things like material exploration, finding new end-use applications, issues of sustainability and the user-experience.

Activities related to design in the wood products industry can be categorized into three areas; those that educate or advocate about design, those that facilitate the use of design by manufacturers and those that involve research.

Wood Product Design Education/Advocacy

In order to advocate the use of design to industry, organizations often put on seminars or workshops to demonstrate what design is and how they can utilize it. Publications that document case studies are often made available to industry through association work. In some cases, high profile spokespeople are used to promote design.

Encouraging public purchasing of local wood product design is an effective way to promote design. Many countries showcase their wood products in public places like airports and parks.

Probably the most widely used method of promoting design is through exhibitions and competitions. An example of this was during the Lillehammer Olympics in Norway. A competition was held to provide the commercial seating for a particular venue. The winning submission was highly publicized and was subsequently specified in Nagano, Japan and Atlanta, Georgia. When appropriately orchestrated, these events have immense impact, although the impact takes time to manifest itself direct economic success. Design competitions and exhibitions reward excellence in design, increase

the visibility of wood products and help to create a more positive image of the industry as a whole. These events tend to be highly collaborative in nature. Below are some examples of successful wood product design exhibitions and competitions.

The **'Walk the Plank'** exhibition in Denmark is an annual event that showcases innovative design using local wood species. It is the result of a collaboration between wood design students and wood manufacturing students. The resulting prototypes are auctioned online with proceeds going to further new product development in the furniture industry.



Photo source: www.walktheplank.dk



Photo source:
www.thedesigntrust.co.uk
Designer: Lynn Wilson

The UK, in an attempt to move the aesthetic of pine and spruce from the traditional *'country look'* to a new paradigm, held an exhibition called **'Pining for It'**. This exhibition was held at and sponsored by retailer Purves & Purves.

Design has been used to promote the use of wood. In this way design becomes a marketing tool for the primary sector. For example the American Hardwood Association uses prominent furniture designers and architects as spokespeople to inspire with their creative use of wood.

The Quebec Wood Export Bureau (Q-WEB) recently joined forces with the Japan Interior Planners' Association (JIPA) to create a product to promote the use of Quebec hard maple. Q-WEB provided a design group called "I" with maple to design a product to showcase and promote the species. The "I's" were asked to make an eye-catching trade show booth which could be easily assembled and shipped.



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The result was a modern Tea House constructed from hard maple. It is part furniture and part room. It was exhibited at the IPEC 21 (Interior Pro Ex Co) in Japan where it won first prize and was consequently invited to the *Salon du Meuble de Paris* (Paris Furniture Show).

Photo courtesy of Q-WEB

The success in the media led to a surge of inquiries about hard maple. As a result, Q-WEB members have requested further use of design to promote underutilized species and is currently orchestrating a competition to raise the profile of yellow birch.

Enabling Design in Wood Product Manufacturing

The most common way to encourage manufactures to use professional design is to provide subsidized design services for first time users. This is sometimes in the form of tax breaks or credits. Quebec has been offering the 'visa design' tax credit for the use of professional design to manufacturers for several years. This not only introduces manufacturers to the service of design but it also builds a more experienced design community. In some cases, programs to link designers with manufacturers are used to facilitate what can be a difficult process for manufacturers new to design as well as designers new to industry.

It is common in Europe particularly, for design schools to partner with industry to deliver co-op programs. The University of Manitoba and Palliser Furniture have developed such a co-op program. Students tour Palliser and then choose whether to work on upholstery or formed plywood projects once a week for six weeks. Technicians at Palliser assist the students in bringing their ideas to fruition. The technicians say "we're willing to give our time because we gain more knowledge. The students spend their time



Photo courtesy of The University of Manitoba

thinking about and developing designs so they take it one step further". This highly successful industry/academia collaboration has been running for several terms.

Design Research in the Wood Products Industry

There is a distinct lack of research specific to the issue of design in the wood products industry. However, the studies outlined below indicate that a few researchers are starting to explore the link between design and the wood products industry.

A three-year design research project funded by the **CTBA (Centre Technique du bois et de l'Ameublement)** is underway (2004) in France regarding the ergonomics of kitchen design. The research will attempt to: identify and analyze the expectations of consumers in the furnishing of the kitchen area; identify the probable technological developments which will alter life-styles (particularly to dining and food preparation); and carry out an ergonomic study by observation of actual situations (using video). This report will be available to kitchen cabinet manufacturers to guide new product development.

A researcher named **Kasja Ekberg** at the University of Luleå in Northern Sweden, has recently (2004) embarked on a study to see how wood product manufacturers are using design today and whether there is a need for design investment and what, if anything, could be done to make more effective use of design in these firms.

The abstract for her publication entitled *'The Importance of industrial design for small wood manufacturing companies – an analysis from the manufacturer's perspective'* reads;

"Although industrial design use in small companies has been discussed more frequently in the literature in the past few years, very little research has been specifically done on the wood product industry. This article presents a study of design use in small wood manufacturing companies in the northeast region of Sweden. Qualitative empirical data was collected from nine wood manufacturing companies. The firms that had invested in design found that it was of vital importance for business success. The general knowledge of design and commercial outcome of investments were, however limited, and in several cases project management was experienced as difficult to cope with. Thus there is a need for enhancing design awareness and providing training in design management."

The conclusion to Kasja's research is that industrial design can be of importance for small manufacturers to create a competitive edge. She points out, however, "that small wood manufacturers, even ones of similar size and structure, face different needs for design and possess different competence to manage design effectively. To be able to decide how and to what extent industrial design can be beneficial for manufacturers, companies must be studied in their surrounding context."

Abra Hovgaard and Eric Hansen recently (2004) published research regarding 'Innovativeness in the Forest Products Industry' in the *Forest Products Journal*. The abstract reads:

"Although innovation has long been accepted in the business literature as instrumental to company success, very little research has been done specific to the forest products industry. This qualitative study looks at small forest products firms in Alaska and Oregon to develop a basic understanding of their concept of innovation and innovativeness. Interviews were conducted in 17 small companies ranging in size from 1 to 60 employees. The literature suggests that innovation can be divided into product, process, and business system innovation. Findings are consistent with this view. Of the seven concepts of innovation identified by respondents in this study, the most common was having a unique product or process. Six of the seven concepts logically correspond with product, process, or business systems innovation. The seventh way, "a way of thinking," is an umbrella concept that describes the collective personality of individuals in the firm and the firm's ability to be innovative. With respect to the product innovation process, we identified six steps of product development practiced by the respondents, however, generally the respondents did not undertake consistent, structured processes for product development."

This is a rare and relevant body of research since innovation involves an element of creativity; design is clearly a component of innovation. At a recent forest industry conference, keynote speaker Warren Easley, Vice President for

Technology and Quality at Louisiana Pacific, insisted that “new, innovative products are badly needed” and that “the key to the future success of forest products manufacturers will be centered on new products, new processes, and the use of new raw materials.” With regard to product innovation, they cite three critical factors that drive new product success: a high-quality new product process, a clear and well-communicated new product strategy for the business unit, and adequate resources for the new product launch. They found that “it is the innovativeness of individuals within the company that allow the development of product, process, and business systems innovation”. Also, “the limited resources of small companies often prohibit them from implementing consistent, structured innovation practices”. The opportunities to assist companies with their innovation efforts follow:

“These efforts should focus both on people and processes. Even within the innovative companies interviewed there was a wide range of innovation expertise. The general population of companies likely present even more potential for improvement of their innovation skills, Companies need assistance in deciding which innovative ideas to pursue as several of the companies expressed difficulty in screening new ideas and deciding which would be profitable. Small companies also need assistance in defining the scope of their business and innovation capabilities since many managers do not strategically think about innovation in their day-to-day operations. Lastly, defining market needs and performing market research is clearly an area where small companies will be challenged in the future.”

A study by **M.S. Baumgartner, and R.J. Bush** called ‘Beyond Yield Improvement: Selected Marketing Aspects of Character-Marked Furniture’, investigated marketing and product development issues associated with character-marked wood furniture in the US. Based on the premise that substantial yield improvements are possible with increased use of character marks, the researchers attempted to better understand the experiences furniture manufacturers have had with these products. They examined the influence of designers, retailers, and product design on the successful development and marketing of character-marked furniture.

While looking at the role of the designer, it was noted that for better chances of success, the designer needs to be included in the earliest stages of development because “to be successful, character-marks need to fit with an overall product concept that involves attributes such as style, function, price, and overall look and feel”. To integrate design into the product development process as early as possible is in accord with current research on best practices of design implementation. It also says that, in the general realm of new product launches, “there are several manufacturers that have introduced novel designs that met with initial resistance, but ultimately set the stage for widespread design changes in their respective industries”. The report notes that many furniture manufacturers tend to take a ‘reactive’ strategy to product design in that they imitate successful offerings by competitors. They found that “there is clearly room for a more proactive design strategy in the furniture industry” because “the direct competition imposed by furniture markets puts pressure on manufacturers to have something new to offer and attract attention”. One of the factors of success in marketing character-marked furniture was if the manufacturer was “in a position, based on reputation for design proactiveness, to persuade retailers to buy character-marked products”. The report concludes by saying “a gap between manufacturers/retailers and consumers will likely exist as long as the industry remains push-oriented in terms of product promotion. More direct consumer research could be beneficial to manufacturers introducing novel design features like character-marks, in terms of product and promotion development”.

Overview of Design-Related Activities in Wood Product Industries

The following section describes some of the activities directly or indirectly related to design within the wood industries in Finland, Sweden, Denmark, Norway, Australia, New Zealand and the United States.

