

Making the LINK:

Advancing Design as a Vehicle for Innovation and Economic Development

April 2006



Executive Summary

Design is an activity that “translates an idea into a blueprint for something useful.” As such, it has tremendous importance: it is an integral part of the innovations that economic policy makers increasingly see as vital; it has application in sectors and industries across the economy; it has the capacity to make products and processes more environmentally sustainable; and, it contributes to quality of place and quality of life in cities and regions. Unfortunately however, **design is underappreciated and therefore not utilized effectively in Ontario and Canada.**

The purpose of this study is then to **address the utilization gap by precisely detailing it and offering recommendations to correct it.** The City of Toronto’s Economic Development Division has undertaken this work because Toronto boasts an especially strong design sector, which can be leveraged for the gain of the city, province and country. While the broader benefits must not be overlooked, we hope specifically to foster an increased awareness of the economic potential of design as already exists in many other countries.

In particular, we show how **successful innovation and commercialization involves design throughout - from conception (idea) to final product (something useful)** - whether it is radical innovation in newer high-tech industries or incremental innovation in more mature sectors like manufacturing. A new discovery or idea is only valuable if it is attuned to the needs of users, and the ‘working out’ of the idea is frequently a process of design.

Yet background research indicates that there is continual underinvestment in Toronto design as a result of two market failures. The first is **imperfect information.** Research in several countries has shown that companies that invest in design outperform their competitors. A forthcoming **companion piece** to this study profiles firms and organizations that have invested in Toronto design with very favourable results. Notwithstanding these telling case studies however, the general reluctance of Canadian businesses to incorporate design, and of government to support it, suggests that the information about its benefits is not fully appreciated.

Second, there are **positive externalities** as the benefits of design investments spill over beyond the party that purchases the services. Everybody gains when design contributes to a stronger economy, more attractive and inclusive public spaces, and greater sustainability.

Despite the existence of these market failures, and the mandate for action that they entail, **little has yet been done** to ensure that anywhere near the full potential of design is realized. Design can assume much more prominence in federal and provincial innovation strategies which can subsequently be built upon with policies to promote take-up of design services. Apart from those with affiliations to the design industry, calls for more design investment have similarly been lacking from private sector institutions.

The report ends then with a discussion of what can and should be done to **increase awareness** and leverage design more effectively. Informed in part by what some other jurisdictions have done, recommendations are offered to potential clients, all three orders of government, and the design industry.

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1

Introduction

When Arlene Gould, Strategic Director of Ontario's Design Industry Advisory Committee (DIAC), wrote in DIAC's landmark report *Design Matters* that the province is "well positioned to take advantage of the current design boom," she was right on two counts.¹ First, Ontario and more specifically Toronto certainly possesses the location-specific attributes that will enable it to become a recognized hub of design innovation, not least of which is the large and growing design workforce in the city. And second, it is also correct to characterize global demand for design as 'booming'. While the aesthetic value of good design has always been recognized, many are also coming to understand that design contributes more broadly to competitiveness, sustainability, the provision of public services, and social fabric.

This new focus on broader benefits has influenced governments and firms in many countries including Korea, Denmark and the United Kingdom to invest heavily in design. In Canada and Ontario however, action has been slow to follow advocacy. As early as 1995, the Ontario Ministry of Economic Development and Trade funded a study that outlined the need for the province to have a coordinated design strategy.² But no subsequent funding to actually implement the plan was ever forthcoming.

The City of Toronto supported the contents of that report and again demonstrated its commitment to design in the *Economic Development Strategy* from 2000. The theme of the following quote runs throughout:

In advanced economies, the generation of new ideas and the translation of those ideas into innovative products and services of superior quality is the primary way economic value is added. Cities like Toronto are increasingly uncompetitive for large-scale routine mass production manufacturing, despite Toronto's historic success in this area. On the other hand, adding value to products and improving the efficiency of production processes through the use of advanced design and new technologies, whether in manufacturing or the delivery of services presents tremendous potential for the city. Toronto manufacturers that have embraced high order design have been successful in establishing and expanding international markets. Specialization, innovation and finding more flexible and higher value-added niches are key to Toronto's future competitiveness.³

Due in part to the City's efforts, some important progress has been achieved including the continued growth of Toronto's design sector. Yet there is still substantial room to take fuller advantage of the tremendous design strength that exists in Toronto.

1.1 Purpose of this Report

The purpose of this report is to address the utilization gap by precisely detailing it and offering recommendations to correct it. Using a literature review, expert interviews and labour force data as information sources we focus especially on how design contributes to economic development and why this should be reflected in relevant policies. We also show how the dual market failures of imperfect information and externalities in the form of positive spillovers, described in detail, currently lead to ineffective use of Toronto's design workforce.

Canada has lost valuable time by not acting on the message of design's importance sooner while other countries have taken it to heart. It is now time to recognize market failures and to use Toronto's world-class design strength as a resource to advance the economy, create jobs, respond to pressing social and environmental issues, increase tax revenues, and improve quality of life.

1.2 Report Outline

The format of the report is as follows. First, we provide a definition of design and review the literature that suggests why it should be a foundation of economic strategy. Reasons include design's integral contribution to both radical and incremental innovation, and its role as a cross-sectoral enabler, finding use in industries across the economy. Next, data demonstrates the strength of Toronto's design sector but also that we are likely not using it effectively to leverage the benefits mentioned above. This problem stems from the market failures detailed in Section 4. Despite these market failures, Section 5 shows that much more can be done in Canada and Ontario to support design. Examples of what other jurisdictions have done help illuminate this point and lead into a discussion of what should be done here. Finally, we provide some specific recommendations for potential clients, government, and the design industry.

2

Design Should be a Foundation of Economic Strategy

2.1 What is Design

To explain why design should be a foundation of economic strategy it helps to provide a definition. The UK Design Council writes that there are a lot of misconceptions about design, particularly that it has become a “buzzword denoting style and fashion.” “But,” they write, “good design isn’t simply about the surface. Aesthetics are important, but only a part of a bigger picture.” A more complete definition states that design is:

an activity that translates an idea into a blueprint for something useful, whether it’s a car, a building, a graphic, a service or a process. The important part is the translation of the idea, though design’s ability to spark the idea in the first place shouldn’t be overlooked.⁴

As such, it is user-focused and, depending on what is being designed, takes into account questions of ergonomics, social context, materials science, as well as aesthetics. These considerations are then built on by the designer with “a mixture of creativity and commercial insight.”⁵ And when seen in this broader light we get an indication of design’s importance and innovative potential.

2.2 Design is an Integral Part of the Innovation Process

Like their counterparts in most countries of the developed world, the federal government has adopted the outlook that “Canada will secure its competitive advantage in the global, knowledge-based economy by maximizing its capacity to innovate.”⁶ As non-renewable natural resources become depleted, and manufacturing sectors face increasing competitive pressure, regions can continually adapt by developing new and differentiated products and processes. This is an observation that has been seized on not only by governments, but also by firms, non-governmental organizations and academic institutions. It derives its strength in large part from the experience of certain regions in the U.S. that turned technological innovation into unprecedented prosperity just as the traditional American manufacturing centres stagnated.

Because these areas, most notably the Silicon Valley, led the computer revolution and continue to apply highly advanced technology in emerging fields like biotechnology, they created the impression that innovation is synonymous with scientific and technological breakthroughs. But this view is too narrow and overlooks the critical role of design.

From the moment something is imagined or pictured in the mind of the inventor, it has a discernable form based on how the inventor wants it to be used, and presumably, how they want it to look. As Vivien Walsh writes then, things “may not be designed by a professional designer,” but “even the most radical technological innovation has to be embodied in usable form by the design process.”⁷ What we think of only as new technology actually often owes its success in equal measure to new design. An excellent example is the development of the cell phone as demonstrated by the pictures at left. While cellular technology was created by Bell labs in 1947, the mobile phone wasn’t really “invented” until the 1970s when someone at Motorola came up with a visual concept resembling the top photo and then adapted and developed the technology to make it happen. Further, the product has primarily evolved, now resembling the picture at bottom, through design changes. Certainly components have been engineered to be a lot smaller and the addition of a screen is a technological improvement. But again, the impetus to develop the technology is a visual idea or design that the phone maker then seeks to translate into something concrete. The value-added between



Figure 1:
Mobile phones 1991 and 2005

generations of phones is not new technology per se, but new technology that contributes to the ultimate goals of better appearance and functionality, both products of design.

There is a widespread perception that the designer's job is to come in after a technically inclined engineer has invented something to make it look nice. But the development (and incredibly successful proliferation) of mobile phones is the result of ongoing close collaboration between engineers, designers and marketers that began in the earliest stages of product development. We have no trouble thinking about architecture in this way – the building is essentially its design. Innovative buildings are not structural engineering inventions made to look good. They are the result of architects working within and pushing the limits of structural engineering to create something that has value for the people that will come in contact with the building. Engineers understand that this is the nature of the innovation process and often develop their own design skills. While good design is useless without sound engineering and manufacturing behind it (or more correctly alongside it), these attributes are similarly wasted if not embodied in a design that meets users' needs.

Although the other design disciplines are not generally thought about in the same way as architecture, they are no less important to the innovative process. Another excellent example is drawn from the history of the personal computer. While the computer revolution is seen as the story of a new technology that changed the way we live and do business, it would not have been possible without an industrial designer creating a mouse⁸ and a graphic designer developing the system of icons used first by the Macintosh and then the Windows operating system. Examples like these exist for each of the various design occupations.⁹ They show how design thinking was involved in the innovation of many of the products and processes that we now rely on and that are tremendous sources of added value for regional and national economies.

2.2.1 Design and Commercialization

In these cases it is difficult to say that innovation starts with *either* science *or* design. A helpful way to view the process is that while scientific and technological knowledge can provide the raw material for some innovations, design can be seen as contributing the functional and aesthetic aspects that allow innovations to be commercialized. New discoveries, no matter how radical, are only valuable if they are attuned to the needs of users. The science is inseparable from the design decisions that make it “relevant and accessible” and “introduce the technology into the social fabric.”¹⁰ Research increasingly supports the view that design decisions actually carry the technology through to the stage where it has an economic and social impact.

For example, a Norwegian study argues that the ‘chain-link’ model is what the path to successful innovation most closely resembles (see diagram in Appendix A). The authors write that “by far the most important components of innovation in this model are design activities and marketing; the key problem for the firm is to link its design competence with market demand.”¹¹ The process involves feedback loops between engineering, design, marketing, and research through all stages of product development. The design expertise that will allow the end-product to be commercialized is incorporated into the innovation process from the beginning. This is contrasted with the ‘linear model’ of innovation which faces increasing criticism but has traditionally been assumed. The linear model suggests that all research occurs at the beginning of the process and thus “is a precondition for innovation.”¹² The innovation is presumed to ‘happen’ when the research produces a discovery and the role of design is ignored until, possibly, further along the linear path at the development stage when the already ‘discovered’ innovative product or process needs to be marketed.

Design's role in commercialization and the applicability of these models have implications for both government policy and firm behaviour. Firms seek to innovate and commercialize to gain competitive advantage. Policy makers have recognized public benefits when these efforts by local firms are successful, and have thus adopted the view that innovation is to be "promoted *systematically* across the economy."¹³ Thinking of innovation as science and technology, governments in Canada and elsewhere have long funded and promoted research, public and private, academic and corporate. More recently however, seeing that research isn't necessarily generating the anticipated number of successful end-products, policy has focused on the development side of R&D. The previous federal government announced the creation of an Expert Panel on Commercialization to "advise the government on how to ensure more new technologies and products make their way to the marketplace to benefit all Canadians."¹⁴ If this panel is continued, it has a responsibility to explore how design can help achieve its mandate.

2.2.2 Incremental Innovation

Discussion thus far has focused on the role of design in 'radical innovation': the development of products and services that diverge significantly from their predecessors or have nothing that could be called a predecessor. But very much related, and not to be overlooked, is the use of design to create differentiation and competitive advantage for existing products and services with less pronounced changes. This we call 'incremental innovation'.

While breakthrough innovations are critical for newer high-technology industries, sectors that are further along their life cycle often rely on decreasing factor inputs to remain competitive. This strategy tends to drive down wages, which is undesirable in the first instance and even more so given that it doesn't result in sustainable advantage. It makes much more sense for mature industries in Toronto, Ontario and Canada to compete by adding value to their products whenever possible. And again, the use of design has repeatedly demonstrated its ability to add value and make incremental product changes that consumers respond to, even when technological change is not involved.

The manufacturing industry is a particularly relevant example of a sector in which firms can employ designers to continually adapt products and create differentiation. In a globalized economy, firms increasingly shift manufacturing away from Toronto and other developed world locations to parts of the developing world where wages are significantly lower. In Canada, certain types of manufacturing have all but disappeared. Yet manufacturing firms in many sectors are still important local employers. Revenues and jobs at these firms can be maintained and expanded through design investments.

Perhaps nowhere is this better illustrated than with Korea's policy direction and experiences over the last decade (see also section 7 and Appendix D). In response to a financial crisis in 1997, government supported the initiative of Korean firms to "put design at the core of competitiveness ... producing emotionally appealing products as opposed to cheap but well-made ones."¹⁵ This strategy proved hugely successful as it revived capital intensive manufacturing and propelled design-led companies like Samsung, LG, and Hyundai to "explosive growth." Samsung has even risen to position 21 on *Business Week's* list of the top 100 global brands, a list that doesn't include a single Canadian company. Korean designers are gaining international recognition and winning awards, and the effort to use design effectively has allowed the country to maintain and enhance

its manufactured exports. “Korea’s top five export items: semi-conductors, automobiles, wireless telecommunications devices, computers, and ships – can all be described as advanced design service industries. If one takes out the design contents from these industries, one may find no manufacturing industry that contributes more to exportation than design.”¹⁶

Expanding the capacity and competitiveness of the manufacturing sector through design, as Korea has done, also provides an opportunity to add value to natural resources. In a widely cited paper on Canada’s relative competitiveness in the global economy, Roger Martin and Michael Porter write that relying on factor endowments “will not produce sustainable advantage for Canadian firms. This strategy approach provides no protection from the discovery of lower-cost sources of raw materials and/or the entry of still lower labour-cost countries into the production of generic products/services.”¹⁷ They call instead for “Canadian firms and governments” to increase the country’s ability to compete by “embrac[ing] innovation, uniqueness and differentiation,” all potentially generated by designers.¹⁸ Canada’s lumber can become the well-designed furniture that is valued by people across the world; its mined ores are transformable into a host of functional and attractive goods from chrome fixtures to precision tools.

So while design is necessary to turn the results of scientific and high-tech applied research into usable products, and thereby stimulate the growth of sectors that have been identified as ‘innovative’, we see that it is equally important in sectors associated with the ‘old’ economy. In fact, it is impossible to make a clear distinction between industries that are innovative and those that are not. Clearly newer industries like bio- and nano-technology are more ‘knowledge-based’ and involve more scientific discovery. But new products only create value if they are designed from the beginning to be functional and appealing, exactly as is the case in more mature industries like manufacturing.

An effective way to stimulate innovation, both radical and incremental, in almost all sectors of the economy therefore is to encourage the use of design. Though it may not yet be true in Canada, *Business Week* magazine recently wrote that “when people talked about innovation in the ‘90s, they really meant technology. When people talk about innovation in this decade, they really mean design.”¹⁹

2.2.3 Design and Innovative Business Methods

Beyond its role in creating innovative products, recent discussion suggests that design thinking can also make the organizational structure and methods of innovative companies much more effective. “Design can be a key facilitator” of innovation says Bettina Von Stamm, head of the Innovation Exchange at the London Business School, “if it is embedded into the organization’s culture.”²⁰ Roger Martin, Dean of the University of Toronto’s Rotman School of Management, echoes this sentiment. To get the full benefit of design, he says, firms shouldn’t simply hire designers, but should also try to understand the problem-solving methods that make them so valuable in the innovation process. By “embracing design-shop approaches,” like role flexibility, collaboration, willingness to modify products, and creative thinking about “what might be,” companies improve their chances of success.²¹ They end up not just designing products but also ‘designing decisions’ to be more user-oriented; user in this case meaning all those within the organization whose “subsequent actions are shaped and constrained by a given decision.”²² Well-designed corporate decisions are intuitively obvious, says Martin, and make the firm more dynamic as a result.