Finland

Finland has developed the networked **Centre of Expertise for Wood Products** which is a service structure that covers various areas of expertise in the forestry and wood products' business chain. It offers customized expertise and promotion for research and development projects. The Centre of Expertise for Wood Products is a network consisting of 55 members. At the core of the cluster are the University of Joensuu, the Finnish Forest Research Institute, North Karelia Polytechnic, vocational training organizations as well as other research and development organizations and companies. These members are evenly distributed geographically and also serve as engines of regional development.

Over 100 research centres, over 200 companies and approximately 40 other bodies have participated in the projects. The most significant achievements have taken place in product development.

These projects include:

- structure systems for multi-purpose buildings and large wooden structures;
- open timber construction system for wooden buildings;
- products for the construction of external areas and landscapes;
- wooden interior decoration products;
- products made from processed birch wood; and
- modern wooden town.

Modern wooden town and wood engineering expertise areas promote the use of wood in construction, or 'building with wood'. Expertise in 'living with wood' and design includes interior structures, and environmental design of both public and private premises.

In the future, the **Centre of Expertise for Wood Products** will focus on combining different areas of expertise. This enables the creation of new products, manufacturing processes, services and relevant business models. Breakthroughs will originate from concentration on new business concepts, design and architecture, development of knowledge transfers and the internationalization of expertise and business networks in the areas of construction and consumer goods. It will focus on internationalization, which means close cooperation with other research and development programmes for the wood industry such as the *Wood Europe* campaign and the *WoodWisdom* research programme.

The wood product industry in the region of Tampere has also developed a strategy involving design. The goal of this strategy is to create a knowledge cluster based on the utilization of information technology in international marketing, design management, the production of quality wooden elements, as well as the production of quality

housing environments. One of the activities proposed is to create an interior design knowledge centre.

Sweden

Sweden has a strong furniture industry. Design, brand names and quality are crucial competitive factors and famous designers have contributed to the international reputation of Swedish furniture design. IKEA, with sales of US \$13 billion, is a result of Sweden's long-standing efforts in design promotion.

The Wood Design and Technology (WDAT) Programme has been developed and led by the government and the forest and wood industries of South Sweden. **WDAT** is an R&D project in the area of wood products from market and user perspectives. The programme started in the year 2000 and runs until 2006. The aim of the programme is to:

- support an education and communication programme that provides a technological and entrepreneurial path toward the future of refined forest-based raw material;
- support customer- and market-oriented product development, and the research of market mechanisms for wood-based end-user products; and
- develop a database of knowledge and tools, and marketing strategies for open wood building systems including materials, components, prefabrication, etc.

The aim is to increase the use of wood material in a highly refined form, in the areas of house building, furniture and interiors.

In another attempt to revitalize itself, the Swedish forest products industry joined forces with the European Space Industry to create a workshop aimed at generating ideas for projects where space technologies might be able to provide effective solutions for the challenges identified in the forest products industry. Some possible transfers from the space industry include: "textile material and carbon added to wood to make it lighter, stronger, fireproof and capable of absorbing greater energy impacts. Waste and water recycling methods, being developed for future Mars missions, might be applied to pulp and paper waste".

Denmark

Furniture has become the trademark for Danish design. The Danish tradition of collaboration among artists, designers and cabinetmakers goes back to the 18th century.

The furniture sector in Denmark currently comprises approximately 450 companies which employ approximately 22,000 people. The high level of technological competence makes productivity in the sector very high. Nearly 83% of production is exported, making the Danish furniture sector Denmark's fifth largest export industry.

The **Development Centre for Furniture and Wood** is a business development 'incubator environment' recognized under the Ministry of Science, Technology and Development. The Centre's operation is organized as a partnership among the regional business college, Institute of Technology and the Viborg County government. This Centre was given a \$6 million dollar (CDN) grant for a three-year period. This is a response to the following industry challenges:

- increased competition from East European countries;
- a relatively low level of research and innovation in the sector, which means that few new products are ready to be offered to the marketplace;
- a challenge in more fully utilizing employee skills and competencies, and also improving the level of training among managers; and
- market circumstances are changing, in that there is growth in demand for inexpensive furniture and for high priced, quality furniture but a shrinking market for the large number of enterprises producing furniture of the in-between category.

One of the projects the **Development Centre for Furniture** has undertaken is the '*Furniture Cup*'. This project was a design event intended to strengthen product development in Danish firms. Selected teams from various Danish companies compete in designing an office for their co-workers and the process is televised. The Furniture Cup increases the chance for success in the innovation process through:

- faster prototype development;
- cheaper development of an individual prototype, so producing several options is more affordable
- transfer of cutting-edge expertise from other trades and sectors; and
- close contact with clients from the first day, so only those concepts they show enthusiasm for survive.

Education is another area in which the Centre assists the wood and furniture industries. In addition to a diploma specialization called 'Innovation Designer', the Centre also offers short duration courses for owners/managers and employees in the industry. The topics range from, outsourcing to tropical woods and finishing oils to Danish pine production.

In Denmark there have been several exhibitions to promote wood. The 'Walk the Plank' exhibit is the result of collaborations between wood design students and wood manufacturing students. This has become an annual event. The exhibition culminates in an online auction of the prototypes. In 2004 the Trapholt Furniture Museum showed an exhibition of chairs with a focus on wood.

There is also an Association of Danish Furniture Industries, an independent organization of members with common interests that promotes the sale of furniture and related furnishing products.

Norway

The **Wood Centre** in Trondheim was established in 2000 to be a 'Centre of Excellence' and act as a link between the NTNU (Norwegian University of Science and Technology) and the forest and wood industry. The Centre's vision is to be a nationally and internationally recognized resource for the forest and wood sector contributing to added value and innovation. The **Wood Centre** assists the University to ensure that wood as a material receives ample attention so that the students are able to achieve competence with respect to the use of wood in different areas.

All of the Nordic countries have significant wood product industries and in recent years they have endeavored to re-develop these industries by bringing together several players to work collaboratively. There are several research institutes in the wood sector in Nordic countries (47 in total). These institutes are highly networked with each other, government, associations, educational institutes and industry. A recent survey of these institutions illustrates the scope of the R&D that is going on there. For example, there are three institutes that conduct research into the marketing of wood products. There are eight institutions that conduct research into architecture, design, aesthetics and wood. Sweden and Finland are the countries that delve deepest into the area of product design and aesthetics.

Australia

Australia's furniture industry is expecting difficulties in the near future and is planning actions to circumvent this. One of the issues is that the industry cannot be described as being innovative or trendsetting, either in terms of engineering or design. This creates two problems – firstly there is little to differentiate Australian products from those produced elsewhere in the world and secondly, local design or a uniquely Australian product has not been given the opportunity to develop. A Government-funded initiative called **Designing Futures** was implemented to shift the forestry industry to high quality production of furniture and other wood products. The program created wood houses, exhibitions, and commercial and experimental studios and it teamed designers with wood manufacturers to develop more products. The goal was to redefine the future of the West Australia timber industry.

Through Australia's **Cooperative Research Centre Wood Innovations (CRC)**, there is a program to develop innovative techniques and methods for the design and manufacture of high-quality and high-performance furniture and other value-added wood products to ensure their competitiveness. The innovative changes in wood product design and construction will also enable the industry to move from traditional technology to using modern, internationally competitive techniques and processes. The goals of this program are:

- to increase the quantity and quality of R&D activities and encourage uptake of new technologies;
- promotion of innovation, product design and quality, and other innovative uses of materials;
- raising awareness within the industry of the need for benefits of research, development and technology; and
- facilitating the establishment of strong links with local R&D institutions.

New Zealand

The Radi Centre, New Zealand's national **Centre of Excellence in Wood Manufacturing**, opened in 2003. Established as a strategic initiative of the Government's Wood Processing Strategy, the Centre is a three-way partnership among Forest Industries Training, the Waiariki Institute of Technology and the University of Auckland. Its key partners include industry, tertiary education institutions and professional societies. The Centre's main goal is to develop the technical expertise, research capability, and teaching delivery to equip people to transform the wood processing industry from its current commodity orientation to focus on high added-value products for export. The initial plans are to provide facilities, technology, and technical expertise to offer a range of undergraduate and post-graduate education programmes, industry problem-solving, technology transfer, and ultimately the **DesignWood** collaborative society. **DesignWood** will bring together professionals from a variety of disciplines into an innovative new 'think-tank' which would foster new approaches to design that feature wood, innovative development of new wood products, and construction techniques that return wood to its rightful place as a material of choice. **DesignWood** would not be a stand-alone institution, but rather a collaborative network or professional society with members in academia, professional organizations and business. It will sponsor projects that promote expanded uses and new applications for wood and seek to educate professionals about the benefits of wood.

New Zealand Trade & Enterprise's '**Wood Processing Sector Engagement Strategy for 2004-2005**' states as its long-term vision "for New Zealand to have global niche leadership in design-led, technologically advanced consumer and industrial solutions (in both wood processing and other market sectors) derived from wood-fibre, by-products and other materials". Included in the key initiatives is promotion of an understanding of global consumers and the value chains and distribution channels that serve them (this work will encourage closer relationships between the industry and 'value creator' sectors like design and biotechnology).

USA

The College of Architecture at the Georgia Institute of Technology is addressing the need for specialists in the area of wood product design at the master's level. The mission of the 'Advanced Wood Products Lab' is to move secondary wood products production in Georgia into a nationally and internationally competitive position. It conducts research such as;

- developing animation and visualization software for optimum layout of CNC machinery for furniture production simulation (models both graphically and temporally the production of parts for a particular piece of furniture);
- research to measure the electrical load for secondary wood processing machine centers so that baseline information for electrical consumption and cost data can be established for secondary wood product manufacturers; and
- ready-to-license product prototypes for universal design complete with records of invention.