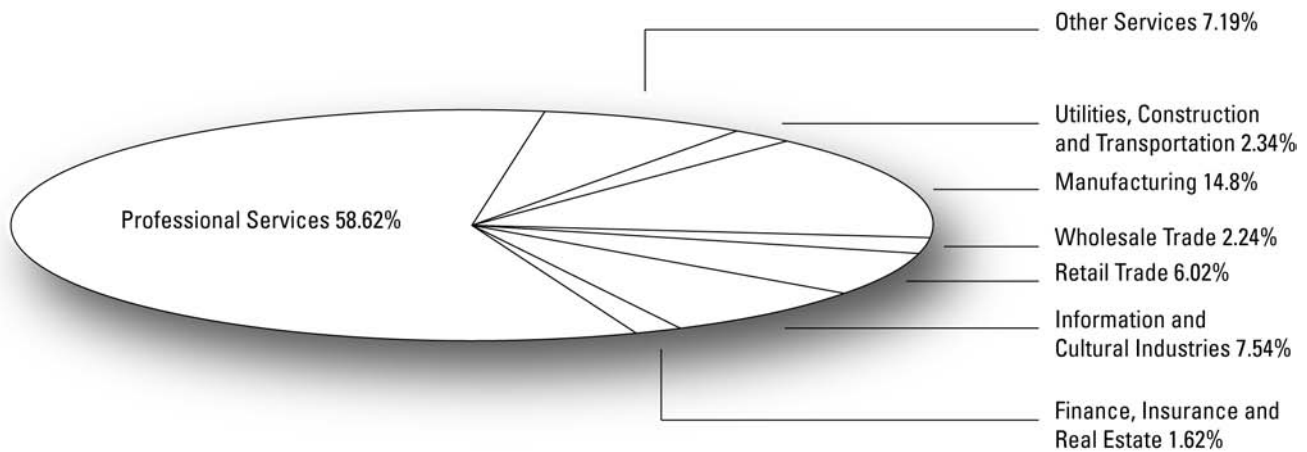
Unfortunately he finds that as it stands now, corporate approaches generally feature extremely low-quality decision design.

2.3 Design is an 'Enabling' Service across the Economy

In addition to its innovative potential, a further reason why design has important economic benefits is that it serves as an 'enabler' for industries across the economy. While the design sector in Toronto shows characteristics of an economic 'cluster' in its own right, it is certainly also an important component of other industry clusters in the area. This is not only inferred from anecdotes but clearly shown by statistics.

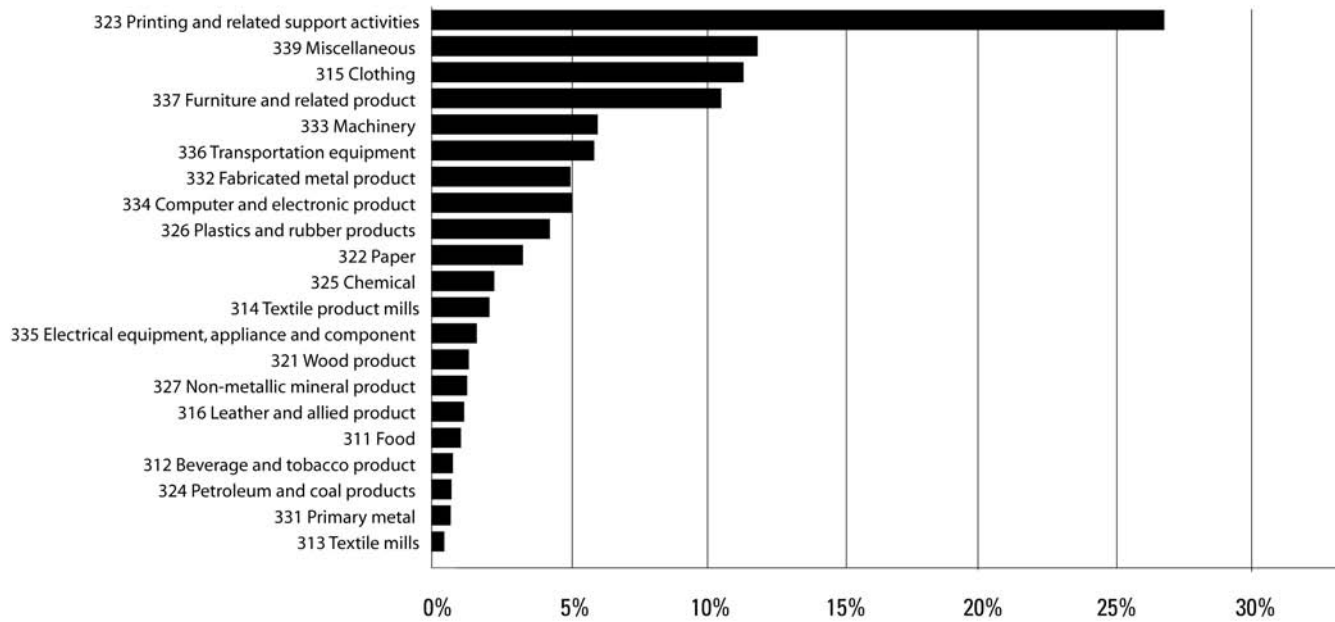
In a paper commissioned by the Design Industry Advisory Committee (DIAC), Meric Gertler and Tara Vinodrai from the University of Toronto find that Ontario's designers are spread out in "almost every corner of the economy, [which] implies that design is a vital input to the competitive success of firms in a wide range of sectors."²³ Not surprisingly given that the majority of Ontario's designers are in Toronto, the authors' findings also apply when the analysis is conducted at the city level. The following graph, compiled from 2001 census information, shows that for the Toronto CMA slightly over half of the professional designers²⁴ work in 'Professional, Scientific and Technical Services'. This category includes the architectural and advertising industries and so its high share of design employment is not surprising. But Figure 2 also shows that significant portions work in 'Manufacturing', 'Information and Cultural Industries', and 'Retail Trade'.

Figure 2: Industrial mix of the Toronto CMA's design workforce, 2001²⁵



Further, designers are employed in a variety of fields within these broadly categorized industries. For example, Figure 3 shows that within the 'Manufacturing' category, designers work on a wide spectrum of products.

Figure 3: Percentage of Total Toronto CMA Manufacturing Design Employment in Each Industry Sub-Group, 2001²⁶



While the graphics above consider all of the design occupations together, obviously there is some variation in terms of which industries are primary employers of different types of designers. Table 1 shows the breakdown of employment in the various industry groups for each design discipline.

Table 1: Employment by Industry and Design Occupation in Toronto CMA, 2001 (%)²⁷

Industry (NAICS 2-digit code and name)	All Designers	Architects	Landscape Architects	Industrial Designers	Graphic Designers	Interior Designers	Other Designers
21 Mining and Oil & Gas Extraction	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
22 Utilities	0.2%	0.7%	1.8%	0.4%	0.1%	0.0%	0.0%
23 Construction	1.8%	2.2%	3.5%	3.1%	0.2%	7.0%	0.6%
31-33 Manufacturing	14.8%	2.3%	1.8%	51.3%	13.4%	3.2%	20.4%
41 Wholesale Trade	2.2%	0.3%	1.8%	5.7%	2.0%	2.2%	3.0%
44-45 Retail Trade	6.0%	0.5%	1.8%	3.3%	2.8%	13.5%	23.0%
48-49 Transportation & Warehousing	0.3%	0.0%	0.0%	0.8%	0.4%	0.3%	0.0%
51 Information & Cultural Industries	7.5%	0.3%	0.0%	1.5%	12.5%	0.3%	10.9%
52 Finance & Insurance	1.2%	0.8%	0.0%	0.0%	1.9%	1.0%	0.0%
53 Real Estate & Rental & Leasing	0.4%	0.7%	0.0%	0.0%	0.3%	0.9%	0.9%
54 Professional, Scientific & Technical Services	58.6%	88.6%	60.2%	29.7%	59.6%	68.8%	28.1%
56 Administrative & Support, Waste Management & Remediation Services	2.2%	0.4%	21.2%	1.5%	2.1%	1.0%	3.3%
61 Educational Services	0.6%	0.7%	0.0%	0.0%	0.8%	0.0%	0.7%
62 Health Care & Social Assistance	0.2%	0.0%	0.0%	0.0%	0.4%	0.3%	0.0%
71 Arts, Entertainment & Recreation	2.2%	0.3%	1.8%	0.8%	2.4%	0.4%	7.6%
72 Accommodation & Food Services	0.2%	0.0%	0.0%	0.0%	0.1%	0.7%	0.0%
81 Other Services (Except Public Administration)	0.9%	1.2%	0.0%	0.8%	0.9%	0.3%	1.1%
91 Public Administration	0.9%	1.9%	7.1%	0.8%	0.6%	0.6%	0.4%
TORONTO (%)	100.4%	100.8%	100.9%	99.6%	100.4%	100.6%	100.0%

These findings are significant because they clearly demonstrate that design is a valuable activity across the economy. Granted, the number of designers in certain industries is rather low. However, the success of the firms that have made design investments in Toronto and elsewhere (see research cited in Appendix B for example) suggests that more would employ designers if they were aware of the benefits. Herein lies an excellent opportunity for potential clients to investigate how design investments might help them and for government to support these efforts.

Because design is used so widely across sectors, it provides policy makers with an excellent delivery point to help guide economic development. Specifically, increasing awareness of design's economic benefits would constitute a very targeted and finite initiative, but one that would have wide-ranging impacts. It is notable that similar reasoning is used in arguments to generally develop a region's innovative capacity. Now it remains to be recognized that the local stock of designers and design ideas is a fundamental part of this capacity.

2.4 Broader Benefits

It must finally be repeated that the benefits of design investments go beyond the economic ones mentioned here. The focus of this paper is design's role in the innovation and commercialization process and as a cross-sectoral enabler because we see that these roles are not sufficiently recognized in Toronto and Canada. However, in places where the economic potential of design is acknowledged and supported, there is also a cautious sentiment that these economic benefits should not become the whole story. Awareness of design should also be increased because of what it can contribute to public spaces, environmental sustainability and quality of life.

3

The Opportunity to Leverage Design in Toronto

The City of Toronto’s Economic Development Division has undertaken this study because we see the arguments made above for design’s importance as especially relevant to Toronto. Particularly, making better use of the already strong design sector that exists here can help achieve our mandate to create and maintain employment, expand Toronto’s tax base, and improve residents’ quality of life. Further, because Toronto is a leading design centre within Ontario and Canada, it can be the initial focal point for increasing awareness and achieving these goals provincially and nationally. This section demonstrates the tremendous design strength and potential here in Toronto. As mentioned, design is an important part of many industry clusters and the design sector has elements, listed individually below, of a cluster in its own right. However, the critical element of take-up is disappointing. This situation must change with greater recognition of the payoffs for investing in design if economic growth at both the regional and national levels, among other beneficial impacts, is to be leveraged.

3.1 Critical Mass

Perhaps surprising given the lack of recognition it receives, Toronto has a huge concentration of designers in both absolute and relative terms. While it conveys the strength of the entire Ontario design workforce, Gertler and Vinodrai’s *Designing the Economy* profile also highlights that a large portion of these designers live in the Toronto region. Table 2 shows that 64 percent of Ontario’s designers are in the Toronto CMA while that is true for only 42 percent of the total labour force. Nationally, 28 percent of Canada’s designers are in Toronto compared to 16 percent of the total labour force. Further, while there is some variation between the design disciplines, none has less than half of its provincial total in Toronto, and only one has less than a quarter of its national total.

Table 2: Employment by Design Occupation, 2001²⁸

	Architects	Landscape Architects	Industrial Designers	Graphic Designers	Interior Designers	Other Designers	All Designers	Total Labour Force
Toronto CMA	3,680	570	2,610	12,680	3,410	2,695	25,645	2,564,590
Ontario	5,135	1,095	4,505	20,230	5,515	3,570	40,050	6,086,820
% of Ontario	71.7%	52.1%	57.9%	62.7%	61.8%	75.5%	64.0%	42.1%
Canada	12,800	2,410	9,795	44,615	11,655	9,825	91,100	15,872,070
% of Canada	28.8%	23.7%	26.6%	28.4%	29.3%	27.4%	28.2%	16.2%

Taken in a wider North American context, the city continues to measure up well. Table 3 shows that Toronto has the third largest design workforce among North American centres with over one million residents, behind only New York and Boston, and the largest in Canada. The second column displays a relative measure of the design workforce using location quotients.²⁹ Here again Toronto ranks very highly at fourth in North America and first in Canada.

Table 3: Top 25 North American Cities (1 million+) for Design Employment, 2001³⁰

Rank	Design Employment	Designers (000's)	Design Concentration	Design IQ
1	New York, NY PMSA	35.2	San Francisco, CA PMSA	3.3
2	Boston, MA-NH PMSA	17.5	Boston, MA-NH PMSA	2.6
3	Toronto, ON CMA	17.3	New York, NY PMSA	2.5
4	Chicago, IL PMSA	17.1	Toronto, ON CMA	2.2
5	Los Angeles-Long Beach, CA PMSA	15.0	Montréal, QU CMA	2.2
6	Montréal, QU CMA	12.1	Seattle-Bellevue-Everett, WA PMSA	2.1
7	San Francisco, CA PMSA	11.5	Vancouver, BC CMA	1.8
8	Detroit, MI PMSA	10.0	Columbus, OH MSA	1.6
9	Philadelphia, PA-NJ PMSA	9.8	Milwaukee-Waukesha, WI PMSA	1.4
10	Seattle-Bellevue-Everett, WA PMSA	9.8	Portland-Vancouver, OR-WA PMSA	1.4
11	Minneapolis-St. Paul, MN-WI MSA	8.3	Ottawa-Hull, ON CMA	1.4
12	Dallas, TX PMSA	7.9	Minneapolis-St. Paul, MN-WI MSA	1.4
13	Atlanta, GA MSA	7.8	Detroit, MI PMSA	1.4
14	Washington, DC-MD-VA-WV PMSA	7.4	West Palm Beach-Boca Raton, FL MSA	1.4
15	Phoenix-Mesa, AZ MSA	6.8	Denver, CO PMSA	1.4
16	Houston, TX PMSA	6.0	Nassau-Suffolk, NY PMSA	1.3
17	Vancouver, BC CMA	5.7	Phoenix-Mesa, AZ MSA	1.2
18	Denver, CO PMSA	5.5	Grand Rapids-Muskegon-Holland, MI MSA	1.2
19	Nassau-Suffolk, NY PMSA	5.5	Chicago, IL PMSA	1.2
20	St. Louis, MO-IL MSA	5.3	Kansas City, MO-KS MSA	1.2
21	Columbus, OH MSA	4.8	Philadelphia, PA-NJ PMSA	1.2
22	Portland-Vancouver, OR-WA PMSA	4.6	St. Louis, MO-IL MSA	1.2
23	Baltimore, MD PMSA	4.1	Dallas, TX PMSA	1.2
24	Milwaukee-Waukesha, WI PMSA	4.1	Cincinnati, OH-KY-IN PMSA	1.1
25	San Diego, CA MSA	4.0	Charlotte-Gastonia-Rock Hill, NC-SC MSA	1.1

3.2 Growth Over Time

Additionally we know that much of Toronto's strong design capacity has been added relatively recently. Table 4 shows that across the country, growth in the design workforce vastly outstripped growth in the overall labour force over the period 1991-2001. The 4.7% average annual growth rate of the design workforce in Toronto is higher than the provincial and national average growth rates and the numbers show that a significant portion of the increases in Ontario and Canada were due to increases in Toronto.

From the discussion in section 2.3 above, we also know that a significant number of the designers being added to Toronto's workforce are being employed outside of traditional 'design industries' and instead are increasingly working in all sectors of the economy.

Table 4: Design Employment Growth in Toronto, Ontario, and Canada 1991-2001³¹

	Designers			Average Annual Growth (%)	
	1991	1996	2001	Design Workforce	Overall Labour Force
Toronto CMA	16,170	18,210	25,645	4.7	1.4
Ontario	25,550	29,655	40,050	4.6	1
Canada	59,735	69,230	91,100	4.3	0.9

3.3 Design Education

The design workforce here has been able to grow so rapidly largely because of the education and training opportunities that exist within the city. Table 5 shows the Toronto universities, colleges and institutes that offer design programs and in what fields. Taken together these programs currently have enrollment of over 3,000 students.

Table 5: Breakdown of Toronto Design Programs by Discipline³²

	Architecture	Landscape Architecture	Industrial Design	Graphic Design	Fashion Design	Interior Design
Centennial College				New Media Design		
George Brown College				Graphic Design	Fashion Design	Interior Design
Humber College		Landscape Technology	Industrial Design	Advertising & Graphic Design, Packaging Design Graphic Arts & Pre-press	Fashion Merchandising	Interior Design
International Academy of Design and Technology				Computer Graphics, Advertising Design, Digital Media	Fashion Design, Fashion Marketing	Interior Design
Ontario College of Art and Design		Environmental Design	Industrial Design	Advertising, Graphic Design, Illustration, Material Art & Design		
Ryerson University*	Architecture	Landscape Architecture		Graphic Communication	Fashion Design, Fashion Communication, Theatre & Set Design	Interior Design
Seneca College					Fashion Arts	
Sheridan College/York University	Architectural Technology		Industrial Design	Graphic Design		Interior Design
University of Toronto	Architecture (Master's)	Landscape Architecture (Master's)				
York University			Design (Master's)	Design (Master's)		

* Soon adding a Master of Design program

It is notable however that despite this variety of programs and certificates offered, virtually all are at the undergraduate level and most are applied diploma programs focused on design methods and technology. Although York University has recently begun offering a Master of Design degree, and Ryerson is developing one, post-graduate education outside of architecture is generally missing. This situation is problematic because advanced programs:

project a vision for design rather than concentrating on immediate needs. Only with this focus on future possibilities can the design sector advance its own disciplines and, most importantly, connect design research to other disciplines ... and industry.³³

The research conducted in post-graduate design study helps graduates contribute to the innovation process by allowing them to answer questions like:

What will the next generation of consumers need? How can we apply state-of-the-art-technology and knowledge of natural resources to develop new products and processes that will reduce environmental impacts? How can we develop a generic model for managing design resources effectively in smaller businesses?³⁴

Such programs also create the educators for the next generation of design innovators.

Further, more interdisciplinary instruction, particularly linkages with management education, is important for design students to develop entrepreneurial skills. Since, as we will see, design's benefits are still largely unrecognized by potential clients, it is important that designers can trumpet their own capabilities, understand the business side of projects they are involved in, and communicate design concepts in a way that clients can relate to.

And while design education should be expanded upwards to include inter-disciplinary and post-graduate programs, it can also be extended downwards with design basics added to the primary and secondary levels. This would help children develop a different set of problem-solving skills and an appreciation of good design from an early age.

3.4 Internationally Known Designers and Design-based Firms

Among the critical mass of designers in Toronto exist some internationally recognized and respected individuals and firms. Further, some local companies and organizations are such committed clients of design services, and have produced such well-designed outputs, that they have also managed to gain widespread design acclaim, including outside of Canada. Unfortunately, in light of discussion to follow, these kinds of enthusiastic clients are not necessarily the norm but the ones that do exist provide vital employment opportunities and exposure for Toronto designers. A partial list³⁵ of some well-known design service firms and design-based client firms that are exporting a large amount of their work and are an integral component of Toronto's overall design cluster includes:

- **Teknion** – a designer and producer of 'office systems and related office furniture products,'³⁶ with a client list that includes the Bank of Dubai and Procter & Gamble.
- **Umbra** – a Toronto houseware company with offices in the U.S., Hong Kong and the Netherlands.
- **Keilhauer** – a furniture designer and manufacturer aiming to conduct closed loop manufacturing with showrooms in New York and Chicago and sales representatives in Asia, Australia, South America and Europe.
- **KPMB Architects** – a global leader in the architecture field behind many high profile projects.
- **Watt International** – a retail and brand design firm with its head office in Toronto and branches in the U.S. and UK which was ranked as one of the world's top 20 design firms and as the world's 3rd largest package design company by *Design Week* magazine.
- **TAXI** – a graphic design, advertising and brand creation company behind well-known design-based campaigns for Telus, Viagra and Mini Cooper.
- **Roots** – a clothing, accessories and leather goods producer and retailer using design in its fashions, marketing and retail outlets to convey an image of Canada to the international markets it successfully sells in.
- **Yabu Pushelberg** – graduates of Ryerson University and veterans of large-scale hotel, restaurant and retail interior design projects abroad including the MGM Grand casino in Las Vegas and the Four Seasons hotel in Tokyo.

3.5 Supporting Mechanisms

Each of the design fields in Ontario has an industry association that offers services such as accreditation and promotion. While these are provincial in scope, they are all located in Toronto. In 2001, the various industry associations started working together on the industry-wide Design Industry Advisory Committee, which produced the *Design Matters* document from which some of the statistics and findings throughout this study are drawn.

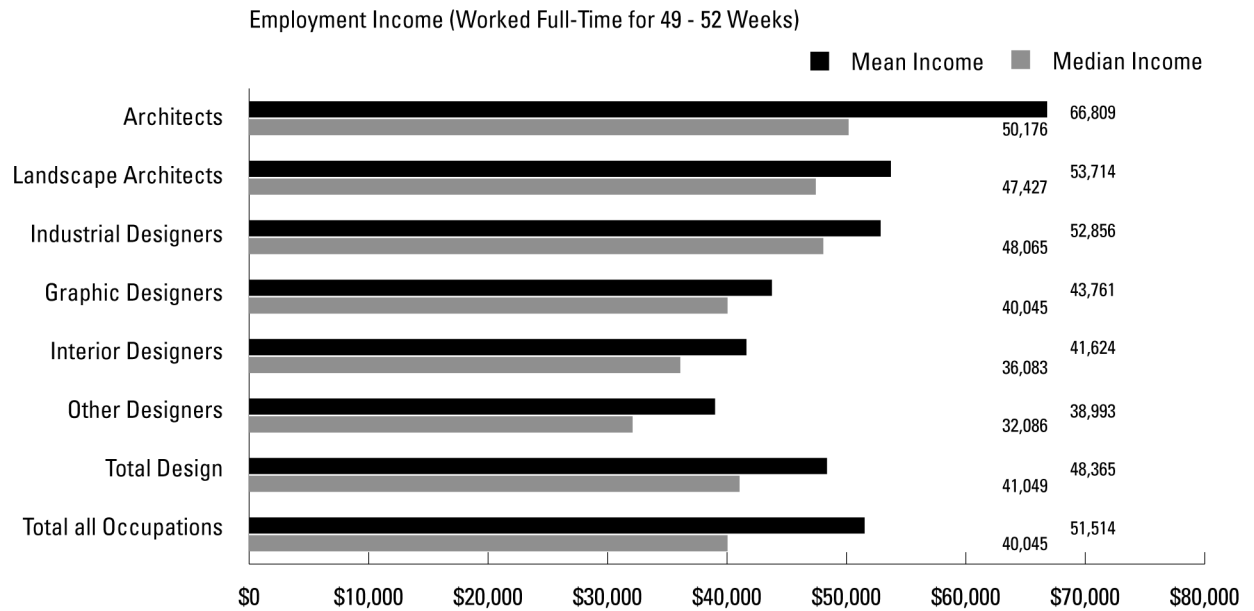
Another mechanism intended to support the industry and increase appreciation is the Design Exchange (DX). Conceived with funding from all three orders of government, the DX was to be Canada's design museum and centre for research and education with a mission "to educate Canadians about the value of design through engaging and enriching programs."³⁷ This continues to be its mandate; however by many accounts, a lack of continued funding has made it difficult to fully take advantage of DX's potential. Operating funds are now supplied solely by the City of Toronto which is problematic when the geographic scope is intended to be national. Additionally, a large portion of the budget goes towards building maintenance limiting the DX's available resources to provide research and other programming. As discussed below in Appendix D, similar institutions in other countries and provinces have more flexible and consistent support, and the means to deliver more ambitious programming. They therefore have a larger impact pushing design into the public's awareness and getting local firms to use it effectively.

3.6 Failure to Take Advantage

The shortage of public sector support for design is especially troubling since, while the various cluster components described above provide the conditions for a strong design sector that increases productivity and adds value to outputs, "numbers alone do not equal value."³⁸ In fact there is a strong sentiment expressed in interviews and written materials that Toronto's 'expertly trained, highly creative' design workforce and supporting institutions are not sufficiently valued nor being put to use effectively. Stakeholders believe this is because the information needed to persuade governments and firms to make design investment is neither sufficiently developed nor disseminated and because the public spillovers of these investments are not being adequately considered (both discussed further in Section 4). Though some Toronto designers have had success delivering their services at home and abroad, many local firms continue to overlook design at least until the very last stages of product development.

Not surprisingly then, whereas the data tables above clearly show the strengths of the Toronto design cluster, its continued low valuation is also captured by data. Figure 4 shows mean and median incomes for full-time, full-year workers in each of the design occupations in the Toronto CMA. Architects, Landscape Architects and Industrial Designers all make more than the overall mean and median incomes. However, taken together, designers have only a slightly higher median income and a lower mean income.

Figure 4: Mean and Median Income for the Toronto CMA's Design Workforce and Overall Workforce, 2000³⁹



The relatively small difference between the mean and median incomes for designers seems to correspond with the further finding that “income increases with level of formal education are less pronounced for the design workforce” than for other occupations.⁴⁰ Figure 5 shows that income levels in design occupations remain virtually stagnant with education level increases up to the achievement of a university degree. At that point they rise substantially. By contrast, income levels in information technology occupations⁴¹ rise steadily with each level of additional schooling.

Figure 5: Mean and Median Income by Education for the Toronto CMA's Design and IT Workforces, 2000⁴²

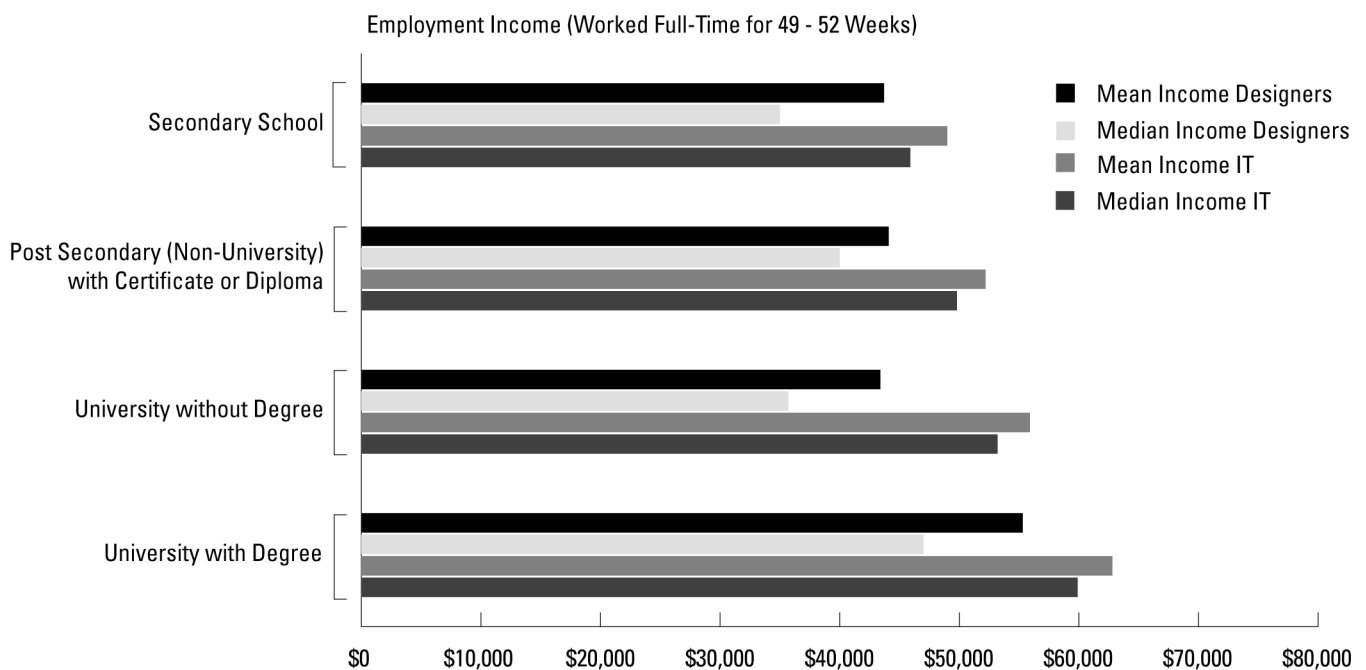


Table 6 shows that this general trend holds for all the design occupations individually, none of which sees significant pay raises before earning a university degree. And while employment in these fields with a secondary school education pays better or close to the Toronto average, employment with a university degree is lower than or close to the average. Although it is difficult to conclusively explain the data, it is clear that the returns to education before achieving a degree are minimal for designers. We can hypothesize that this lends credence to the common sentiment that the intricacies and significance of good design are not understood or appreciated by clients.

Table 6: Median Income by Education for the Toronto CMA's Design Workforce, 2000⁴³

	Employed Labour Force	Secondary School	Post Secondary (Non--university) Certificate or Diploma	University without Degree	University with Degree
Architects	50,176	69,696	43,181	47,070	52,030
Landscape Architects	47,427	44,974	43,794	n/a	44,903
Industrial Designers	48,065	40,165	44,939	41,115	50,136
Graphic Artists	40,045	36,055	40,089	36,071	40,185
Interior Designers	36,083	29,983	34,964	32,974	37,912
Other Designers	32,086	28,922	33,863	34,393	33,937
All Occupations	36,598	30,010	36,057	37,785	52,012

In addition to the relatively low salaries that highly trained designers face, it appears that “design work is often highly contingent, and that economic survival for designers can be precarious.”⁴⁴ Gertler and Vinodrai find that designers are less likely than people in other occupations to have a usual place of work. They are self-employed much more commonly than other Toronto workers and, on average, the self-employed designers earn less than their wage or salaried counterparts. Related to these findings, an increasing portion of design work is being outsourced or contracted out, possibly confirming the perception that firms see it as an add-on to be brought in during the final stages of product development rather than incorporated into all stages of the business process as an in-house activity.

So while design’s contribution to innovation, productivity and economic growth should be translating into stable, well-paying employment for Toronto’s design workforce, it is clearly not yet doing so. In equilibrium models from economics, compensation levels are expected to gravitate towards the value of the services provided, resulting in the optimal level of design investment. If designers are earning relatively low wages and finding it difficult to maintain steady work, then, say the models, there are either too many of them or their contribution is not that important. By extension, there is no reason for policy to ‘intervene’ to change market outcomes. Yet as we will see below, the market for design does not function perfectly and is likely not providing ideal outcomes as a result.