Another Institution called **Finlandia University** in Michigan has developed an innovative program to assist the small manufacturers in the area (mostly wood based) in the areas of business and design. The program is based on a Finnish model. In addition to their design and business classes, students work for private firms in the region. The students gain valuable real-life experience and the companies gain access to design expertise (students and faculty). Students worked with a company called Strandwood Molding Inc. who make chair seats and backs from molded OSB.

Both Minnesota and Montana's wood product industries are developing creative value-added strategies involving the use of design to move to higher value products. Minnesota is proposing a **Wood Products Design Studio** because "teaching the value of design to our secondary wood products industry has the potential to create a unique leadership position in North America. Montana is also proposing a **Wood Design Center** to brand and market their wood products from log homes to wooden bowls. This Center would act as a marketing and educational center with staff and a rotating short-term resident expert.

Examples of Innovative Design in Wood Products

This section provides examples of innovative wood products. These products build on the wood manufacturing processes that have emerged over time by incorporating design and today's technology to make thoroughly contemporary products. These products range from a new kind of medium density fiberboard (MDF) to a concept for a pre-fabricated home, and are both unique and responsive to the needs of the current market. Europe, Japan and Australia tend to be leaders in innovative wood products.



Photo source: Handwerk out of Austria

Handwerk out of Austria has developed two innovative wood flooring solutions. On the left is 'Industrial Designer Parquet'. Made from character marked wood cut into thin strips (1.5cm x 28cm) this parquet creates a unique, contemporary look. It is available in various thicknesses and in tongue and groove panels or glue down plates.

'Rollywood' is roll out solid wood flooring. Solid wood planks on a foam backing roll out like an area rug and do not have to be glued or nailed in place. Once rolled out, they will not slide. It comes in three species choices as well as a choice of surfaces, smooth and two textured non-slip surfaces.



Photo source: Handwerk out of Austria

Designed by the German firm **Red Dot Design** for Zech Holzfenster GmbH & Co., Götzis. Zech-WGS is a functional, energy saving window with outstanding insulating properties and durability. The Wood Glazing System (WGS) involves an innovative production process. The frames and panes are flush inside and out and the fittings are concealed in the core of the window element. The Zech-WGS is all one piece and fits neatly into any façade. The inside frame can be fitted in any kind of wood.



Photo source: www.red-dot.de/



Photo source:
www.moma.org/exhibitions/1995/mut

An Italian designer named Marco Ferreri developed a composite material called **Softwood™** in 1994. Softwood™ is a thermally bonded and pressure-molded laminate of fabric and wood, padded with a sheet of polyurethane foam. A soft, flexible seating surface is created. A polyurethane sheet is placed in the center of the seat and back, and the Softwood™ is attached at the perimeter by hot die-pressing. The fabric becomes soft and acts as an adhesive at high temperatures, eliminating the need for a glue additive. The manufacturer, Nemo, has been assigned the exclusive rights to the process for the furniture industry.

Very recently an interior door has been produced using this technology.

Molded **Strandwood** (MSW) is a composite of wood strands (like OSB) die-compressed with thermo setting adhesives to form panels or compound, complex curvatures. Although its uses are virtually unlimited, it is especially well-suited for structural furniture components including shells, seats, backs, arms, leg rests, and bases. It provides a high strength-to-weight ratio and can have special features molded into it to stiffen parts, nest connecting features or create layout guidelines like centerlines.



Photo source: www.strandwood.com

A Finnish company called **WISA** offers these panel profiles (photo below) which are a simple innovation that creates options that go beyond the standard flat T & G panels. The photos on the right demonstrate the end result. In the far right photo flat and wavy panels are combined to create a unique wall pattern.



Photo source: www.wisa.com



BASF has developed pigment preparations for through-colored medium density fiberboard (MDF). BASF calls this product "Design-MDF". The brilliant, vivid colors bring out the wood fibers and give the impression of a natural material.



Source for photos:
www.basf.com/specialty_colorants/baselrantsmdf.html

BASF collaborated with Glunz AG, Germany to make the boards which are available in: black, blue, green, brown, orange and yellow. "A table was designed by Katrin Neelsen of Neelsen Design Management, for the architect lounge of Stylepark AG at the Light & Building 2004 exhibition. There it was discovered by Prof. Dr. Ulrich Schneider, who immediately recognized its decorative potential for the museum. BASF and Glunz donated the designer table to the museum after the exhibition. The table is now an ideal communication point for visitors to the museum

in the redesigned entrance hall. A soft finish enhances the surface, making it look as if it has been waxed. The black coloration of the table is inseparably linked with the wood fibers. Any scratches that occur remain practically invisible, which means the item's elegant appearance will last for a long time." (BASF website)



The product has been very successful in the furniture and display cabinet market in Europe and was introduced in North America through Weyerhaeuser in August, 2004.

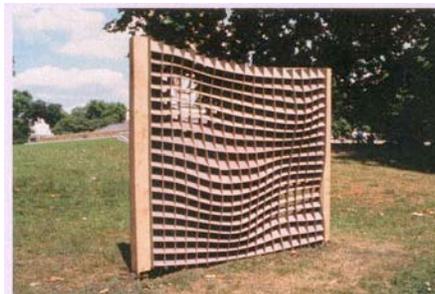
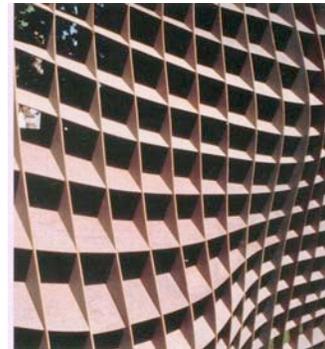


Photo source:
www.superblue.co.uk

The honeycomb fence was designed by **Robert Frith** (left). An innovative solution to outdoor fencing, made of marine plywood with softwood posts. Templates of plywood are cut by a CNC router and slatted together to create a lattice. The slats can be arranged to either frame or hide specific views.



An innovative approach to the pre-fabricated house was designed by Japanese architect **Shigeru Ban** in 1995. Several of these homes have been constructed in Asia and the first one was recently constructed in the US. The structure of the 'Furniture House' as it is called, is supported by modular panels and floor-to-ceiling storage units rather than traditional beams. The storage units function as both structural supports and space-defining elements and house closets, bookcases, cabinetry, lighting, and HVAC units.



Source for photos: www.archrecord.construction.com

BC's Situation

Design is an activity linked to culture and advanced manufacturing and since British Columbia is relatively youthful in both of these areas, it tends to be behind in embracing design. There are, however signs that this is changing. This is partly from necessity, due to hyper-competitive business conditions, and partly due to the fact that the local design community is achieving the critical mass necessary to have a presence. This section of the report looks at the past and present relationship British Columbia has had with design and speculates on the role design might play in the future of the wood product industry.

Historical

Canada's history with design has been decidedly sporadic. The period following the Second World War (1945-1960) provided a brief fertile ground for design. The conditions at this time were conducive to progress. There was considerable global pent-up demand for housing and consumer goods. New materials like plywood, aluminum and plastics developed during the war provided new product possibilities. Governments in many industrialized countries, including Canada, promoted good design as a competitive edge in global trade as part of their conversion of the economy from war to peacetime production.

Art galleries and industry joined forces to promote modernist design in Canada, with BC and Vancouver at the forefront of this effort. Forest magnate, H.R. MacMillan, opened an exhibition at the Vancouver Art Gallery in 1949 entitled "Design for Living," a show which brought together design and artistic communities to create four imaginary households for postwar Vancouverites. Wood products, especially chairs and tables were prominently featured. This exhibition also heralded an unprecedented level of cooperation between the province's industry and its artists and craftspeople – a relationship that contributed greatly to the development of art, furniture, and craft in BC.

Several British Columbian manufacturers capitalized on expertise gained in the wooden aircraft industry during the war by developing factories that produced bent plywood furniture. One such company was Mouldcraft Plywood in North Vancouver. The chair pictured to the right is an example of the kinds of modern furniture produced at this time (circa 1946). The designer of this particular chair is unknown. BC designers made significant contribution to the field of design both nationally and internationally. Two furniture designers from BC exhibited at the 1954 Milan Triennale. BC developed a particularly strong expertise and reputation in the category of institutional furniture at this time.



Photo Source: www.value-createdreview.com

Collectively these types of activities brought significant media attention which led to a general interest in modern design. The thinking at the time was to educate the public about 'good design' (which tended to be based on the principles of modernism) in order to create a more progressive consumer and thus stimulate the economy. There was also the idea that design could be instrumental in developing a stronger national identity.

While the various federal government initiatives after WWII seeking to promote design made some impact, the momentum was lost in the 60's and almost all funding stopped.

Current

At present, there is no national design policy in place in Canada. Design does not exist on any government agendas federally. Although the government is actively supporting innovation and specifically the commercialization of innovation, the field of design is not explicitly included in these efforts. The government of Canada's current interest in design is mainly concentrated on creating a strong design education infrastructure and is not directly involved in the integration of design into business.

The Design Exchange, based in Toronto, is Canada's national design hub. Their vision is 'to strengthen cultural identity, enhance our standard of living, and create wealth in the economy by fostering a demand for sustainable Canadian design'. While it is in theory a national organization, the activities of the Design Exchange remain almost exclusively in Ontario. There is a national industrial designers association called ACID (Association of Canadian Industrial Designers)

with a chapter in BC called BCID (British Columbia Industrial Designer's Association) which provides a resource for professional industrial design.

There is no single style that characterizes design today in BC. If anything, designers continue to be inspired by the Modernist cannon originating in the Bauhaus and its function-oriented approach to design. Wood is certainly a prominent material in BC design and Canadian design in general tends to be seen internationally as unpretentious and quality-driven.

Literature Review

In order to determine the current perceived value of design to the wood product industry in British Columbia, an industry literature review was conducted. The following excerpts illustrate the current view of design's importance to the industry.

Canadian companies "still imitate the US and European designs and need to become increasingly more design innovative." Competitive Analysis of the Canadian Furniture Manufacturing Industry, 2002

"Initiatives need to be undertaken to encourage the development of design as the driving force of the Canadian appearance wood products sector." Forintek Canada Corp. Technology Roadmap, 2003

"...traditional comparative factors such as raw material costs and labour etc. while still important must be balanced with 'market based value-oriented factors'" The Canadian Secondary Wood Product Sector: Competitive Success Factors and Current Status, 2004

The following points from the literature review, are relevant to the issue of design and speak to its value for industry competitiveness.

- It is apparent from the literature that the issue of design is becoming increasingly important to the industry.
 - While earlier reports depict design as one of a number of factors for success, more recently, design has been referred to as the critical factor around which all other issues will revolve. This urgency is partially due to the competitiveness of the global economy where Canada's wood products' industry cannot compete on price alone.
- The literature strongly suggests that product differentiation, through quality and innovation, are becoming crucial factors to success across all sectors in the value-added industry.
- Design is seen to be more and more important as we move up the value chain, and this evolution is also a direction the research points strongly toward.
- Design is seen as the link between technology and the marketplace.
- The literature describes the design approach to adding value as a paradigm shift from the cost control attitude. This shift will require work, commitment and vision.

"Over the past ten years, we have undertaken on behalf of the western Canadian furniture industry, a number of design initiatives for manufacturers and the retail trade. We have come to the inescapable conclusion that innovative, market-focused product design is a fundamental building block that western Canadian manufactures can rely on in order to achieve a sustainable, competitive advantage over lower priced imported products. Only through consistent exposure to hands-on demonstration projects will industry participants realize that a significant investment in innovative product design will yield a significant payback to them in terms of sustainable revenue growth, improved profitability and long term customer satisfaction at both the retail and ultimate consumer level."

Joe Malko, President of Furniture West

While much of the research has concluded that design is important, professional design is severely under-used in the industry today.

British Columbia, with its economic reliance on the wood industry, has made efforts to address the issue of design. For example, in 1997 a 'wood product design' program was developed specifically to train people to design products for our industry using local resources. This three-year program culminated in an eight month work experience session that matched manufacturers to designers to work on a new product development projects. Unfortunately, the funding was pulled from this project in 2002 and the program is ending this year (2005). A few of the graduates of this program are starting to make a difference in industry, but most have moved on as industry has not embraced the hiring of design professionals in a significant way. The Emily Carr Institute has also been running a series of courses through their industrial design program directed at innovations in wood. The goal of the Innovations in Wood Design curriculum is to educate designers about the BC forestry, manufacturing and retail context. The Emily Carr Institute and the University of British Columbia's Centre For Advanced Wood Processing Program and were instrumental in bringing the iMade exhibition to Vancouver in 2003. CAWP is Canada's national centre of excellence for education and research related to wood products processing and advanced wood products manufacturing. This exhibition demonstrated the importance of design and its relationship to marketing and technology in the Italian Furniture industry. This model is of particular value to BC in that the manufacturers are very small and have developed intricate networks that rely on a high degree of cooperation to compete globally. Forintek Canada Corp. is starting to look at adding design to its existing team of industrial advisors and forest product market economists. Forintek's mission is to be the leading force in the technological advancement of the Canadian wood products industry, through the creation and application of innovative concepts, processes, products and education.

Currently, the vast majority of value-added producers in BC do not utilize professional design and instead rely on in-house non-professional design to copy successful products already on the market. This strategy relies solely on price as a competitive advantage and is becoming less and less viable with lower cost producers from offshore tying up this category for many industry sectors. The import competition is pushing the value-added industry into higher-end niche markets. This shift to quality driven markets is a shift away from cost as a main determinant of 'desirability' to other more complex issues like uniqueness, reliability and emotional response. Design tends to give products and services a distinctiveness that they would otherwise not have. More and more, manufacturing generates wealth when it serves human desire. Desire is the true source of economic value in the 21st century.

Employing professional design allows companies to read the market and respond creatively by constantly improving in the areas of customer satisfaction and productivity. There are starting to be a few companies in BC who use professional design.

One example is **Van Gogh Designs** in Surrey BC. This company manufactures sofas and has been in business for 12 years. Five years ago they contracted (on a royalty basis) designer Ian Ellis from the Kootenay School of the Arts wood product design program. The company has experienced significant growth as a result. They have achieved a 17% annual sales growth for the last three years and prior to this they were increasing sales by 9% per annum. They now have a distinct identity in the market place which affords them better margins and access to new markets where they often compete with larger companies. They are getting free publicity as the media sees the uniqueness of their product offering. Their product line has been edited to become more streamlined which has given them better economies of scale.



Some of the initial changes to the product direction Ellis implemented were small steps. For example he took an existing big seller (in red) which was reaching its peak in product life cycle and gave it a slightly fresh look (in white). Eventually pieces that were new to the market were strategically added to 'lead' and give credibility in the line. This fashion forward style (in blue) isn't a huge seller but it gives credibility to the rest of the line.



Photo source:
Van Gogh Designs

Another BC company that has recently hired a professional designer is furniture manufacturer **Whistler Creek** in Surrey. Industrial designer Alain Albert was hired in 2004 as the production manager. His initial energies were spent re-engineering existing product lines to improve quality and manufacturability. Alain's industrial experience allowed him to utilize ideas from both the kitchen cabinet industry and the picture frame industry to improve the furniture at Whistler Creek. For example, they now use concealed drawer glides from the high-end kitchen cabinet industry in all of their cabinets. These glides are concealed and are sturdier and smoother than the ones used in the past, but cost roughly the same. They have also adopted a technique for securing the glass to their cabinet doors from the picture frame industry. The time and cost savings attributed to this innovation are substantial. Whistler Creek recently purchased a CNC router and through Alain's expertise have been able to re-engineer a good portion of their products to take advantage of the full potential of the CNC for its precision and the use of advanced construction techniques.



Photo source: Alain Albert

Alain has also designed a new collection of furniture called 'Canyon'. It draws on Whistler Creek's existing 'house-style' which involves generous solid wood proportions and classical details but the new line is more contemporary and unique. The Canyon collection which is a year old, has steadily grown to capture 15% of their sales and has become their second best selling line. The ability to design new products that are distinctly their own style and not a knock-off

of competitor's models has been one of the biggest benefits of industrial design for the company.



There are only a couple of companies that could be considered truly 'design-led' in BC's value added industry. These companies tend to be design-driven from the company's inception and innovate in order to be ahead of the market. In some cases, these kinds of companies can actually re-define the structure of an industry or product category. These companies tend to have criteria for business success that go beyond the usual financial goals. They also strive to create products that enrich society and the environment.

Brent Comber Originals is one such company. It is a small, North Vancouver-based manufacturer that specializes in contemporary, sculpted natural wood seating and tables for the contract market. This company has been in business for six years and, during this challenging time, has outlived many larger, more mainstream furniture manufacturers in BC. Their products are sold to residences, hotels and other commercial spaces across North America and more recently Europe and Asia. The owner is himself a designer who attempts to 'blend the natural shapes and materials of the Pacific Northwest with a modern urban aesthetic'.



Photo source: www.brentcomberoriginals.com

The stool/table below (above left) is part of a line made from reclaimed fir. The pieces on the right are made from alder saplings. Brent Comber Originals has carved out a niche that uses design and local materials to create a unique product with good market potential.

These examples of business success involving the influence of design in some of B.C.'s wood product manufacturers suggests that design is indeed a valuable tool for the industry.

Future

When thinking about how our wood industry will weather the storm of global markets, one thing becomes very clear “We are all in the same boat and the best material for that boat is wood”. The first task at hand is to assemble all the necessary people and materials to make this “Ark” the best we possibly can with the resources (people, technology, and materials) available. Using this analogy I believe the BC Forest Industries are at a pivotal point of either sailing into a bright horizon or keeling over and sinking into the deep seas, but we have to decide what kind of an “Ark” we want to be in when the eye of the storm hits! Personally I would rather be in a well designed and constructed one that has integrated the principals of form and function and has utilized every possible material or technical innovation available rather than taking my chances on a bunch of logs randomly strapped together with a few “pretty” details. The good news is we have some of the best resources (people, technology and materials) in the world right in our backyard and all we have to do make a well designed plan and work closely and collectively together in it’s implementation.

Noah’s Ark – a narrative by Christian Blyt, Innovations in Wood Program Coordinator at the Emily Carr Institute

To begin to address the underutilization of design in BC’s wood product industry, a workshop was held to identify the challenges and opportunities that exist for the uptake of design. The results can be found in **Appendix 2**. The two main barriers identified were industries lack of familiarity with industrial design and the design communities lack of understanding of the needs of the wood product manufacturing industry. Clearly, in order to accelerate the uptake of professional design in BC’s wood product industry, there is a need to bring manufacturers and designers together.