4

Market Failures

There are strong indications that the market continues to undervalue design for two primary reasons:

- First, there is ‘imperfect information’ in the market for design as governments, firms, and even designers are still not completely aware of the benefits.
- Second, high quality design entails positive ‘spillovers’ to parties beyond the purchaser of the service. Because only the private benefits are considered in each individual transaction, design remains undervalued.

Each of these points is explored further here.

4.1 Imperfect Information

A fundamental aspect of market economies is that private sector firms are trusted to constantly pursue the growth of their bottom line. By extension, it is commonly supposed that they make themselves aware of all opportunities to achieve this growth, a perception reinforced by the assumption of ‘perfect information’ among all market actors in economic models. Yet we know that this isn’t always the case. Though firms do seek ways to grow, and have the option to undertake extensive market research, they cannot be assumed to have omniscient knowledge of what will work and what won’t. Even if, for example, a company was intrigued by the potential of incorporating more designers into all stages of its operations, “they need proof and direct experience of the impact of design on business results.”⁴⁵ And unfortunately, quantitative study in this area has only been undertaken in certain jurisdictions with the results not widely publicized, so firms often do not have the proof of returns that they require.

As a result, if they have not used design services in the past or have done so only in a limited fashion, many firms remain unaware of the likely benefits and are thus understandably reluctant to invest in design. For the DIAC study, Toronto-based businesses across different industries were asked whether designers are involved in critical decision making; 78 percent responded no.⁴⁶

4.1.1 Empirical Study of the Return on Design Investments

However we know from the studies that do exist that when firms do involve designers, the investment generally pays off. It appears that even if design employers are somewhat ambivalent at first, they are pleased with the results. Writing about a study in London on the use of design consultants⁴⁷, Vivien Walsh relates how:

most of the respondents were doubtful about using consultant designers in advance and pleasantly surprised by the direct benefits (profits, market share, exports) and indirect benefits (learning how to best use a consultant) afterwards.

She further points out that:

this may not say much for the planning and strategy of the firms, but it is a vindication of government policies encouraging manufacturing firms’ use of professional design via subsidies.⁴⁸

Several more recent studies, detailed in Appendix B, show similar benefits. For example, in 2004 the UK Design Council analyzed the stock market performance of design-led companies versus their peers over the previous ten years. It is the most comprehensive study to date to concretely measure the business impact of design investments and it clearly shows that companies making

these investments are more competitive at all stages of the business cycle.⁴⁹ More research that demonstrates the nature of this dynamic, and particularly whether it holds in Toronto and Canada, will give firms the information they need to make smart design investment decisions. We expect that this will mean more design consideration at all stages of product and process development and more stable work for designers.

4.1.2 Implication

But while we are collecting this information and improving the knowledge base among all players in the market for design services, we should also be acting on what we already know. As we have seen, firms and designers may be unaware of the extent to which business success can be fostered until they have had the experience of working on design-led innovative projects.

When these projects are undertaken, the evidence is that they work well for all involved. The lack of information in the market is therefore preventing beneficial design work from taking place and it is important to correct this situation. The challenge to eliminate imperfect information falls on everybody involved, including the designers who can be more entrepreneurial, the potential clients who can actively pursue opportunities to learn more about design, and governments who can help their own innovation and economic development agendas by increasing awareness.

4.2 Positive Spillovers

The second reason why the market mechanism leads to the under-valuation and under-use of design is the existence of positive externalities or spillovers. When an individual or firm privately purchases design services some benefit is received by the general public. Yet the client considers only their private utility and is unwilling to pay for this public benefit which will thus go uncaptured without external support. These spillovers are of multiple types as described below. It is also important to note that there is a difference between local (meaning specific to a country or smaller geographical unit of analysis) and global spillovers. While both are important to capture, they have different implications for what capturing measures should be taken and by whom. Each of the following spillovers has at least a local aspect, implying some responsibility for all three orders of government in Canada to push the market towards delivering ideal outcomes.

4.2.1 Raising the Bar

First as relates to innovative products, once something comes onto the market its design is available for all to observe. This can lead to mimicry among competitors, or more positively seen, can inspire competitors and designers working in other fields. Regardless, it has the effect of improving the design of things in general and generating interest among citizens. In short, well designed products contribute to a culture that values things that work well and look good. And this demand from discerning consumers feeds back to inspire products, processes and places that are even better designed, to the benefit of the public and the regional economy. The examples of Korea, Denmark and Montreal show how local appreciation of design and certain key design investments by local companies raise standards and help develop a reputation that gets attached to all outputs from these places.

4.2.2 Economic Indicators

Beyond the general advantages of nurturing a culture that values it, design has more specific economic spillovers. For example, since design solutions can spark industries that otherwise might be in decline like manufacturing, it can help avert public problems like high unemployment levels.

Design can give companies a competitive edge so that they do not have to compete on cheaper labour inputs and can instead sustain wages and revenues.

4.2.3 **Sustainability**

As environmental degradation becomes a larger problem, the capability to design things, spaces and processes in a more ecologically conscious manner becomes increasingly important. Environmentally inclined designers think beyond the immediate application of what they are working on and give ample consideration also to questions like “what are the processes by which this thing is produced?” and “what are the processes by which it will end its useful life?”⁵⁰ These types of questions have led to the advancement of fields such as biomimicry that combine science and design in seeking more sustainable development methods. Another such field is ‘green building’ which is producing innovation in construction materials and practices. Green buildings are more energy efficient and therefore can entail cost savings for developers and tenants. But reduced energy use and the other advantages of more sustainable buildings clearly spill over beyond these two groups.

A collaborative project between York and Ryerson Universities called ‘Design for Sustainability’ has studied Canadian enterprises in multiple fields that “are leaders in designing their products, services and business strategies to preserve the environment, reconcile diverse stakeholder interests and achieve competitive advantage.”⁵¹ Many of these enterprises engage in sustainable design because they see it as a prudent business decision, but when they do, it benefits all who live in the environment they are helping preserve. Similarly, consumers who opt for more sustainable alternatives receive some private utility but the advantages accrue much more widely to current and future generations. To ensure these benefits are leveraged there should be support for sustainable design undertakings, for public appreciation, and for the capacity of local designers to come up with helpful solutions.

4.2.4 **Quality of Place**

Essentially combining all the beneficial spillovers of design investments discussed above, good design contributes to quality of life and quality of place. In any region, when things, places and processes are designed in a way that they function better, are better looking, and are more sustainable, they enrich people’s lives. Recent work by Richard Florida and others suggests that creative activity, particularly in diverse cities such as Toronto, acts to draw and retain creative and talented people. Having these people as residents is, in turn, “a necessary condition for a city’s innovative dynamism and overall economic success.”⁵²

Design is “one of the most critical elements of creative activity,” and therefore its importance in helping achieve this dynamism cannot be overlooked, especially since quality of place is likely not a consideration of private design clients.⁵³

4.2.5 **Implication**

From a policy perspective then, the point here is of course not to eliminate the public spillovers of design, but rather to encourage firms and governments to make decisions that allow them to be fully captured.

5

What is Currently Being Done?

Unfortunately, despite public spillovers and imperfect information, design has not yet received much attention in government policy or discussion. Apart from those with affiliations to the design sector, overt support has also been lacking from private sector institutions. There is now a tremendous opportunity, and in fact a responsibility, to change this situation and certain developments are promising. Elements of institutional support, and opportunities to extend it, are examined further below.

5.1 Innovation Policy

Industry Canada, on its Strategis business and consumer information website, has importantly acknowledged that:

*[e]ffective, innovative design is a critical factor for economic growth. Through the application of sound design practices, design practitioners are able to increase the value of products, services, communications and physical spaces, while at the same time reduce costs, improve efficiency and increase productivity.*⁵⁴

To ensure that these economic growth goals are realized, the federal government must now make the link between design and innovation in all relevant policy documents. *Achieving Excellence: Canada's Innovation Strategy* was drafted in 2001 and continues to provide national policy direction. It encourages Canadian firms to be more innovative because,

*cost competitiveness is not sufficient to position companies in a global marketplace where competition is increasingly driven by quality rather than price. To succeed, firms need to apply and commercialize knowledge — to innovate and be first to market with better products and improved processes.*⁵⁵

It also recounts that many firms have been successful in their innovative efforts, citing the statistic that “in recent years, at least 80 percent of Canadian manufacturing companies successfully introduced a new or significantly improved product or process.”⁵⁶ But despite what we know about the role good design plays in the successful introduction of new or improved outputs, it receives very little mention in the 90-page report.

While *Achieving Excellence* is now four years old, all new initiatives should be crafted with design in mind. In May of 2005, Industry Canada announced the creation of the aforementioned Expert Panel on Commercialization reflecting that it's not just the hatching of new ideas and technologies that drives economic growth; these inventions have to reach the public. But what the official news release about the creation of the roundtable suggests should be done to improve commercialization is worrisome. Certainly, “creating the right environment . . . including availability of risk capital, skills, infrastructure and security of intellectual property” is important, but commercializing many product and processes fundamentally means translating the ideas into functional and appealing forms through the design process.⁵⁷ Design essentially links technology to people and, if continued, the panel could therefore benefit by adding someone who represents the design sector.

The provincial government can similarly outline a more explicit role for design in its innovation and commercialization strategies. In a mid-2005 Cabinet shuffle, the Ministry of Research and

Innovation (MRI) was created to advance programs previously administered by the Ministry of Economic Development and Trade that “help move R&D from the lab to the marketplace.”⁵⁸ At the time of writing, MRI is conducting extensive research about best practices and is still in the process of developing precise policy direction. Once programs are established or consolidated under the new Ministry, they must include more discussion and promotion of design-led innovation. They must especially continue to dispel the premise that commercialization only happens through a process of linear ‘technology transfer’ whereby laboratory ‘discoveries’ are handed over to people who can market them effectively.

This model may apply well to certain research products like pharmaceuticals where, besides choosing the size, shape and colour of the pill (not insignificant design considerations), the refined chemical compound is the end product. For other types of innovative outputs however, commercialization involves the transformation or unfurling of an idea or invention through successive product designs. If prototypes and patents from labs are to be transferred to the marketplace successfully, they must undergo a rigorous design process whether this is in the lab, with the licensee, or between the two. The Province’s efforts to increase the yield of its publicly funded research are commendable but would benefit from an exploration of how design can help make it happen. As the provincially appointed Task Force on Competitiveness, Productivity and Economic Progress writes in its annual report:

*public policy emphasizes creating the supply of risk capital and then funnelling it into organizations that have neither the incentives nor the capability to help Ontario succeed in commercialization and innovation. A more balanced public policy would increase commercialization of our R&D and lead to a more innovation-based economy.*⁵⁹

The balanced policy the Task Force calls for should then include support for increased use of design.

5.2 Take-up Programs

When design assumes greater importance in government innovation and commercialization strategies, the foundation will be laid for subsequent policies that promote take-up of design services. One area where governments are very clearly supporting design capacity in Toronto is in the education sector, as outlined in Section 2. These programs ensure the wealth of well-trained designers that Toronto enjoys.⁶⁰ But without concurrent policies to mitigate the undervaluation of design and encourage its use, designers have trouble finding steady work and their education is partly wasted. It is lamentable then that design is generally not recognized and promoted as a key function in the Canadian, Ontario or Toronto economies, there are no incentive programs for firms to make use of designers, local or not, and finally, no order of government has a procurement policy that involves significant design criteria. The funding of design education is to be applauded but must be accompanied by promotion or similar supports that ensure design is properly valued and those who receive training are able to apply their knowledge and skills.

5.3 Indirect Research Funding

There are now certain government programs that can stimulate demand for design but they are indirect because the programs were not created with the design sector in mind. However, the impact of these should not be minimized as some are quite helpful and are important first steps towards greater recognition of design’s potential. For example, the Ontario government is contributing \$235 million and the federal government \$200 million towards General Motors

Canada's Beacon Project which "represents a major shift in the way auto makers have traditionally reinvested in their plants."⁶¹ Rather than purchasing machinery, Beacon is putting \$2.5 billion towards research and development in automotive engineering and design at Canadian universities. The large contributions by both GM and government are an acknowledgement that competitiveness in the automotive sector will rely on engineering and design innovation, and a workforce with the appropriate knowledge base. A list of government R&D programs that could similarly support the design sector is presented in Appendix C.

5.4 Support from Other Sources

It is finally important to again note that while policies from senior orders of government are the primary focus of this section, it is not the sole responsibility of Ottawa and Queen's Park to offer support to the design sector. Despite its limited resources, the City of Toronto can and should also be doing more. Efforts to market Toronto for example could play up the strengths of local design. The City should continue to show leadership by pressing ahead with its public realm design review panel and can institute a broader procurement policy with design criteria.

Further, supportive policies from all orders of government should be just that as initiative must come from the private sector. There is a mandate for governments to help achieve the public benefits of good design but it will be a lot easier to do so when clients for design services recognize their own likely private benefits and the arguments that link design to innovation and economic development in general. Certain individual firms have made important investments on their own behalf and have thereby contributed to the understanding of the process. Yet these cases remain isolated and no consensus view or collective voice has emerged. Organizations like the Conference Board of Canada that provide leadership can be helpful in this regard. The Board conducts a host of 'Innovation and Knowledge Management' research but their findings and solutions, like those of governmental innovation policy makers, will benefit by incorporating the emerging research that explores the role of the design.

6

What Other Jurisdictions are Doing

The as yet unrealized opportunity to support and take full advantage of design in Toronto, Ontario and Canada contrasts starkly with some other locations. Policies and attitudes in six jurisdictions that have moved to leverage their design strength for economic development are described in some detail in Appendix D, and are also briefly outlined here.

Korea

Starting in the early 1990s with the formation of the Korean Institute for Design Promotion, and substantially built upon later in the decade after the Asian financial crisis, the Korean government has made massive investments to promote design on both the demand and supply sides of the economy. Seeking to reinvigorate their manufacturing sector and develop home-grown original brand manufacturers (OBMs), the national government provided more design education, created incentive programs for design investments, and organized a nationwide design week. It is unclear to what degree these initiatives are responsible for the success and rapid growth over the same time period of companies like Samsung, LG and Hyundai given that these companies were investing heavily in design on their own accord. But certainly the timing is more than coincidental.

United Kingdom

Design has been an economic policy issue in the UK at least since the Design Council (DC) was formed after World War II. This organization continues to be the primary mechanism through which the national government works to leverage design's economic potential, and in terms of mandate, it is similar to Toronto's Design Exchange. However, its vastly larger resource base allows the DC to have much more ambitious program delivery, which includes outreach campaigns and publication of research.

Denmark

Danish design is recognized around the world and has a storied tradition, but government support is relatively new. While policy direction is still being ironed out, Denmark did institute the quite innovative and unique Icebreaker Program, which provided SMEs with financial support to undertake design investments. The requirement was that the company must never have employed a designer before. More than half of the participating firms said they would continue to make design a routine element of their business. Importantly, the private sector is also involved in a coordinated manner in the promotion of Danish design as the Federation of Danish Industries has undertaken a design investment benchmarking effort.

China

While specific policies are difficult to locate, China has clearly identified design as a key activity in its rapidly growing economy. The country now reportedly has over 400 post-secondary design schools (a 2,000% increase since the mid 1980s) that graduate over 10,000 students each year. In combination with low wages and cheap currency, this situation has designers and stakeholders in other countries worried. However, indications are that China has been unable to adopt a world-leading position because their design is not sufficiently innovative. Curriculum is rigid and many manufacturers still rely on copying. If designers in Canada can continue to offer differentiation, and receive the necessary support, it appears they can stay ahead of the curve.