All industry sectors and supply chain members can benefit from the influence of design. Design provides a powerful marketing tool for the primary industry. Innovative and environmentally sensitive design endorses the positive environmental aspects of wood. Design can also showcase the unique qualities of a particular species. All sectors stand to benefit from the potential design has to help find creative ways to better utilize fibre fall-down (like bark) or character-marked wood.

The secondary industry, whether industrial or consumer products, would benefit greatly from the improved use of design. The development of new composites or engineered wood products would benefit from the divergent thought process offered through design at the R&D stage to explore as many options as possible. Design input can also be beneficial at the commercialization stage to demonstrate as many end-use applications as possible. Building products like doors, windows and flooring have evolved in Europe to a much greater degree because of the influence of design. Innovations in these product categories would benefit from things like user-experience research (the users in this case are both the builders and the end-users). Sectors like cabinet and furniture industries are closely tied to fashion and, as such, clearly benefit from designs ability to translate market trends into successful products.

For BC’s wood products industry to become more innovative and design oriented, an industry-wide cultural shift is required. A group of BC designers (Michael Bjornson, Paul Conder, Stuart Waddell, Laura Friesen, Andrew Hamilton, Robert Studer and Grant Wyllychuck) were assembled for a two-hour brainstorm session to come up with creative yet plausible ways to encourage the better use of design in the wood products industry. These are their ideas.

The group felt that the underlying reason for the relative lack of design and innovation in our wood products industry is mainly a factor of not needing to, until now. Currently, the industry’s ability to compete is undeniably in question. Historically, this is when industries are motivated enough to re-invent themselves. When Denmark faced deforestation, for example, it focused its efforts on manufacturing technology and design and eventually became highly efficient at manufacturing furniture. Denmark remains the largest exporter of furniture in Europe today. With long-term vision, Denmark is currently embarking on a rigorous reforestation program. The group felt that efforts to introduce design to the industry at this time would be constructive as industry is starting to look for new ways to achieve competitive advantage.

In order to ‘start the ball rolling’, the group felt that some type of government incentives would be useful. These incentives might include: no interest loans for R&D activities that include design (i.e. prototyping), R&D tax credits that include design as component, tax credits to employ professional design or export incentives for those companies who demonstrate effective use of design.

The process of shifting this industry to being more design enabled, would be best achieved through carefully planned incremental steps. One of the first things necessary would be to communicate to industry what design is and to demonstrate its commercial benefits. The group had several ideas about how this might be achieved from seminars to demonstration events. Local designers are continuously experimenting with wood and wood fibre. Molo, for example, is a small design company based in Vancouver who has recently won international accolades for its paper interior wall system that uses the equivalent of three 2x4's to make a 40 foot wall. These types of innovations at the niche market scale illustrate the kind of innovative thinking that design would add to industry.

In order to get manufacturers and designers working together it was suggested that events that bring studio designers into factories to explore the technologies and materials would be useful. This type of exchange has been used in other industries successfully. The results for industry include the incorporation of new technologies or products into their production and publicity generated by the innovative concepts brought to them by the designers.

It was suggested that a centre of excellence might be developed as an incubator for wood product design. This would be a facility to experiment with new products and materials to create prototypes that could be licensed to industry. Such centres have been used successfully in Europe. Expertise and facilities already exist in BC and so it could be a matter of coordinating the activities so that they would be industry relevant. All participants felt strongly that any design efforts be highly responsive to market needs so the market research efforts through UBC, Forintek and BCWood, would be involved.

Another idea that was popular in the group was a wood design award (monetary prize) to reward and showcase excellence in design. It was also felt that BC could create global recognition in innovations in wood by hosting an international trade show. In this way, BC could become global leaders in 'eco-friendly innovative wood building materials' for example. The group questioned whether the wood industry would do well to cooperate with other industries rather than functioning as a stand-alone entity in some cases. Wood used in intelligent ways will be more successful in the market than wood used for the sake of using wood. The industry would do well to explore synergies with other industries or materials.

It was generally felt that if design friendly people were employed in the various wood-related organizations that design would have a better chance of becoming a recognized factor in successful manufacturing. In other manufacturing industries, design is seen as an integral component to any business that creates a product. Industries that are more progressive focus their efforts on how to be more effective in their use of design rather than whether or not professional design is valuable.

It was pointed out that not all companies are in a position to capitalize on the benefits of design. Design requires a supportive environment to thrive and alone is not a 'cure-all'. It requires a certain level of manufacturing capacity, business expertise and marketing supporting it to be able to reap the benefits. The group felt efforts to inculcate a design culture would be more successful if they were focused on those companies who have the interest and capacity to innovate. It was also put forth that mid-sized companies might be more likely to embrace design because they would be more flexible and more in need of new solutions than larger ones.

It was felt that in order for these projects to be successful, assistance in or education about design management would be necessary.

There was significant discussion around the idea of whether to focus design efforts in certain sectors where economic growth seems most viable, or whether to diversify efforts so that all sectors develop a culture of design.

It was noted that there have been some efforts to date to advocate design in the industry but these efforts have been sporadic and disjointed when a sustained, cohesive effort is needed to advance the role of design.

In summary, there was a general enthusiasm and optimism for a revitalized wood products industry in BC and the design community is willing to have a role. We see incredible potential for this industry with its natural resources, wood technology expertise, wood marketing expertise and expertise in designing wood products. We have a certain reputation for lifestyle, living and leisure in the global market which creates a natural synergy with furniture, housing and even urban planning.

Our manufacturers are small, but flexible and if they worked together could develop networks that would allow them to access larger markets. The product differentiation that would result from better use of design would reduce intra-industry competition and allow business clusters to develop. If effectively nurtured, this industry has the potential to attain global niche leadership in design-led, technologically advanced consumer and industrial wood-based solutions.

“The development of design tends to be too separated from the world of manufacturing in Western Canada. Other business cultures understand the use of design given their years of exposure to its value. It is still fairly new in B.C. and there is still some missionary work to be done. Our dependence on an abundance of raw resources, unlike manufacturing nations may be impeding the necessity to rely on a strong manufacturing sector and therefore the use of design.”

Peter Galonski, Industrial Designer and Program Head at Kootenay School of the Arts' Wood Product Design Program

Conclusion

The wood products industry has been critical to the province of British Columbia's economic development. The primary conversion sector has thrived as a result of a seemingly endless and varied forest resource. For many years, B.C. was a leader in the export of "commodity" forest products. As lower cost producing nations and a more demanding marketplace eroded this position, "engineered" and "remanufactured" wood products and systems became a natural extension of the primary industry. Slowly a small secondary industry has developed (i.e. furniture, window & door, kitchen cabinet, flooring, furniture, wooden pallet & container, etc). Currently, each of these sectors is experiencing the effects of increased global competition.

In order to ensure the survival and continued growth of this important industry, new bold and innovative strategies are necessary. A clear strategy for the industry as a whole, with adequate provisions for the evolution of a strong secondary industry will be key. Any strategy that is to enhance secondary industry performance must promote and facilitate design. Overlooking the role of design would be a detriment to the growth of this industry at this point in time.

Design on its own cannot resolve the complex issues facing industry currently. However, as a complement to existing business, technological and market intelligence, it will provide an extremely valuable asset. By using a multidisciplinary approach to revitalize British Columbia's wood product industry, and drawing on its existing strengths (unique resource base, excellence in wood-related technology, reputation for quality and sustainability in the global marketplace, access to design expertise and cultural diversity), it has the potential to become a leader in design-led, technologically advanced consumer and industrial wood products.

The future belongs to those who create it.

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www.designcanada.org
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Appendix I: National Design Policy Overview

The degree to which design policies have been implemented globally varies according to the specific needs and business environments of the country. These policies are mainly funded by government; with industry, education and research playing a crucial role in planning and implementation. Typical policy objectives have included, to:

- improve industry competitiveness
- encourage new product development
- enhance the welfare of the society
- support regional development
- encourage greater use of design
- increase the number of markets and commercial successes
- improve industry's return on investment
- increase export market share
- increase export of design skills
- improve the effectiveness of organizations through design.

Australia

Australia has had a relatively long history of design promotion. The latest policy was developed in 1995. The goals and implementation strategies are as follows:

Goal 1 - to position design as a strategic discipline essential to the management of Australia's industrial and commercial future

- 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
- supplement the above material with design diagnostic tools and techniques for use by firms
- establish a series of benchmark and performance criteria for managers and designers to effectively manage the design process
- prepare specific data to show how design adds value and delivers competitive outcomes
- 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.

Goal 2 - to position design as a key competency in the continuum of quality, continuous improvement, best practice and innovation leading to sustainable competitiveness

- 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, and the arts
- 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.

Goal 3 - to celebrate Australia's design successes throughout industry and the media to generally lift public and consumer awareness of design and its role in the country's future

- produce a TV series on design in Australia aimed at raising community awareness of Australian design and its role in Australia's future
- revise the evaluation criteria and process to enhance its credibility for the community and buyer's awareness and acceptance of Australian design hallmarks and design awards
- contract a media and public relations consultant to provide a regular series of media and background material
- set up a 'buyer/consumer' advisory committee drawn from consumer organizations to give their view of design value in the awards process
- field test the concept of a design competition to promote an Australian design culture
- support for the Australian Gold National Designer Brand and marketing network to reinforce the potential of such design-led international marketing initiatives
- to ensure product quality for the Olympic 2000 events establish review mechanisms for venue structure, fitting fixtures and equipment, infrastructure, visual communication, commercial and communal decoration, advertisements and products
- 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 Federation Council for 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.

Goal 4 - to 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

- establish formal international affiliations in major markets

- agree on the international design benchmark criteria and measure Australia against three major overseas markets. Publish inaugural findings and commentary
- agree on design benchmarks for use by Australian firms and publish the Executive Summary information for discussion and adoption
- initiate a regional meeting of design promotion organizations to exchange strategies and experiences in community/industry design awareness
- development of policies and rationales for the support of national design research.

Goal 5 - to direct selected actions to encourage firms to gain competitiveness through design

- document case studies in print, video and multimedia format for marketing purposes
- document a dividends from design cost/budget analysis to provide commercial evidence and confidence that design pays dividends
- develop guidelines for the management of design for use by firms
- implement a pilot program to assist firms specify and undertake projects through professional designers, such as the Designer Link proposal
- offer scholarships for the study of design management to Australian industry and designers.

Goal 6 - to direct selected actions to benefit and encourage the design profession to be accepted as a broader management industry discipline

- 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
- 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
- update and distribute existing directories of commercial design service providers to provide industry with effective access to appropriate design services
- enhance technology transfer in the use of design developments including, eco-design, T40 process re-design, rapid prototyping and new information technology standards in design.

Goal 7 - to direct selected action to remove barriers to the use of design in industry

- liaison by the peak body with Department of Administrative Service and Purchasing Australia and with private industry purchasing associations on design criteria for buyers to enhance major customers' demand for design standards and values
- develop accounting standards and treatment for valuation of design and intellectual property
- review the lessons and next steps from the Design Services Australia project (1991) to identify optimum strategies for development of the design service industry
- facilitate workshops on the use of design in commercializing intellectual property and so identify strategies for protection and commercialization through design
- publish, for small business and design professionals, current rules and processes on R&D tax incentives relating to design investments.

Goal 8 - to direct selected actions to identify the opportunities available for the effective use of design in Australia

- take action to direct market information on design opportunities to client firms
- support the Designer Link initiative delivered by AusIndustry and design bodies to assist AusIndustry target firms to access designers and implement design projects
- select four projects in major industry sectors and test pilot a design project to demonstrate added value benefits
- select four projects to test pilot a design project to add value to niche markets
- prepare discussion papers as to the role of design in R&D commercialization, building relationships with key clients and specifying components for projects.

Goal 9 - to ensure that policies and recommendation outcomes are delivered by a co-ordinated process and are endorsed by industry and the design community as well as supported and funded by government

- empower the national peak body of design representing the key stakeholders by providing the essential mandate, co-ordination and advice on design
- resource an executive and secretariat service for the peak body of design to provide the key co-ordination, project development and management roles.
- support a research officer to document design development and application and provide critical information support to the peak body and government
- provide government seed funds for the operation of the secretariat and peak body for a period of five years through a performance-based contract.

New Zealand

New Zealand has recently developed a national report and strategic plan by the Design Taskforce and the government called 'Success by Design'. Its goals are:

- effective design process, superior products and services, market and commercial successes, operational efficiency and return on investments
 - develop design capability in order to grow international competitiveness
 - integration of design into businesses with aspirations to succeed internationally as exporters
 - communication program to build business awareness and confidence in design: benefits gained through design, design process and design capability
 - encourage businesses to improve and apply design capability
- increase design commitment and raise design capability through education.

Europe

European Union (EU)

The European Union has BEDA (The Bureau of Designers' Association) which was formed in 1969. BEDA's objective is to develop a long-term policy on design for the European Union. It works toward the harmonization of professional design qualifications and raising and maintaining design standards. It lobbies the European Commission and the European Parliament. Their current activities include:

- a research project for the EU Research Directorate, 'Design for Future Needs', set out to establish what designers could bring to the practice of 'foresight'
- establishment of a new network called 'Design Europe'
- working with the European Commission to quantify the value of intangible business services
- collaborated with the European Institute for Design and Disability (EIDD) to organize the first European-wide 'Design for All' award
- establishing a new European Design Award promoting the value of design and innovation to small- and medium-sized enterprises in improving competitiveness and the part design can play in management strategy
- created a series of briefings called the 'BEDA Communications Series' on the value of design to the European economy
- sponsored debates to communicate a vision of design for Europe
- a compilation of facts and figures, together with details regarding intellectual property, the level of fees charged by designers in different countries, design awards and competitions, membership details etc. (published in 2005)
- involved in the think-tank called 'Friends of Europe' based in Brussels. It aims to stimulate new thinking on the future of Europe and promotes discussion, research and new thinking about European policy issues. Two issues have formed the underlying theme of its debates and publications: reform of EU-level decision making and ways of improving the EU's communication.

Germany

Post-war Germany developed an image and economy that was both technocratic and democratic. The *Werkbund* was crucial as it brought together politicians, manufacturers and design educators in its efforts to link design to its economy. At present Germany has the following two organizations that deal with design on a national level;

German Design Council

- assumes national and international responsibility for the transfer of design-related information and know-how in the fields of business, politics, culture and public life
- funded by Federal Ministry for Economics and a circle of donors including publicists and representatives from education and research, and important industrial and service companies

iF International Forum Design

- design promotion between the industry and professional designers, advertising agencies and PR agencies
- matchmaker to alert existing and potential clients to particular design expertise and for companies to display the iF label in markets

Ireland

The Irish Design Sector developed a policy called '*Opportunities in Design, Strategies for Growth*' in 1999. The goals are;

- growth in the design sector
- to help design to be seen in home and export markets as truly innovative and creative, unique and distinct 'Irish style' and image generating premium commercial returns
- recognized for its strategic importance as a key differentiator
- delivering sustainable competitive advantage and economic wealth.

It will be implemented through:

- design resource center: promotion of design value, new knowledge development, database
- national design programs: design advisory service to manufacturing industry, design audit program, individual company counseling, new product program, design intelligence
- state development agencies promote and strengthen Irish design: business development programs to the design consultancy sector, internationalization of design consultancy services
- national training plan for design: continuing professional development courses, co-operation between industry representatives, state development agencies and the education sector, development of the design firms, business agencies and the education sector
- addressing the design education needs and implement improvements in relation to design education at primary and secondary levels
- pro-active design education to support the design industry sector
- Creative Ireland Inc.

Italy

We think of Italy as the country where design and economic success went hand in hand. Interestingly, there was practically no initial governmental intervention in this success story. It was achieved by the manufacturing industry joining hands with each other (in business clusters) and with designers. Its success, can be attributed to its deep understanding of its own indigenous craft-based manufacturing (furniture in particular), its successful embrace of modernism and most importantly, its understanding of the existence of an international, niche market for design as 'added-value' as defined both culturally and economically. Rather than opt for a 'democratic' design movement, Italian manufacturers aimed their architect-designed goods at an international taste elite and as a result came to lead the field where innovative modern design was concerned.

Currently, the country has no national design policy but instead the focus is regional, for example, a meta-district of the Lombardy region and its micro-district Milan is a research subject at the *Politecnico di Milano*. The goal of this research is to develop regional businesses and their international competitiveness, as well as development of regional branding of products and for the purposes of tourism and industries.

Estonia

Estonia is an example of a country with a developing economy which has shown a strong initiative in improving its design sector. The major goals of the Estonian Design Policy are to:

- strengthen the competitiveness of business and industry and improve the quality of life through better products, services and environments
- give access to its design sector, the most comprehensive design intelligence in the world
- make the business and industry sector fully aware of the importance of design
- become a locus for professional design implementation.

The proposal includes the following:

- for the design community, establishment of an information center, continuing education, travel grants, benchmarking
- for industry and businesses, information booklets and an Icebreaker program
- for the public, information booklets and competitions
- for design education and research, shared courses, international teachers and researchers, business education, traineeships, travel grants, business education
- for tourism, information booklets, adjustment to the welcome to Estonia campaign, competitions for street furniture.

Scandinavia

The decision to bring together these countries under one brand was a marketing device first and the concept of 'Scandinavian Design' flowed directly from it. The benefits were enormous, economies of scale. Also a single model of modern design rooted in craft and democracy grew from this. It became an international success in the 1950's and greatly enhanced the economies of these countries. While it was definitely a cohesive effort by all four countries, each one had its own distinctive approach. In the last 5 to 10 years these countries have been re-emphasizing design and re-working their design policies.

Denmark

Like Sweden, Denmark has a long history of craft and industry and is particularly strong in design. In 1989 Denmark was in economic recession and the Danish Ministry of Trade implemented the 'Strategy 92' network plan, which aimed to create business networks among the SME's. These networks were very successful in reviving the furniture industry. By pooling their resources in the network, these companies were able to buy advanced equipment, hire design firms, jointly develop work processes and fund export marketing.

In Denmark during the last 10 years there has been an increase in the use of both design and designers in industry. Because Denmark has no natural reserves for raw materials, it has concentrated on the export of finished products. In 1998 the government created a national design policy as a joint collaboration by four Ministries; Culture, Business, Education and Research.

The goal of this policy is to make Danish design a brand for its unique quality, affecting the competitiveness of Danish companies developing new products, and welfare.

It is being implemented through:

- design promotion in industry, business and the public sector
- practical tools and consulting on design, design competitions, development contracts, design analysis
- promotion of Danish design worldwide
- national support for using design and designers: discount on consultancy fees; and Icebreaker program: discount on designer fees
- research centre without walls
- the growth foundation financing of development projects, which include design
- continuing education: travel grants and master classes
- innovation unit MindLab, enquiry into the economics of culture, set inside the Ministry of Economic and Business Affairs.