United States

There is no direct support for the American design sector to speak of yet the U.S. boasts some of the most renowned design consultancies, like IDEO and ZIBA, and design-based brands, like Apple, Gap, Cadillac, Gillette, and Motorola, in the world. The lesson to take from the American example appears then to be from the clients who have deemed large design investments necessary. However, to suggest that there was no leadership on the part of government in getting the American design sector to where it is now is incorrect. Large amounts of indirect funding for design research delivered primarily through the military and universities laid the groundwork that the private sector picked up on. The best examples are the design elements that helped advance the personal computer, developed by Xerox and Apple, but first conceived of in government-funded research centres.

Montreal

Though all of the other examples are international, Montreal merits inclusion because of the wide-ranging support programs for design that Quebec offers, and the Province's decision to focus these programs in the city where most of the designers are. For example, Quebec has funded institutions including the Institute of Design Montreal and tax credits for firms employing designers. The City of Montreal also has created the position of Design Commissioner. These various initiatives have helped foster a greater appreciation of design within the city and have helped create the impression that Montreal is Canada's design capital. However, institutions seem to be directed solely towards either the cultural or economic importance of design. Reconciling these imperatives and seeing the benefits of design more broadly is a challenge. Ontario can therefore learn both from the successes and mistakes of Montreal in trying to take advantage of the design capacity that also exists in Toronto.



What Needs to be Done

That there are market failures preventing Canada from realizing the full potential of design is troubling. That there is little being done to correct this situation, especially in light of what other places have done, is even more so. But the opportunity to take corrective action is not lost. In speaking with multiple design sector experts and stakeholders, it becomes clear that a necessary condition to make effective use of design is for there to be a better understanding of what it is, what it does, and what it can contribute. This will clearly help eliminate the problem of imperfect information. Evidence that design-based firms outperform their peers and that successful innovations involve design through all stages of the process must be made available to potential clients, and they in turn must seek it out. More local study and benchmarking must also be conducted to determine the particularities of the market for design in Toronto, Ontario and Canada.

Additionally, governments can promote the results in a variety of ways - this paper is part of the City of Toronto's effort to put design on the economic policy agenda, and senior orders of government can help by supporting our ongoing research efforts and making design part of their strategies to improve innovation and commercialization. They also have the option to financially support design undertakings so that hesitant clients are exposed to the benefits. Ultimately though, the responsibility for clients to make beneficial design investments is their own. Government subsidies intended to eliminate imperfect information should therefore eventually cease. "The ideal scenario is that [they] will not be necessary anymore, having in mind that [clients] will already understand what design is" and what it can do for their business.⁶²

To correct the market failure associated with spillovers however, ongoing public support may be mandated. Even with perfect information in the market, some public benefits will be forgone without additional support, and here, governments acting on behalf of the public have many policy options. To select which are most suitable, we again stress the importance of expanding awareness and local information. Only with greater attention and understanding can appropriate market corrections be found.

Specific recommendations to help increase awareness, correct both market failures, and leverage the full potential of design, particularly using Toronto's strong design sector, follow here.

8

Recommendations

With the largest population of designers in Canada, and amongst the largest in North America, Toronto provides a logical base to start generating more appreciation of design and taking advantage of its often unrecognized benefits. Unless otherwise noted however, the following recommendations apply and are important throughout the rest of the province and country as well. They are divided into three types: suggestions for potential clients, for government, and for the design industry.

8.1 For Potential Clients

If Canada is to leverage the benefits of design, particularly the economic benefits, leadership must be provided by industry. As has happened in countries like Korea and the U.S., the Canadian private sector must invest time to learn about the potential of design, and resources to realize this potential. While also spilling over to benefit the public, the dividends of these time and resource commitments will accrue to firms and investors. The following recommendations offer some ideas on how this can be accomplished.

1. For firms: make a concerted effort to investigate the benefits of design and explore opportunities to incorporate it into all stages of output development

In order to eliminate the market failure of imperfect information, and thus help Toronto, Ontario and Canada fully capture the benefits of design, firms make take the initiative to inform themselves. Although reluctance and ineffective use of design are still common in Canada, studies in several countries show that the earlier and more deeply firms involve designers and design thinking, the larger they can expect the returns to be. More research is emerging in this area and firms will be well served to follow it closely, contribute to it, and take the findings to heart. They should begin now to involve design expertise in their organizational structures, and apply it from the earliest stages of output development.

Moreover, leadership must also come from institutions related to the private sector. Industry associations and organizations providing business guidance such as the Conference Board of Canada should adopt programs to amplify the message that design is an integral part of the innovation that firms are increasingly seeking to produce. Here they can look to Denmark and the example of the Federation of Danish Industries. Business schools can also incorporate the importance of design into their curriculum, as it appears both Rotman (University of Toronto) and Schulich (York University) are starting to do. In combination with initiative from government and the design sector, these actions by potential clients and associated institutions will translate into economic growth, raise the bar of local design quality, and contribute to the public sphere more broadly.

2. For investors: as a part of due diligence, examine whether design is part of the long term business plan when considering providing capital

In recent economic development research, tremendous attention is paid to start-up firms in high-technology industries. These firms are widely seen as the primary source of the innovations that will keep regional economies competitive. But because of the tremendous amount of capital required to commercialize products, the venture capital funds and investors who are able to provide this capital can exert a significant amount of influence. This recommendation is borrowed from the UK Design Council who recognized the implication that it is as important for investors as it is for output-producing firms, if not more so, to inform themselves about the benefits of design. With this information they can help firms use the capital provided to integrate design services and modes of thinking effectively, and thus improve the chance that their investment is successful.

8.2 For Government

The recommendations above are primarily intended to correct the imperfect information that exists within the market for design. We expect that as research emerges and the private sector seeks it out, firms will recognize what design can lend to their innovative efforts, product development and business growth, and will start to make additional design investments on their own behalf. Yet as these decisions will still be based on the private benefits the firms expect, investment will still not be sufficient to capture the spillovers, or public benefits, of good design. Here, government has a role to play. As DIAC writes, ‘the important question to pose is not “how can government support design?” but rather “how can government obtain best value from its design workforce?”’ The following recommendations will help obtain best value for the public by working to improve information and capture desirable spillovers. Unless otherwise noted, they are directed towards both the federal and provincial governments.

3. Increase awareness of design’s economic potential by incorporating it into public sector innovation and commercialization strategies

All of our research and comparables indicate that the economic benefits design helps leverage can only be fully realized with increased awareness. The first order of business for economic development policy makers at senior orders of government is therefore to add discussion of design to their innovation and commercialization strategies. What is currently missing from these strategies is an explanation of the feedback loops in the R&D process and design’s role in turning both radical and incremental new ideas into tangible outputs that people value. Specifically, at the federal level such discussion should be added to the *Achieving Excellence* document and a representative of the design sector should be on Industry Canada’s Expert Panel on Commercialization. Provincially, as the policy focus of the new Ministry of Research and Innovation is developed, it should similarly involve the design sector.

It must also be noted that at all orders of government, making design an integral part of economic development strategies does not mean that it should be outside the purview of other Ministries or departments. The benefits of good design are found within the cultural, social and environmental spheres as well. Montreal’s longer history of design support policies shows that institutions with varied mandates can all be more effective if they work together to seek complementarities.

4. Once innovation strategies include design, build on this by developing specific support programs

When design, innovation and commercialization are equated with each other, it will provide the impetus to then develop specific initiatives aimed at increasing design activity and capturing the inherent spillovers. Support for innovation has mainly come in the form of public research funding, and more recently has included funding for technology transfer activities to get this research commercialized. Returns on these efforts stand to improve if programs are directed towards developing value-added outputs through design. Options include:

- providing firms with tax credits or subsidies to strategically incorporate design services;
- funding programs that teach businesses and designers how to work together; and,
- strategically placing design providers or consultants in incubators, science parks and convergence centres;

To determine the ideal combination of options will require further study of the particularities of design in Canada (see next).

5. Support more research that quantifies the economic and broader impacts of design

In times of fiscal restraint, we do not expect the provincial and federal governments to undertake policy initiatives that involve extensive funding impulsively. As mentioned, their first step should be to increase awareness. While that is happening though, senior orders of government should partner with the City of Toronto to identify the particularities of the local design sector, and to study the role of design and creativity further in the current economic context. The information gained will be useful both for economic development policy makers and for firms who are considering design investments. The research we envision is of two types:

1. Detailed case studies that provide specific analysis of firms and governments agencies that have invested in quality design and incorporated it into product or process development. These will help tell the story of what the design process entails in a very practical way. Also, highlighting firms that have successfully integrated design thinking will likely get the attention of their competitors.
2. Broader, long-term econometric analysis of the type that has been conducted in other countries and is presented in Appendix B, that measures the overall value of design investments. Part of this effort must be determining appropriate measurement variables as replication of existing studies may not be ideal. One way that the federal government could support this type of research is to have Statistics Canada add questions about design investments to existing manufacturing and innovation surveys.

6. Become model clients of design excellence through the adoption of standards and the increased use of competitions with design criteria

It is intuitive that an effective way to demonstrate the benefits of design, and to thereby improve available information, is to lead by example. As major purchasers of goods and services, governments have the ability to advance design quality and appreciation. They can become model clients to the private sector by showing how design can improve quality and efficiency in the delivery of public services. Procurement policies that include standards for design excellence should be adopted to help deliver better schools, hospitals and workplaces; contribute to environmental sustainability; and reduce costs. Where possible, request for proposal competitions should include design criteria.

The application of design standards is as important for the City of Toronto as it is for senior orders of government. For example, parks and buildings on City-owned land, and urban form in general, must be designed well to attract people and businesses and to raise the quality of life for residents. These benefits to the public can only come from coordinated and stringent design requirements or review processes. The City's planning and urban design departments do obviously try to ensure that built form and public spaces are designed well, but Council should adopt measures that strengthen their ability to do so.

7. Continue support of post-secondary design education, and extend it downwards to the primary and secondary levels, and upwards to post-graduate programs

The principal form of support that government has offered to the design sector is post-secondary education funding. The payoff of having a variety of strong diploma and degree programs in the design fields, particularly at colleges and universities in the Toronto area, is evident from the number of able graduates ready to contribute their skills to projects here and abroad. The current situation in the United States further shows the dividends that initial government investment in design

know-how can bring when industry starts to recognize the potential benefits of using it. But the provincial government should build on their support of design education by expanding its scope;

- first, design elements can be added to primary and secondary school education in order to develop problem-solving skills and appreciation of good design from an early age;
- second, more Master's level programs must be developed to envision the future possibilities of design and build on undergraduate training for immediate needs and markets; and finally,
- more interdisciplinary study can be encouraged to allow design students to develop their entrepreneurial knowledge and to allow students in other fields, such as management and engineering, to gain a greater understanding of design.

8. Recognize that the strong design sector is a key attribute of Toronto's economy and highlight it when promoting the city, province and country abroad.

Many countries, regions and cities have capitalized on their designers by promoting their work externally. Such a strategy helps build a strong reputation for local design that gets attached to all domestic products. Qualitative research indicates that Toronto designers are already exporting a large amount of their work and have been able to develop a reputation for quality work internationally. Canadian firms should be encouraged to invest more in local design services, but government should also be supporting designers' efforts to export their work, particularly as the market for design, like most markets, becomes global in scope.

8.3

For the Design Industry

The design industry accepts its own responsibility to make design work to its greatest potential for Canada, Ontario and Toronto. The two primary industry institutions that exist in Ontario, the Design Industry Advisory Committee (DIAC) and the Design Exchange (DX), must explore how support can best be delivered from an institutional point of view. We offer these recommendations to support their efforts.

9. Follow through on the steps laid out for the industry in the DIAC Design Matters action plan

Although they produce different classes of outputs, all of the design fields are essentially participating in the same activity by creating visual representations of ideas. It is not simply the design occupations but rather this common activity that is under-recognized. By using this commonality to present a unified message, the design industry is in a much better position to get its issues heard. Through their extensive labour force study, DIAC recognized the need for designers to become more entrepreneurial and coordinated in advocacy and promotion to generate the support and involvement of both industry and government in advancing design. Their action plan includes imperatives to:

- launch a design for commercialization program;
- create a brand strategy;
- form a design educators network; and,
- establish a model design policy for government.

Designers in Ontario and elsewhere should get involved with their industry association, look to DIAC's action plan for guidance, and work together to see it through to the achievement of objectives.

10. Examine the currently existing design support infrastructure and explore ways that it might be strengthened

DIAC and the Design Exchange are very valuable components of the infrastructure that currently exists in Toronto to support designers and their clients, and to foster an appreciation of design amongst the public. As such, they should each take steps to ensure that this infrastructure is being put to use as effectively as possible and should constantly seek ways to solidify their work plans and financial structures. A first step, for example, could be to realign the funding that the Design Exchange (DX) receives with the geographical scope of its mandate and programs. Since all public funding now comes from the City of Toronto, it makes little sense to proceed only with national goals. In consultation with all three orders of government, the DX board should attempt to gauge what investment possibilities exist to accomplish which objectives. For instance, the federal and provincial governments might support the DX to become a centre for design along the lines of the other National and Ontario Centres of Excellence (see Appendix C).

While working with government, the DX board should also work with DIAC as advocacy and support from the industry side should be well-coordinated. This is not to say that the two should be mutually exclusive – some duplication of mandate and objectives may be desirable – but there should be very clear information about who is doing what.

9

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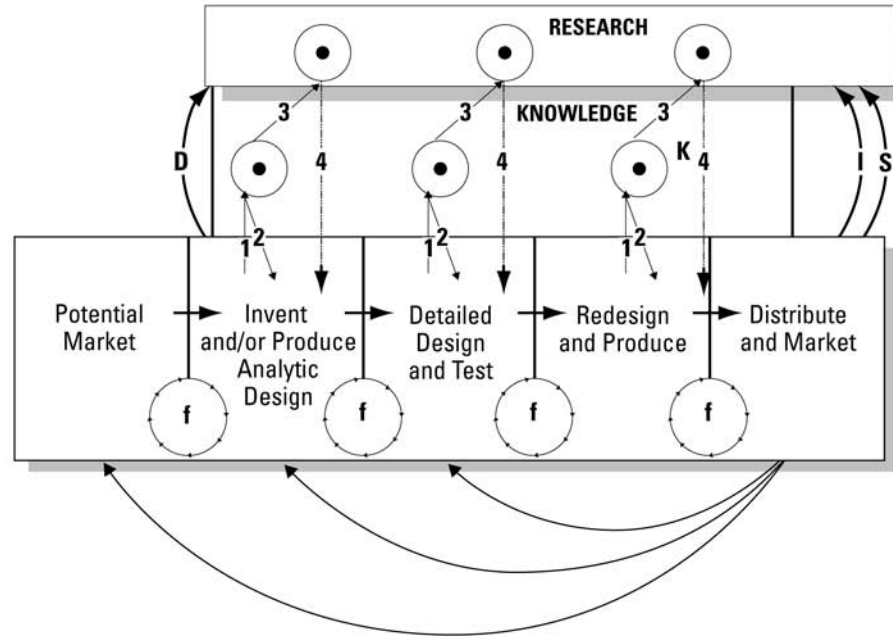
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Appendix A - The Chain-Link Model of Innovation⁶³



Symbols on Arrows:

f/F = feedback loops / particularly important feedback loops

K (1,2,3,4) = links through knowledge to research and return paths. Design challenges dictate appeal to previously held knowledge (link 1). If problem solved at the K node, returns to design through link 2. If not, link 3 to research activated. Return from research (link 4) is problematic – therefore dashed line

D= direct link to and from research from problems in invention and design

S = support of scientific research through the instruments, machines, tools, and procedures of technology developed by the innovation process

I = support of research in sciences underlying the product area when the innovation process produces new information. The information obtained may apply anywhere along the chain.

Kline and Rosenberg's chain-link model of innovation starts with the identification of a potential market. A design is then conceived of, developed, tested, produced and marketed. However, the process is far from a strictly linear one. Feedback loops connect back from lessons learned along the way and inform improvements in subsequent rounds of design. Further, the most notable and novel aspect of the model is that 'the linkage from science to innovation is not solely or even preponderantly at the beginning of typical innovations, but rather extends all through the process – science can be visualized as lying alongside development processes, to be used when needed.'⁶⁴ Here 'science' comes in two forms: previously held knowledge and that uncovered by specified research. Just as research supports innovative design, the products of this design-led innovation can in turn offer instruments and information that supports subsequent research, shown by arrows I and S in the diagram.

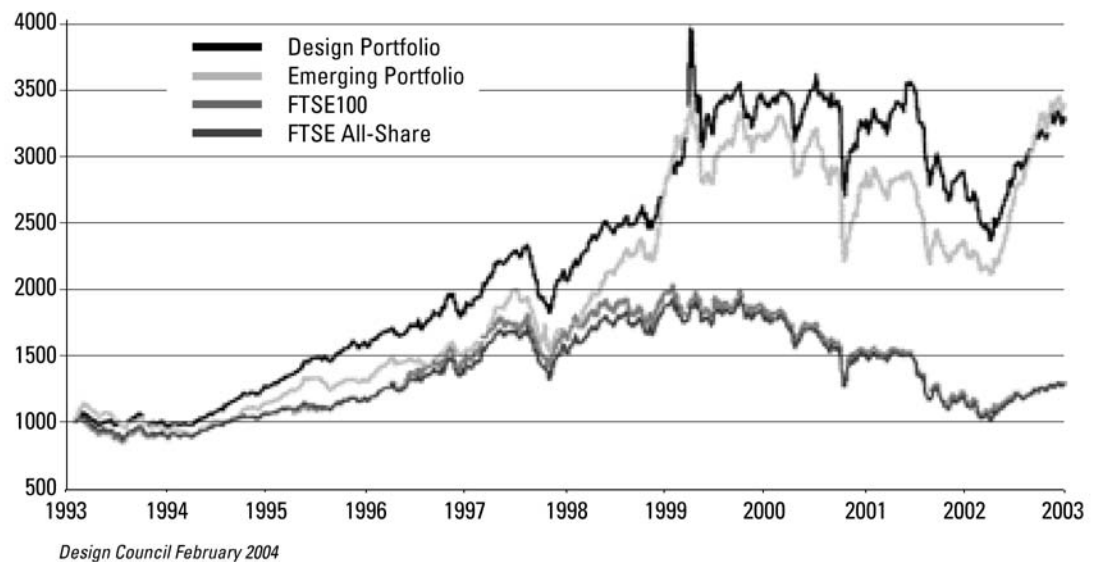
Appendix B - Empirical Studies of Design Investments

The Impact of Design on Stock Market Performance: An Analysis of UK Quoted Companies 1994-2003⁶⁵

This study, performed by the UK Design Council, tracked a research universe of 166 publicly quoted, design-led companies between 1994 and 2003, 'encompassing a long bull market period, from March 1995 to March 2000, the bear market period from March 2000 to March 2003, and the more recent recovery period.' Design-led companies were identified by having won awards in four different design-related awards schemes or were put forward by a Design Council panel (without detailed stock market information) as an effective user of design. Five standardized categories were created; the more categories a company had received awards or nominations under and the higher honour they had received (eg. gold, silver, bronze), the higher score they received. As mentioned, 166 companies received at least one point, and these were then divided into two groups based on the number of points attained. The higher group, the Design Portfolio, comprised 63 firms. The lower group, the Emerging Portfolio, contained 103.

The performance of both portfolios was compared to the FTSE 100 and the FTSE All-Share over the entire study period. Figure 6 shows that using 1000 as a baseline performance figure, the design-led companies had greater success over all stages of the business cycle. While generally mirroring the trends of the market, the Emerging Portfolio companies outperformed their peers throughout, and the Design Portfolio was generally higher still, both finishing 200 percent above the composite.

Figure 6: Design and Emerging Portfolio Performance UK, 1994-2003



Valuing Design: Enhancing Corporate Performance through Design Effectiveness (U.S.)⁶⁶

In this somewhat similar American study, researchers from Northeastern University investigated companies in the furniture, computer, automotive, and electronic appliance industries, and compared focus on design with bottom-line outcomes. Members of the Design Management Institute's advisory council were sent questionnaires asking them to "select companies in each of the four industries with which they were familiar⁶⁷, and then, within each industry, rank them from those that were most effective at demonstrating good design to those that were least effective." Firms had to be listed in the Standard & Poor COMPUSTAT database. "Their rank orders were recorded and then average ranks were calculated for those companies that received at least two rankings." The 51 firms that did get two or more rankings formed the sample. The companies were then ordered from highest to lowest based on these average ranking and divided into a top-half (26 firms) and a bottom half (25).

Using top- or bottom-half as a dummy variable, and controlling for industry differences, regression analysis was conducted against twelve measures of financial performance from four areas: growth rates (3 measures), returns related to sales (4), returns related to assets (4), and total stock market returns (1). "For each of the three growth-rate measures, a single comparison was made over the five-year period between the group of firms with more-effective design and the group with less-effective design. For each of the remaining measures, five comparisons were made, one for each year of the study. Thus, in total, 48 comparisons were made." The researchers write of the results:

[o]f these 48 comparisons, the results in 45 instances were in the direction we expected – that is, the group of firms with more effective design outperformed the group with less effective design. In 25 comparisons, the results were statistically significant. In the three instances in which results did not go in the direction we expected, the results were not statistically significant. Taken as a whole, these results provide strong evidence that effective design is associated with better financial performance.

Design and Innovation in Norwegian Industry⁶⁸

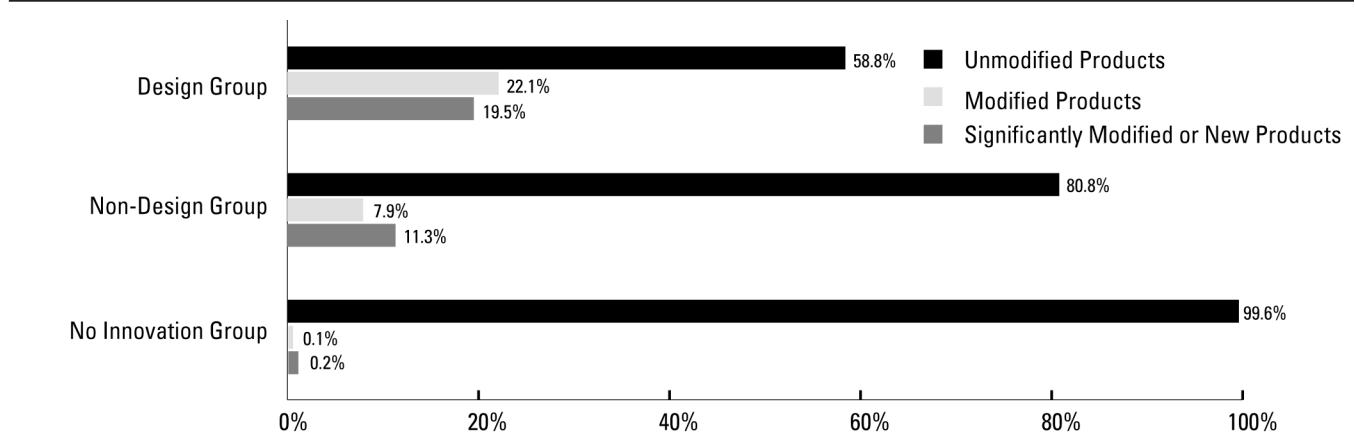
In 1993, Statistics Norway "developed new data on design expenditure and new product development in Norwegian firms." In this study prepared for the Norwegian Design Council, researchers analyze the data and ask three basic questions:

- Do design-performing firms have more innovative activity (that is, higher expenditures on innovation in general) than 'Non-design' firms?
- Do design-performing firms have higher levels of innovation (that is, higher proportions of their sales coming from new products) than 'Non-design' firms?
- Are design-performing firms more profitable?

"The data analysis" they write, "shows that the answer to each of these questions is 'yes'." To arrive at this conclusion, firms who responded to the survey are categorized in three groups: those without any innovation expenditure, called Non-innovative Firms; those engaged in innovation activities but not product design, called Non-design Firms; and those investing in product design (as defined by the firm), called Design Firms. On questions of innovation performance, Design Firms are compared with Non-design Firms. A key finding is that innovation expenditure per employee is

roughly 38 percent higher in the design group. Further, multiple regression analysis shows that of all innovation activities, product design correlates most strongly with the rate of new or significantly modified products that the firm produces. Not surprisingly then, Figure 7 shows that the share of total sales from new or significantly modified products is highest in the Design Firms group.

Figure 7: Share of Sales from New or Significantly Modified Products Norway, 1993



Group comparisons were also made in terms of economic performance. Here the results are less clear because of large divergence within each group, but operating profits per employee are highest in the Design Firms. They also appear to perform well on other economic indicators although the Norwegian researchers warn that it is difficult to say anything certain from the results in Table 7.

Table 7: Overview of Economic Performance by Type of Firm Norway, 1993

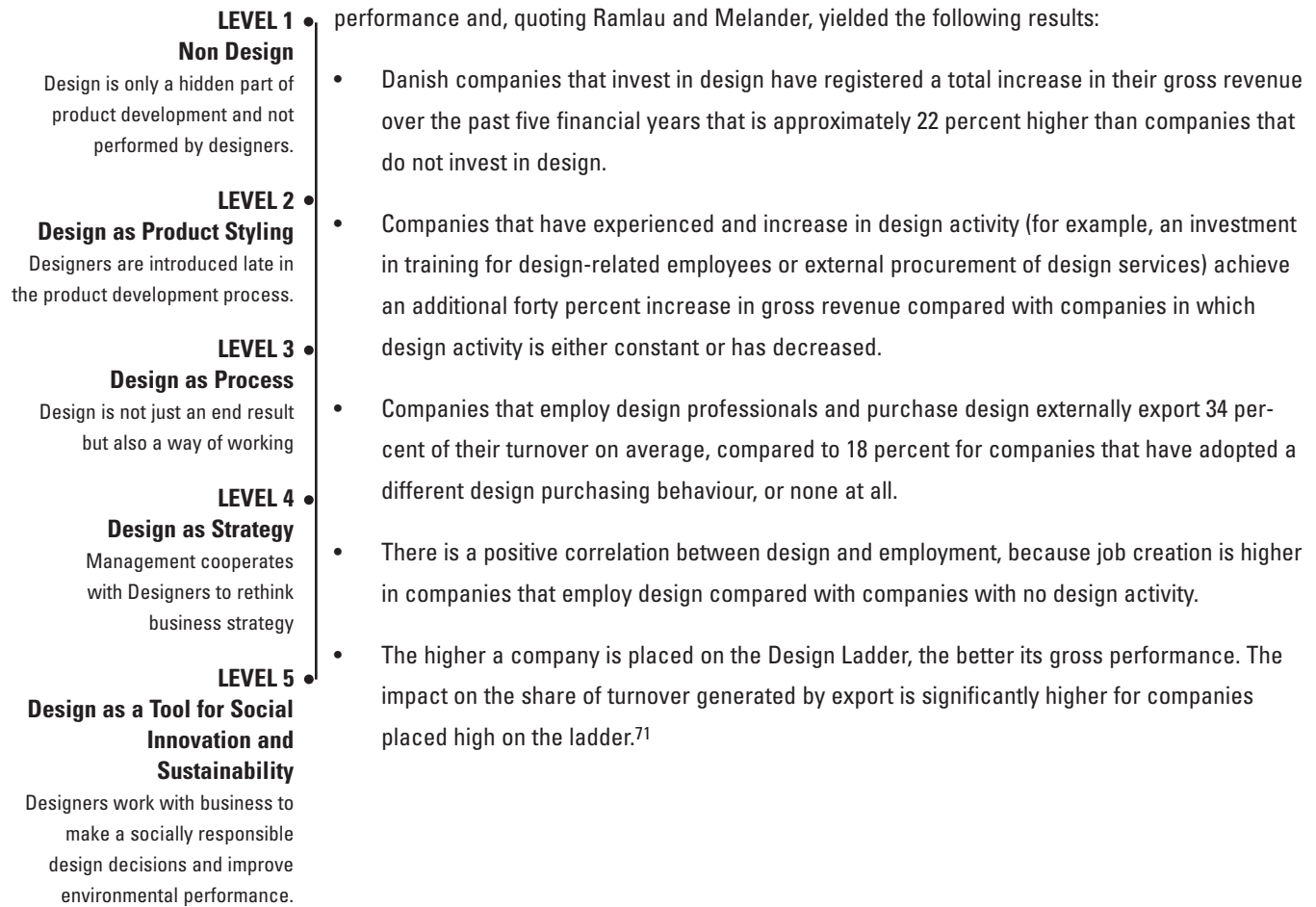
Category	Results*
Operating Profits pr Employee 1000 NOK	
No Innovation Group	33
Non Design Group	101
Design Group	250
Return on Equity 1%	
No Innovation Group	11,2
Non Design Group	8,4
Design Group	11,6
Return on Total Assets 1%	
No Innovation Group	9,4
Non Design Group	11,2
Design Group	10,8
Share of Firms with Positive Net Results 1%	
No Innovation Group	69,1
Non Design Group	72,0
Design Group	73,3

* The figures are average results within each group.
The differences are not statistically significant

The Danish Design Council (DDC) Survey and Design Ladder⁶⁹

In response to a government decision to cut their funding, the DDC, in association with the National Agency for Enterprise and Construction, conducted a survey to determine and demonstrate the economic benefits of design. It measured the level of design activity adopted by a company using a framework called the Design Ladder, which describes the five levels of design involvement in Figure 8.

Figure 8:
Danish Design Ladder⁷⁰



Appendix C - R & D Support Mechanisms in Ontario and Canada

Federal Level

Industrial Research Assistance Program (IRAP)

A National Research Council program that offers technological expertise and financial assistance for R&D activities to Canadian enterprises with fewer than 500 employees. Although companies could use contributions and loans to undertake design activities, the technology focus of the program indicates that design is not the kind of R&D activity that IRAP is intended for.

Scientific Research and Experimental Development Program (SR&ED)

A federal tax incentive program for businesses of all sizes and in all sectors who are working to “advance the understanding of scientific relations or technologies, address scientific or technological uncertainty, and incorporate a systematic investigation by qualified personnel.”⁷² Clearly, greater scientific understanding is a laudable goal but without programs that encourage new discoveries to be made functional through the design process, SR&ED is unlikely to be as helpful as it could be.

Natural Science and Engineering Research Council of Canada (NSERC)

In addition to providing grants and scholarships to students, NSERC offers joint funding for collaborative R&D projects that involve university scientists and engineers. Even though one of the central goals of the council is to “deliver creative ideas and practical solutions,” there is no mandate or initiative to extend collaborations to include designers.⁷³

Canada Foundation for Innovations (CFI)

CFI is an independent corporation created by the federal government whose mandate is “to strengthen the capacity of Canadian universities, colleges, research hospitals, and non-profit research institutions to carry out world-class research and technology development that benefits Canadians.”⁷⁴ While funding all types of Research infrastructure, a CFI grant helped establish joint design programs between York University and Sheridan College in York’s state of the art Technology Enhanced Learning Centre, and could be used again to expand the scope of design education in Ontario and Canada.

Networks of Centres of Excellence (NCE)

The three federal granting agencies jointly administer the NCE program which supplements their research funding by building “partnerships among universities, industry, government and not-for-profit organizations aimed at turning Canadian research and entrepreneurial talent into economic and social benefits.”⁷⁵ There are 19 networks across the country, and while it is unclear to what degree design considerations are involved in their work, there is no mention of design on the NCE website.