Finland

Finland has had a strong design background since the 50's when architects such as Alvar Alto drew international attention. While not exclusively for wood, Finland's design is heavily reliant on wood and they are leaders in innovative wood products. More recently they have been very successful in the IT industry with Nokia being the most globally known brand in the world. Like the other Scandinavian countries, there is a strong influence of craft in Finland's design scene.

Finland has recently implemented a major design program called Design 2005! It was established by a multi-disciplinary group representing the Finnish Ministry for Trade and Industry, the National Fund for Research and Development, the Ministry of Education, the Ministry of Foreign Affairs and the Ministry of Culture. Its goals are to:

- provide a basis for well-being and speed up job creation by design
- encourage a high-quality aesthetic and distinctive built environment
- develop a strong national identity and cultural image in design and craftsmanship
- enhance the country's international competitiveness by raising the standard of design education and research and integrating design to a broader national innovation strategy and by promoting Finland as a design leader
- continuously create new knowledge in design
- develop close co-operation between education and industry to produce high-standard design know-how comparable to the highest international standards
- develop production and delivery processes; products and services meeting a market and user-centered approach and culture-bound innovations.

The strategies for implementation are to:

- involve the Design Technology Program and the Finnish National Technology Agency
- involve Designium, the Centre of Innovation in Design
- involve the Design Museum to make Finnish design known
- give assistance to SMEs in particular to use design services and business incubators supported by regional labour and business centres
- increase the internationalization of design firms
- continuing education, with priority on business management and strategic design
- reassess design education to increase the number of tertiary-level designers
- provide multidisciplinary degree and research programs linking design to other university programs and research
- design a publicity strategy for the public sector as a model and a promoter of design culture, international marketing of Finnish design and furnishing the state-owned buildings and Finnish embassies with Finnish design.

Norway

Norway is traditionally known as an exporter of raw materials, an image that has been reinforced by the growth of the petroleum industry. For many years, there was little tradition of utilizing designers in product development processes. This situation is changing as a result of a series of design promotion policies. The most recent policy on design was approved in 2001. Its goals are to:

- develop design as a driver for Norwegian business and competitiveness in global markets
- increase market share, higher profits, more satisfied customers
- increase Norway's interests as a trade partner and co-operator; and as a travel destination
- create innovation based on human related and sustainable value creation
- invest in design to give Norway a clearer identity based on innovative products and services

This is implemented through:

- *Good Design* label promotion and awards, National design campaign 2002-2005, increased institutional activities and methodical creation of national design competence, including design in public procurement 2002-2010
- board member candidate's design education in public sector
- professional and economic help to first-time buyers of professional design
- regional design consultants, design promotion to business, database on business-directed design, design in business incubators, consultancy of design in interactive and digital media
- innovation foundation for professional design to attract new ideas, concepts and products
- program for internationalization of Norwegian designer products, designers and design firms
- designer continuing education grants to expose and develop competencies abroad
- integration of business-directed design to Research Council activities
- evaluation of business-directed design education and research program
- multidisciplinary research center.

Sweden

In the mire of design trends, Swedish design has always been a strong, stable presence. Not for its glamour, but for its functionality and quality and even its aura of ecological awareness. Like Finland, the 2005 has been designated the year of design.

The Ministry of Industry and Trade has recently commissioned the Swedish Industrial Design Foundation and the Swedish Society of Crafts and Design to create *The Innovative Caring Society* which is a proposal for a national design policy whose goals are to:

- improve the quality of life, competitiveness, improved public sector, improved national image
- become a world leader on user focused products, services, environments and communication which meet human needs for utility, pleasure and meaning
- become a world leader in design processes in Swedish companies, producing international competitiveness, high profits and increased exports.

These goals will be implemented through:

- marketing and promotion activities, exhibitions in Sweden and main international market areas
- promoting cross-border research and training collaboration
- master's programmes specialized in strategic private and public sector areas
- the Innovative Caring Society, development in business and public administration
- European Institute for Innovative Caring Design, a research and education institute
- national projects focusing on business development and introducing design in important business sectors, large enterprises and their subcontractors
- Swedish Centre for European Design Research
- regional and national programs for design and innovation as a model of important design for the private sector
- local 'meeting points' for design issues: exhibitions, meeting, festivals, workshops, publications etc.

The United Kingdom (UK)

The UK has had a long, close relationship with design. It has a thriving design educational system which goes back a century. The UK is currently in the unusual situation of exporting the service of design rather than the end product as their manufacturing is so depleted. There are a myriad of organizations and bodies responsible for the level of design. They are as follows:

British Design Council

- improving the competitive edge of business by developing new knowledge, creating tools and raising awareness and providing resources for presenting British creativity and innovation

Design Policy Unit (government body responsible for design policy and promotion)

- encourages the best use of design by businesses, education and government
- liaises with representative design bodies and other government departments
- develops new knowledge creating tools and raises design awareness to improve the competitive edge of businesses

- sponsors the design consultancy sector and design export issues
- British Design and Art Direction
- sets standard of creativity and promotes the concept to businesses
 - educates and inspires the next creative generation
 - D&AD Awards Touring Show and Annual Publication promoting UK design and advertising excellence
- Design Business Association (design industry's trade association)
- opens up new markets with world-class companies through British Trade International sponsored trade missions and exhibitions
 - export training for design companies
- The Design Museum
- stages international and touring exhibitions and seminars
 - provides curatorial and quality control services for the exhibitions
- British European Design Group
- organizes international trade and overseas trade missions with British Trade International sponsorship
 - market research and curatorial service
- The British Council Design Department
- market intelligence, access to key opinion formers, decision-makers and potential purchasers
 - creates opportunities for British suppliers to do business
- The British Design Initiative Ltd.
- design advisory and recommendation service assists overseas companies to invest in British design services
 - design export news articles and studies on the strengths of UK design and its export success
 - design news service summarizes latest news on innovation, products and projects
 - design export register records overseas design projects, resource for British Trade International Export Desk to identify the strengths in planning trade missions and market promotions
 - direct links to design consultancies
 - British Trade International supports trade missions, seminars, exhibitions and design workshops
 - undertakes tailored export consultancy, market research and public relation campaigns
- The Crafts Council
- promotes the contemporary crafts and applied arts through exhibitions, training, education, advice, information and sales initiatives worldwide in Sales Development Unit
 - maintains a portfolio of trade and export initiatives in partnership with British Trade International and the British Council

Asia

Korea

Korea has been progressive in the design field for the last several years. The Korean government developed its first plan in 1993 and most recently in 2003. The goals are:

- enhancing the competitiveness of Korean products and developing a strong unified image of Korea by promoting Korean design
- industrial design promotion and increasing the number of designers and design businesses and investments in design infrastructure
- increase investments in design development, especially in SMEs
- expand creativity and enhance the design quality and user-oriented design
- develop a design industry hub in the East Asian region.

Implementation through:

- promoting design development of enterprises, SMEs' design development consulting program to place design firms in SMEs
- establishment, maintenance and funding of design infrastructure
- nurturing design firms, business incubator to activate design firms to get started, provide necessary facilities and assistance
- training of professional industrial designers, annual retraining of in-house designers
- reform design education materials every three years for elementary and secondary school students
- establish standards and assessment criteria to encourage nation wide specialization in design education emphasizing marketing, engineering, ergonomics, design management, design administration and multimedia
- International Design School for Advanced studies
- design education for art teachers in elementary, secondary and high schools
- annual Korea Industrial Design Convention, National Design Awards for designers and business managers
- 500 Millennium Products (2003) applying modern Korean design in the world markets
- enhancing the public awareness of design
- Korea Design Center: link in worldwide design information, commercialization of good ideas, conferences, seminars, business meetings, banquets, exhibitions and concerts; business-incubating facilities, SMEs' design consulting program, design research, design library; design education for design experts, students and the general public.

North America

USA

The USA's use of Industrial Design was most notable after the 30's. The USA, led by large companies like General Motors and General Electric, hired designers to 'style' otherwise functional products. They saw design's role as 'modernizing' and used marketing to encourage people to be modern. This model of corporate design became the driving force behind the economy. It was less about engineering and innovation, and because it was business-led, it was also less centralized. This model is evident today alongside regional and national models. Design plays a role but mostly in relation to corporate identities and branding.

Currently in the USA there are three very active non-profit organizations involved in design promotion and policy efforts. These are:

The Design Management Institute whose goals are to:

- assist design managers to become leaders in their profession
- deliver postgraduate education in design management
- promote design as an essential part of business strategy, improve effective management of design for economic growth, bring together design and business professionals from corporations, consultancies, the public sector and universities
- sponsor, conduct and promote research; collect, organize and deliver knowledge
- organize and sponsor design and brand management conferences, journal, newsletter, eBulletin
- provide a professional knowledge database and links to consultants and associations.

The Corporate Design Foundation whose goals are to:

- improve the quality of life and the effectiveness of organizations through design
- expand the awareness of design through education of corporate managers, public sector and business students
- teach material to business and engineering schools and other educational institutions.

The Industrial Designers Society of America whose goals are to:

- increase public awareness of design, promote design to business for its economic value
- promote design education and maintain strong professional and educational design communities
- promote and foster the quality of design.

Appendix 2: Challenges and Opportunities

Through a workshop involving a mix of participants from government, industry and the design community, several challenges and opportunities were identified in regards to the use of professional design in the wood products industry in B.C.