Provincial Level

Ontario Research Fund (ORF)

As the continuation of the Ontario Research and Development Challenge Fund, ORF provides funding to Ontario’s research community both for operational and infrastructure costs. The Research Excellence portion of the program, focused on operational costs, will fund public sector research institutions that are collaborating with the private sector. With administration transferred from MEDT to the new Ministry of Research and Innovation (MRI), the government will provide a

maximum of one third of a project's operational costs, to be matched in equal part by the institution and the private partner(s).

Ontario Research and Commercialization Program (ORCP)

Grants for up to three years will be awarded under the ORCP program to publicly funded research institutions and non-profit organizations that are trying to commercialize the results of their research efforts. One of the specific goals of the program is to support "Early Stage Proof of Principle initiatives that help bridge the gap between research discovery and market ready invention." ⁷⁶ This program is also under the purview of MRI.

Ontario Centres of Excellence (OCEs)

Similar to the NCEs at the federal level, OCEs bring together academia, industry and government players working in the same field. They are intended to strengthen linkages and, like ORCP, bring research closer to the marketplace. There are currently four centres in the fields of Communications and Information Technology; Earth and Space Technology; Photonics; and Materials and Manufacturing. This last one especially could benefit from collaboration with designers, but again it is unclear to what degree they are involved.

Given the emphasis of all three of these programs (and a new ministry) on commercialization and 'bridging the gap' between research and the marketplace, it is surprising that none mentions design in its eligibility or mandate descriptions. As we have seen, commercialization in many fields is not about transferring completed research to the market. It is about the chain-link model and designing ideas to have user applicability from the beginning.

Appendix D - What Other Jurisdictions are Doing (expanded)

Korea

As Business Week magazine wrote in its recent special issue devoted to the Industrial Design Excellence Awards that it sponsors, “no region of the world has embraced design more emphatically than Asia.”⁷⁷ While Japan was first to strategically take up design as an economic strategy and China is rapidly growing its design capacity alongside its surging economy, Korea is currently enjoying the greatest design-led innovative success. It also provides a potentially instructive model for policy makers.

Government support played a large role in moving towards the current situation where the Korean population and private sector value design greatly. Whereas through the 1960s, 70s and 80s Korean industry relied on exports of goods that got their competitive advantage from price, rapidly rising wage levels were making this increasingly difficult in the early 1990s. The Asian financial crisis of 1997 finally bankrupted or forced the restructuring of many of the country’s manufacturing conglomerates and crippled the national economy. Recognizing that this event signaled the end of their advantage in labour-intensive manufacturing, the Korean government and firms “aimed at producing emotionally appealing products, as opposed to cheap but well-made ones,” and “put design at the core of competitiveness.”⁷⁸

The administration of President Kim Dae-Jung, who came to power in 1998, built on a policy strategy started earlier in the decade when the Korean Institute for Design Promotion was formed. Researcher Kyung Won Chung describes this strategy as a “government-pull and civilian-push model.” Chung writes that this model was selected because:

*a close rapport between government and the civilian sector can be the most important factor for the success of design promotion. For example, the government can initiate the design promotion procedures at the start of industrialization, when the need for full-scale design investment is relatively less. A government funded design organization can be established to play a central role in the preparation of the pre-conditions for design promotion including the infrastructure. When design promotion accelerates as time goes on, the role of the civilian design sector expands, while the governmental role decreases.*⁷⁹

The specific policies established by Dae-Jung then focused on “put[ting] in place the underlying mechanisms for future growth of the design industry.”⁸⁰ Primary among these were policies to develop design talent. The government invested in design education at both primary and secondary schools as well as at higher levels, and established national design awards presented by the President. They also paid attention to establishing demand for design services alongside the supply by building a Living Design Centre and organizing a nationwide Design Week, both under the slogan “spreading a design culture in people’s day-to-day lives.” The government also worked closely with the private sector, making contributions of \$22 million (USD) to a design venture fund and \$261 million to subsidize prototype manufacturing. And finally they built 10 Design Innovation Centres across the country to create “special brands unique to each region, and provide support for local companies as they worked to establish their own design management systems.”⁸¹ While started by Kim Dae-Jung, most of these policies and initiatives have been continued or expanded by new President Roh Moo-Hyun.

Alongside these support programs, Korean firms have leveraged design to huge success and helped make the country the “hungriest tiger.”⁸² What’s more, the government-pull civilian-push dynamic that Chung discussed is taking hold as Korea’s design culture seems to be self-reinforcing. For instance, Samsung, arguably the country’s best known company globally, has made massive investments in design on its own accord. Its CEO states that “good design is the most important way to differentiate ourselves from our competitors” and the result of this attitude is that “Samsung is [now] the poster child for using design to increase brand value and market share.”⁸³

A recent *Business Week* cover article on the company’s rapid rise and innovative designs makes no mention of the role that government support played in Samsung’s successful embrace of design. Yet it is very unlikely simply a matter of chance that perhaps the most ambitious attempt by a national government to foster a design culture coincided with the rise of the ‘poster child’ of successful design investment. This is especially evident given that other Korean companies like LG electronics and Hyundai motors have similar stories. As a result of initial government support in the underlying infrastructure and culture, these companies have all “reinforced their design departments” and “design is emerging as one of the most popular disciplines in [Korean] university education, competing with law, business administration, and medicine.”⁸⁴

United Kingdom

Concerted design policy in the UK enjoys a much longer history, traceable to 1944 when the Board of Trade in the wartime government founded the Council of Industrial Design “to promote by all practicable means the improvement of design in the products of British industry.”⁸⁵ The COID subsequently became known as the Design Council, and operating with a grant from the UK Department of Trade and Industry, this continues to be the primary government mechanism to “demonstrate and promote the vital role of design in a modern economy.”⁸⁶ In terms of mandate then the Design Council is similar to the Design Exchange in Toronto, although the principal public sector partner for the latter is the City of Toronto while the former has always received the bulk of its support from the national UK government. And not surprisingly, funding from a senior order of government with a variety of revenue sources means that the DC is in a much better position to achieve this mandate, offering a wide array of programs and publications that are beyond the scope of the Canadian DX.

Design Council initiatives are usually delivered as part of umbrella ‘Design Campaigns’ in key areas of business and the public sector. They bring together designers with businesses and consumers to identify and resolve key issues. For example, the technology design campaign aims to increase the chance of success for science and technology start-up companies by impressing upon them the potential benefit of employing design skills and methods. The campaign includes programs to collect evidence of how design investments have helped emerging technology ventures in the past; to introduce design teams to start ups; and to encourage investors “as part of due diligence to look for evidence that businesses seeking funding have used design to validate their market propositions.”⁸⁷ The Design Council is also making a concerted effort to embed design support services into the UK’s science parks, incubators and technology transfer environments.

In addition to these campaigns, the Design Council also produces a great number of publications, many of which are available on its website. Particularly notable among the DC’s research initiatives is its work on design in the public sector. By looking at the economic benefits of design in the

broadest sense, this research details how, among other public services, design can improve learning environments for students, therapeutic environments for patients, and work environments for public sector employees. It is a critical reminder that the potential benefits of design extend beyond the bottom lines of firms to include these broader considerations as well.

Reflecting the same attitude that provided governmental support for the Design Council in the first place, but also government heeding the results of the DC's work, UK policies and pronouncements over the last decade have made investment in design a priority. The 1995 White Paper on Competitiveness, an annual document that outlines national economic development strategy, acknowledged that "the effective use of design is fundamental to the creation of innovative products, processes and services."⁸⁸ The paper also accordingly set out some action measures including the establishment of Scottish and Welsh Design Advisory Services to help develop local design identities.

The change of government in 1997 saw a policy of design support continued with the announcement of the Millennium Products Initiative (MPI) to "select and celebrate 1,000 examples of British innovation and design in the run-up to 2000."⁸⁹ The selected products and services were made into a traveling exhibition and provided a database of successful design undertakings. According to the Design Council, MPI created a high level of awareness of British Design and was a huge branding success.

Most recently in 2005, the British Chancellor Gordon Brown has asked the Design Council Chairman Sir George Cox to head a review looking at how to better connect businesses to design and creativity and to produce a report with the results in September. The Chancellor's 2005 budget also included funding for a Design Immersion Program. Administered by the Design Council, the program offers small and medium sized enterprises (SMEs) the opportunity to participate in development modules that teach them how to think creatively and achieve innovation through design.

Interestingly, this program is being delivered through Regional Development Agencies including London's. While the UK government's policies have generally been national in scope and the Design Council's website makes little distinction between cities or regions, this funding decision shows some recognition that different areas require different forms of support. Like Toronto for Canada, the strength of the UK's design sector lies in London and policies that take this into account are much more likely to be successful.

Denmark

Denmark is a notable case because it has among the most celebrated design histories and identities in the world. 'Danish Design' gained international recognition during the mid 20th century especially with modern furniture design including the round-back chair and the enclosed castor still used on most office chairs. This tradition continued with internationally known design-based companies like Lego toys and Bang & Olufson audio equipment. Unlike the UK however, governmental support for design in Denmark is quite new. As the Managing Director of the Danish Design Centre writes, "design is one of our raw materials, yet we have until now taken it for granted."⁹⁰ But facing the same competitive pressures as other developed countries and "struggling to regain the competitive edge lost within the field of technology," design issues have come to "[top] the Danish political agenda."⁹¹

In 1997 Denmark adopted a national design policy which bolstered the Danish Design Centre to promote design in the public and private sectors. They introduced the government-funded Icebreaker Program “which provided Danish SMEs with access to financial support for working with designers or beginning a new design project.”⁹² Icebreaker was intended to introduce companies to the benefits of design investments as applicants must not have employed a designer within the preceding five years. By providing an initial incentive to use these services the government hoped that the companies would make similar investments without need for additional incentives in the future. And indeed, “almost 80 percent of [the participating companies] reported a significant improvement in competitiveness and financial performance as a result of the intervention” while “57 percent continued or planned to continue cooperation with designers as a routine element of their business.”⁹³

However, despite this clear success, political changes in 2001 meant that funding for the DDC was drastically reduced and the Icebreaker Program shelved. Fighting for reinstatement of funds, a streamlined DDC conducted a survey that provided a method to measure the economic benefits of design (discussed in Appendix B) by examining the design investments of 1500 companies. The results were unambiguous and convinced the government that continued promotion of design was a worthwhile activity. In 2003, a new four-year national design policy that reversed many of the cuts was adopted.

The private sector is also on board in a coordinated manner as, coinciding with the new design policy, the Federation of Danish Industries established a network with the aim of benchmarking Danish design. Their message is that “companies need to adopt corporate design strategies if their efforts are to result in higher profit margins.”⁹⁴

What is interesting about the Danish case is the degree to which design is part of the national identity. When fiscal cutbacks were on the governmental agenda and public funds to support design were among the cuts, design was still at the forefront of national identity and discussion among citizens, businesses and government. Writing about what is lacking in the UK, Richard Murray relates how every Dane “from bus drivers to pensioners seem[s] capable of articulating lucid opinions on design.”⁹⁵ Along with the findings of the DDC’s study, public debate likely led the government to reestablish support for Danish design rather than trusting that there would be sufficient private sector investment to leverage the desired benefits.

China

No international comparison of economic policies in any sector can be complete in 2006 without a discussion of China. Much has been made of the country’s rapid growth and the prevailing low wages and currency that have allowed Chinese manufacturers to price their outputs lower than competitors. It is commonly acknowledged that in an increasingly globalized economy, labour intensive work will inevitably move to poorer countries. But China is receiving particular attention because it is also developing its capacity in the knowledge-intensive industries that were supposed to be the domain of industrialized nations like the U.S. and Canada.⁹⁶

This two-pronged approach to economic development is the result of China’s shift to a market-driven economy while still maintaining a strong central government that is very active in setting policies to drive the expansion of chosen key sectors. One of these sectors is design; Thomas

Friedman writes that “what China’s leaders really want is that the next generation of underwear and airplane wings not just be ‘made in China’ but also be ‘designed in China’.”⁹⁷ And while details of particular policies or government actions are difficult to locate, anecdotal evidence gives a good indication of what is happening in the Chinese design sector. The country now has over 400 post-secondary design schools (a 2,000% increase since the mid 1980s) that graduate over 10,000 students each year. Not surprisingly with this newly trained work force, some countries have found that their “design work [has gone] overseas along with the manufacturing work.”⁹⁸ China is even developing some design-based original brand manufacturers such as Lenovo which just bought the ThinkPad brand from IBM and won its first *Business Week/IDEA* annual design award.

Such examples have caused considerable concern among designers in other countries and call into question a strategy of focusing on design as an economic development tool just when China is doing the same thing with more resources and lower prices. Yet from accounts of those who have closely studied design in China, this concern and apprehension appears to be partly unfounded. During a visit to China for example, American design professors Bruce Tharp and Stephanie Munson found that many Chinese design graduates were unemployed and “had very low expectations that they would be working designers in at least the near future.”⁹⁹ This could be because they are still behind the game relative to designers in the U.S. and other countries who have adapted and made design more of an innovative activity. Bruce Nussbaum writes that “Design in America isn't about form but innovation, in the guise of new products and services.” Further,

*in recent years, [American] designers have taken the values and skills honed over decades of working on products and applied them to creating new information, services, experiences, and just about everything associated with the “things” produced in China and Asia. Cell phones are made overseas, but the graphics, packaging, ads - the products' personality - are being designed by U.S. outfits.*¹⁰⁰

Meanwhile in China, Tharp and Munson suggest that consumer goods in general are still such a novelty that they need not be designed well to sell. Taking a short term view, Chinese manufacturers see little reason to invest in innovative design. Further contributing to their reluctance, “China loves foreign goods and brands (partly because their own are seen as low-quality), and manufacturers serving the Chinese market are compelled to just ape existing designs. The design skills needed to update a product line, or knock off the hottest gadget, aren't particularly sophisticated.”¹⁰¹ There is therefore no immediate demand for boundary pushing design work and curriculum developers have apparently responded by keeping Chinese design education correspondingly simple and rigid.

By one Chinese design teacher’s estimation, it will be “forty years until [China] has widely developed the upfront research, ideation, and problem definition skills that are taught in some of the more forward-thinking U.S. design departments.”¹⁰² As previously mentioned, Canada is noted for its design education in terms of the novel thinking that is encouraged, and likely enjoys a similar lead-time advantage. Thus, even if the prediction is overstated, innovative design work is unlikely to follow manufacturing and be outsourced en masse to China anytime in the immediate future.

But like the other countries discussed above, China has identified design as a key growth sector and there are lessons to be learned. Should Canada continue to neglect design in business and policy decisions and not take advantage of the world class designers that are already here, there

will be designers in places including China ready to take the industry lead. Such neglect heightens the chances that Canada could eventually be left supplying the raw materials for well-designed, value-added products from elsewhere.

United States

The U.S. appears to be somewhat of an anomaly and to provide an argument against the necessity of government support to get the most out of the design sector. Certainly the country has lacked for any kind of national design policy while at the same time being home to some of the most renowned design consultancies and most recognizable design-based brands in the world. In a review entitled *International Perspectives on Design Support for SMEs*, Welsh researchers identified that the U.S. fit into the group of countries where “the national government is not committed to financially supporting design programs.” Summarizing sentiment from an international conference, the authors write:

[a]s the USA delegate commented, The government is not sponsoring or purchasing design as a big sector of the national economy. So design is very much driven by industry.¹⁰³

This story fits with the view that, in general, American governments don't intervene in the market and that the private sector is more self-reliant and successfully entrepreneurial as a result. Design consultancies like IDEO and ZIBA recognized the innovative potential of design and reorganized their service provision accordingly. Bruce Nussbaum writes,

[t]hey pitch themselves to businesses as a resource to help with a broad array of issues that affect strategy and organization -- creating new brands, defining customer experiences, understanding user needs, changing business practices. And yes, if corporations want a nifty look for something manufactured here or abroad, American designers still do that too.¹⁰⁴

American companies or divisions like Apple, Gap, Cadillac, Gillette, and Motorola have similarly recognized what design can do for their products and brands. They have all deemed investing in these types of consultants, or in-house design departments, worthwhile even in the absence of a government design policy. It is unclear whether smaller enterprises in the U.S. are as willing to undertake design investments but it should be noted that the above examples were design oriented even in their humbler beginnings.