Challenges/Barriers	Opportunities
<p>Lack of a cohesive 'wood industry strategy' The value-added wood industry is fragmented and has not collaborated in the development of a long-term vision and strategy for its development. Without clarity about the "big picture," it is difficult to find the best way to integrate design.</p>	<p>Develop a cohesive 'wood industry strategy' Design thinking would be an asset to any such discussion and design should be considered an integral component of a well-rounded strategy to bring the value-added wood industry in line with other progressive industries.</p>
<p>Unreliable or insufficient supply of wood fibre Ongoing access to a sufficient volume and quality of fibre is a concern.</p>	<p>It is evident that to ensure its survival in BC, the value-added wood industry needs better access to fibre.</p>
<p>Unreliable supply of remanufactured wood components Local manufacturers often lack a reliable supply of wood components that enables them to produce high-end products in a cost-effective manner. For example, one BC furniture company had to import furniture grade plywood from Eastern Canada and Oregon at a significant cost.</p>	<p>Wood and wood product supply issues Actions that foster the development of industry clusters or networks would lead to better co-operation and flow-through in this portion (and others as well) of the value chain. Companies need to be able to see that collaborating rather than competing would be strategically advantageous for all. Strength in design leads to increased differentiation in the market, which in turn will allow for better capacity for company branding.</p>
<p>Long geographic distance from major markets The major markets on this continent for many value-added wood products are in Eastern Canada and US, a long and costly distance to ship from Western Canada.</p>	<p>Proximity to markets Canada imported nearly 17 times more advanced wood products from China in 2001 than in 1992, with a total value of over \$310 million. Canada is the United States' largest export market for wood products. Targeted efforts to recover market share from imports would provide certain domestic market opportunities. Higher value niche products attainable through the use of design can sustain higher shipping costs making export markets more viable.</p>
<p>Lack of government policy for design Neither the federal nor western provincial governments are known to have official "design" policies for promoting design to business and industry.</p>	<p>The formation of a design association As the design community reaches critical mass, an association will likely form (DesignWest is in its formative stages). This organization will be responsible for raising the profile of design to both government and business.</p>
<p>The professional design community is still developing Industrial design is a relatively new discipline in BC and the design industry is still fragmented without strong industry associations for collective action. There are relatively few design consultancies and they are small. There is no central mechanism to assist buyers to access the design community.</p>	<p>The development of the design community There is opportunity for the design community and industry to grow together, the more industry uses design assistance the more expertise the design pool will eventually have. Industry could be instrumental in developing a highly specialized design community that would serve its needs. The two groups would benefit from joining hands and working together for they have the same goal; to make excellent products that are highly marketable.</p>
<p>Local professional designers tend to be inexperienced Local designers are predominately young and lack the experience, resources, and personal connections to be an influential force on the wood manufacturing industry.</p>	<p>Designer Link Service An initiative to provide a service to link designers with manufacturers based on matching designer skills to manufacturer requirements would be of benefit.</p>
<p>Weak marketing by professional designers Many designers lack the capital, knowledge or skills to effectively market their services to industry. They are not effectively using business case data to market design.</p>	<p>See above.</p>
<p>Designer "brain drain" Design school graduates have few employment options in BC. Designers are leaving BC to work for large US manufacturers (e.g., Herman Miller) who offer them attractive salaries. Due to this attrition, when Western</p>	<p>Student co-op work programs The placement of students into industry could be further encouraged as these programs tend to result in employment for graduates and better employees for industry.</p>

Canadian manufacturers do want to hire professional designers, they find few to choose from locally.	
Canada lacks a design culture There is a lack of appreciation for design among manufacturers and consumers in B.C. Europeans put more value on design. When Canada promotes design, it does so in a superficial sense; i.e. a product line is promoted as being the work of a particular "design celebrity." Design is often not an integral part of how products are conceived, developed, produced, and marketed in Canada.	Encourage a design culture in Canada Exposure to good design will continue to add to the design culture in B.C. and Canada. Opportunities to reward and exhibit design should be taken.
Canada is culturally diverse This makes it difficult to draw on 'traditions' to create a cohesive design strategy.	Celebrate Canada's cultural diversity There is an intrinsic value of multi-ethnicity to the creative process. Cultural and regional differences offer a source of inspiration, a unique marketing story and a space in which to challenge convention.
Scarcity of high profile examples of good design in public spaces European cities like Oslo, Norway, use their publicly funded buildings and spaces to exhibit excellent design.	More wood design in public spaces Well-designed high-profile wood structures need to be encouraged. Collaborating with the Canadian Wood Council and WoodWorks! would be beneficial to both causes.
Canada lacks "Champions of Design" The professional design community does not have the clout to give "design" a higher public profile. Furthermore, large corporations in BC are not stepping forward to push design. Canadians as a whole tend to be modest about trumpeting their innovation successes. There is still a perception within Canada that designers from outside Canada must be better than home-grown talent (i.e., anti "made in Canada").	Design Champions Involving the media in the promotion of BC and Canadian wood design excellence will be key to increasing the profile of the industry.
Market misperceptions of environmental impacts of wood industry The environmental movement and aggressive advertising and promotion by producers of non-wood materials have created misperceptions among consumers about the environmental impacts of wood products. Consumers consider substituting non-wood products for wood products. They need more information about the benefits of wood.	Raise the perception of the wood industry People have a natural affinity for wood products, however, they often gravitate to products made from non-wood materials because they tend to have more cutting-edge design. Wood is a renewable resource that can provide environmentally sound solutions for many products. This needs to be illustrated to the public in a way that has a large impact. Design has a 'wow' factor that can draw positive attention and would be instrumental in promoting wood.
Weak protection of intellectual property The wood industry is concerned about investing in new designs that could be copied by competitors. They are wondering how to prevent piracy by local and foreign competitors, and whether government can do more to protect proprietary rights.	Intellectual Property Issues of intellectual property are becoming very important as we navigate through the 'knowledge economy'. Laws are becoming increasingly complex and it would be a useful service to industry to provide accessible information regarding this issue.
Preoccupation of plant operators with other issues Owners of small secondary wood plants have "too much else of concern" to focus on the benefits and opportunities of applying professional design.	Time constraints of manufacturers Designers can actually free up time for managers to concentrate on managing instead of being deeply involved in the product development process. The solutions to encourage the use of design professionals must be easy to access for manufacturers, perhaps integrated into other services.
Scarcity of long-term strategic thinking in the wood industry Wood products' manufacturers in BC tend to have a "gold rush" mentality. This "commodity mindset" has caused many companies to mimic successful competitors instead of finding their own market niche and to compete on the basis of price instead of product differentiation and quality. Within this context there is little chance of strategic use of design.	Promote long-term strategic thinking As visionary thinkers, designers could be a valuable asset to strategic planning. Manufacturers need to be convinced of the benefits of long-term planning and systems' integration including product development strategies.
Economic challenges The effective use of professional design has costs, including:	Reduce design costs Subsidies or tax breaks for first-time design users would

design expertise, patents, travel, prototyping, sourcing new materials, new equipment and marketing. Many manufacturers don't have the capital readily available or they can't afford to wait for the benefits of applying professional design because the payoff takes time.	help to alleviate the initial cost of design.
Lack of wood industry capacity to apply design Many value-added manufacturers do not have the ability to effectively apply and manage professional design expertise. Design needs to be integrated and requires a supportive environment to be effective.	Improve design management skill Assistance or education regarding how to effectively manage the design process would be useful.
Industry not keeping up with changing tastes Many Western Canadian wood product manufacturers are not highly tuned in to societal trends, which is necessary in many highly fashion-oriented sectors.	Keeping abreast of trends In today's rapidly evolving market, this is especially difficult and is part of what design expertise can bring to the table. Designers are inherently interested in what is 'new'. For more general trends, a service for 'what's new in the wood product industry' could be developed to keep the industry as a whole tuned in to trends in markets like furniture or flooring.
Wood manufacturers are often out of the "design loop" Retailers and distributors who are closer to the consumer on the value chain are more apt than manufacturers to perceive the value of design. Some retailers and distributors are now buying design services to develop new products and then going offshore for production, bypassing the BC wood industry.	Working with retailers The manufacturing industry and retailers would both benefit if the products they sell are more closely aligned with consumer wants. Designers are well positioned to liaise between these two entities.
Competitive pressures to incorporate new materials and parts Foreign wood product competitors are incorporating non-wood materials and specialty parts that are not easily accessible in BC. Effectively applying design means having to access a wider array of inputs than just wood.	Sourcing new materials and parts Designers have an extensive knowledge of materials (both wood and non-wood) and have the problem-solving skills to find out where and how to source these materials. Designers are trained to select materials that achieve the best balance of aesthetics, performance and cost.
Limited research done on market needs Wood manufacturers do not gather as much intelligence about the tastes and needs of consumers, retailers and distributors, both local and foreign, as they could with the result that product designs may not keep pace with market needs. Simply adding value through further wood processing does not guarantee market acceptance.	Market research Market research would be a necessary initial step in targeting any design-related initiative. Part of the design process involves market research on a given product category. Designers will look at the current product market offering and find where gaps exist.
Limited knowledge about professional design The wood industry has limited knowledge about the benefits of design or has misconceptions about its value. Manufacturers do not have access to success stories and they often perceive that design is a cost rather than an investment. Many don't know how to use designers, or have the mistaken belief that design is a magic formula for giving a product greater market appeal. They do not integrate design into the product development process at an early stage.	Reducing the cultural divide between wood manufacturers and designers Manufacturers and designers have difficulty communicating because they lack a common understanding and language. "Industrial design" has not been well defined and communicated to the wood industry, nor is the design community familiar enough with wood industry needs and terminology. Seminars and workshops that provide tangible access to the design process would help bridge the gap. Designers are trained to communicate ideas and if given the opportunity could 'sell' their services to industry.