The lesson to be learned then from the U.S. appears to be not for the government but for the private sector. Forward looking American companies that are among the largest in the world are making significant design investments without waiting for incentives. Canadian firms should take note and, in fact, needn't even look south of the border for examples. Arguably the two best known Canadian brands globally, Research in Motion's Blackberry product line and Roots Clothing, are both companies whose success has been based on design albeit of quite different types.

However, to suggest that there was no leadership on the part of government in getting the American design sector to its world leading position now is incorrect. As mentioned, the lack of any national design policy confirms the perception that there is not direct public support. Yet in looking at the histories of the prestigious design consultancies and the major design innovators, important indirect government support is often at work. By massively funding research that

involves design work through the military, universities and scientific research centres, the U.S. government provides the basis for many subsequent successful design ventures.

The most notable examples revolve around the popularization of the personal computer in the early 1980s. Using staff and ideas from Stanford University's Augmentation Research Center, funded by NASA and the U.S. Air Force, the Xerox Company developed the first PC at its Palo Alto Research Center (PARC). Though widely considered a technological breakthrough, the most novel elements of the Alto were its design features – a handheld mouse and a graphic user interface that used icons rather than “require users to memorize text commands to perform tasks.”¹⁰⁵ The Alto had faults and Xerox was unable to successfully commercialize it but Apple hired a start-up design firm composed of graduates from Stanford's product design program, again a recipient of ample federal research money, to work on the concept.¹⁰⁶ The new mouse that they developed helped launch the Macintosh and the PC revolution, and started a design tradition at Apple that continues through to current products like the iPod and Powerbook. The design firm, Hovey Kelley, later became IDEO. It went on to design a range of important or iconic products including the insulin pen and the TiVo video recorder and is now probably the leading design consultancy in the world.

The American rationale for publicly funding design research is the same that exists there and in Canada for R&D in general. It gives government some degree of control in making sure that research is in the public interest; that local designers and firms can capitalize on the results; and that non-commercial externalities of valuable research are captured. It may be too late for Canada to rely strictly on large amounts of indirect support for design to overcome market failures but the U.S. example shows the importance of the design education that Canada and Ontario have done a good job of publicly delivering. It also shows that it may be helpful to expand this education to include more design research.

Montreal

Though all of the previous examples of jurisdictions and how they have supported design are national in scope and outside of Canada, it is also instructive to look at Montreal. There is a perception that Montreal is Canada's capital in terms of “style, fashion, and high design,” despite actually having fewer designers than Toronto, so it is helpful to look at how this reputation was developed and how it is maintained.¹⁰⁷ Economic geographers Deborah Leslie and Norma Rantisi have to compare to the design sectors and design policies in place in Canada's largest cities. As they write, “a major impetus for the study was a recognition that many of the institutions supporting design in Montreal were absent in other parts of Canada and that it had been more successful in branding itself as a center of high fashion and design.” In formulating policy to encourage the effective use of design in Toronto and other locations then, the Montreal example, and particularly descriptions of the institutions that are unique to the city, can be instructive.

Leslie and Rantisi trace the appreciation and support for design that currently exists in Montreal to both cultural and economic circumstances that confronted the city in the 1970s and 1980s. First, the rise of Quebec nationalism inspired a concerted effort to preserve Quebecois culture in the sense of heritage and language through the support of cultural institutions and industries in the artistic sense. Local design was a part of this cultural initiative and since Montreal is the centre of Quebec's culture and its design industry, it received particular attention and support in policies.

Second, there was also a strong economic imperative as deindustrialization took hold at the same time that financial services and firms in other sectors were relocating due to the political climate. In 1986 a federal Ministerial Committee set up to study the economy of the Montreal region identified design as a path to recovery. The committee's final report stated that:

[d]esign, as an important aspect of Montreal businesses, must result from the culture of the city: a new commercial culture of design is the keystone to the export of manufactured goods and to the dynamism of the tourist and retail trades. For such a new culture to arise, Montreal will need the concerted efforts of its business, university and government sectors.¹⁰⁸

Indeed it appears that both the cultural and economic imperatives led to the creation policies and institutions that did help increase awareness and appreciation of design, and helped the city leverage its design strength for economic and social benefit. Montreal clearly demonstrates how certain goals can be achieved with federal, provincial and local support. Yet while indicating and applauding this Leslie and Rantisi also point out that the dual reasons for supporting design have never really been reconciled. They feel that "existing institutional modalities continue to separate the cultural and economic aspects of design into discrete spheres" when "more attention could be devoted to merging cultural and economic [goals]."¹⁰⁹ The Montreal example can be helpful then both in terms of what has worked and what is lacking. Four institutions that demonstrate this are detailed further here:

1. SODEC (Société de Développement des Entreprises Culturelles)

SODEC is an agency of Quebec government that came out of the Ministry of Culture and Communications' 1992 Cultural Policy. It is very much a product of the cultural imperative and was created because "there was a concern that profitability was taking precedence over aesthetic innovation, and that more support was needed for small, niche producers, who were viewed as the vanguard of creativity and culture."¹¹⁰ Though provincial in scope, SODEC concentrates its activities in Montreal. The agency offers subsidies and loans for SMEs to commercialize and distribute their products, and facilitates networking by sponsoring things like Montreal's International Interior Design Show. It has been quite successful in its attempts to maintain "artistic values in a 'commercial sphere'." But, say Leslie and Rantisi, this strength also represents SODEC's main limitation as "rather than viewing artisans and industrial-oriented innovators as oppositional, complementarities and interdependencies should be explored to promote long-term viability for both."¹¹¹

2. IDM (Institute of Design Montreal)

While also an important supporter of design in Montreal, and committed to the view that promotional efforts should be "coordinated from the urban level," IDM tends toward the other side of the spectrum as it is concerned more with economic value. The institute's objective is to have design "become a brand image for Quebec products and a major lever for improving the competitiveness of Quebec companies in the marketplace."¹¹² It attempts to raise consumer awareness of design, and offers a free design consultation service, marketing support, and a Business Integration Program for design students. But again, while successful, these programs also "hinder [IDM's] ability to accommodate the hybrid character of the sector," ie. the "cultural, environmental or social values attached to design."¹¹³ Further, the IDM is primarily geared towards industrial design as opposed to the other design fields.

3. Provincial Tax Credits

Another institutional support program intended to leverage the economic benefits of design is the Ministry of Economic Development, Innovation and Export Trade's tax credit for design investments. To qualify, firms must hire an external industrial, furniture or fashion designer. Benefits have been cited by companies using the credits in all three of these design fields however the overall effect of the credits remains unclear. Some designers complain that the tax credits do nothing to dispel the notion that design services are a cost rather than an investment. What is really needed they say, is "a greater appreciation or understanding of design on the part of manufacturers, [and] of the need for a greater dialogue and exchange between manufacturer and designer."¹¹⁴ The tax credits are helpful then as one component of Montreal's institutional package, but do not seem to be adequate to correct market failures on their own.

4. Design Commissioner and Commerce Design Montreal

Montreal is unique in Canada for having created a Commissioner of Design position, now held by Marie-Josée Lacroix. Lisa Rochon in the *Globe and Mail* explains that "spreading design is Lacroix's mission. Infiltrating the ranks of the private sector with the good word of design and architecture is what she does for a living."¹¹⁵ The Commissioner's most notable initiative is Commerce Design Montreal, aimed at economically revitalizing the city through its commerce. The program bestows awards for innovative interior design of public spaces in the city, such as retail shops and restaurants. In addition to encouraging owners of these types of establishments to invest in interior design, the program includes 'People's Choice Awards' to increase public awareness. 58,000 people voted in 2004 and "in this mode of visioning, consumers are recast as 'design citizens'."¹¹⁶ CDM has been such a success that cities including Lyon and New York have purchased a license to use the concept and logos.

The program likely owes some of its success to its recognition of both the economic and cultural imperatives of design as it aims to increase business success through the creation of better public spaces. However, like Montréal's other institutions, Leslie and Rantisi warn that this integration is not as complete as it could be. Particularly, the awards can be seen as "a superficial place-marketing strategy, rather than addressing the important investments needed to maintain creativity in an urban center." Because economic revitalization is the goal, the Design Commissioner's "influence is felt more profoundly within Montreal's private sector community and less within the city's bureaucratic ranks."¹¹⁷ Lacroix has expressed frustration that she hasn't been able to integrate design into "decisions taken by different services in the city, like public transport, parks, urban development, [and] housing."¹¹⁸

CDM and the other Montreal design institution examples show that, while the economic potential of design must be recognized and must make its way onto the policy and business agendas in Toronto, there is a danger of going too far on this specific path and starting to see economic benefits in opposition to design's broader benefits. Toronto's private and public sectors ironically have the benefit of acting late and should take Montreal's experiences under advisement. Leslie and Rantisi do an excellent job of pointing out how both the successes and tensions can be instructive. They write that "the institutional laboratory of Montreal provides a fertile terrain of policy experimentation in the field of urban cultural policies."¹¹⁹ They are complimentary of Montreal's continued strong support for local design and the "flexible, multi-pronged approach"

that is used. But they are critical of otherwise successful initiatives that do “not fully accommodate the hybrid nature of design.” They call for a blurring of institutional lines and this may represent an advantage for Toronto as there are few existing lines to blur.

Footnotes

- 1 Gould, Final Report (2004), p.1
- 2 Design Exchange (1995)
- 3 City of Toronto (2000), p. 62
- 4 Design Council website: http://www.design-council.org.uk/webdav/harmonise?Page/@id=6011&Session/@id=D_jyTsoEXM9vww7hG9jwMQ&Section/@id=1033 5 ibid.
- 6 Government of Canada (2001), p. 8
- 7 Walsh (1996), p. 513
- 8 Writing about the design of Apple's mouse by industrial design firm Hovey Kelley, Alex Soojung-Kim Pang: "From a mechanical point of view, the button was simple, but Hovey Kelley's attention to it is illuminating. The feel to the mouse shaped the experience of using the Lisa and Macintosh, and the button defined the experience of using the mouse. A rugged detector and encoding system, a rib cage to hold the electronics and mechanical parts together, and a removable leaning ring were all necessary to make a mouse that would work. Paying attention to the subtle ergonomics and aesthetics of the button was necessary to make a mouse that would be used. Getting the button right -giving it an audible click to tell users how far to push, figuring out how far it should depress, making it responsive but not so sensitive that it could accidentally be activated - meant getting the mouse right. It was part of what Sachs calls the "Zen of the product," the hard to describe qualities that shape the experience of using a technology. We normally think of technologies as mere applied science, reducible to drawings and parts lists; but as Sachs explains every device has a ghost of 'intangible intellectual property about how something works that you simply can't document, or things where language fails us. The Zen of the product is something you can't write down.' ... That might help explain why the story of the Apple mouse isn't widely known. It would seem to have all the ingredients of a good Silicon Valley story - but product design just isn't something journalists or historians tend to write about. It's supposed to be invisible...it's the peculiar fate of good design to erase traces of itself; bad design is far more noticeable." See also Appendix D – U.S. example
- 9 see also Von Stamm (2004)
- 10 see Green (2005) and Aubert (1985)
- 11 Solum et. al. (1996), p. 10
- 12 Solum et. al. (1996), p. 11
- 13 Government of Canada (2001), p. 4
- 14 Industry Canada news release, May 18, 2005. IC website: <http://www.ic.gc.ca/cmb/welcomeic.nsf/cdd9dc973c4bf6bc852564ca006418a0/85256a5d006b97208525700500646b49?OpenDocument>
- 15 Cho (2004), p. 12
- 16 Cho (2004), p. 13
- 17 Martin and Porter (2000) - Developments in Canada's energy sector have however clearly provided some firms and their regional economies with huge gains, if not a sustainable advantage. 18 Ibid.
- 19 Nussbaum (2005)
- 20 Von Stamm (2004), p. 13
- 21 Martin (August 3, 2005)
- 22 Martin (August 30, 2005)
- 23 Gertler and Vinodrai (2004), p. iii
- 24 This includes the occupation categories: Architects; Landscape Architects; Industrial Designers; Graphic Designers and Illustrators; Interior Designers; and Theatre, Fashion, Exhibit and other Creative Designers. 25 Source: Statistics Canada, Census of Population, 2001.
- 26 Source: Statistics Canada, Census of Population, 2001 (Custom Tabulation).
- 27 Source: Statistics Canada Census of Population, 2001. Note: numbers do not add exactly to 100 due to rounding and data suppression.
- 28 Source: Adapted from Gertler and Vinodrai (2004), p.4 - additional information from Statistics Canada, Census of Population, 2001.
- 29 A location quotient is found by taking the proportion of all employment that is in a certain industry in a certain location, and dividing that by the proportion of all employment that is in that industry in some reference location. In this case, a value greater than 1 means that the city has a higher proportion of designers in its workforce than the country does.
- 30 Source: Gertler and Vinodrai (2004), p.33 – the number of designers in the Toronto CMA is different here than in other graphs because the authors have excluded the self-employed for comparison purposes between Canadian and American Statistics
- 31 Source: Gertler and Vinodrai (2004), p. 8
- 32 Source: Adapted from Corbett Communications (2004), p. 25
- 33 Gould, Final Report (2004), p.33
- 34 Gould, Final Report (2004), p.34
- 35 Fuller listings are available through the design industry associations – see <http://www.dx.org/diac/contact.html>
- 36 Corporate Overview, Teknion website: http://www.teknion.com/about-teknion/corp_overview.asp
- 37 Design Exchange website: <http://www.dx.org/about/about.html>
- 38 Gould, Final Report (2004), p. 4
- 39 Source: Statistics Canada, Census of Population, 2001 (Custom Tabulation)
- 40 Gertler and Vinodrai (2004), p. 23
- 41 Includes software engineers; computer programmers and interactive media developers; and web designers and developers. While obviously different in many regards, this is an appropriate comparison group for income purposes because it similarly involves a creative service that is applied across other economic sectors.
- 42 Source: Statistics Canada, Census of Population, 2001 (Custom Tabulation)

- 43 Source: Statistics Canada, Census of Population, 2001 (Custom Tabulation) – Note: some cell entries reflect very small sample sizes, eg. there are zero landscape architects with some university but no degree.
- 44 Gertler and Vinodrai (2004), p. 35
- 45 Gould, Executive Report (2004), p. 15
- 46 Corbett Communications (2004), p. 7
- 47 Potter et. al. (1991)
- 48 Walsh (1996), p.519
- 49 Design Council (2004)
- 50 see Mau (2005), p. 39
- 51 Institute for Research and Innovation in Sustainability website, <http://iris.yorku.ca/CompletedResearch/itemAuhUHzhjeZ.html>. See also case studies in Corporate Knights magazine, Summer 2005.
- 52 Gertler and Vinodrai (2004), p.1
- 53 Gertler and Vinodrai (2004), p.1
- 54 Strategis website, <http://strategis.ic.gc.ca/epic/internet/indsib-dsib.nsf/en/Home>
- 55 Government of Canada (2001), p. 36
- 56 *ibid.*
- 57 Industry Canada news release, May 18, 2005. IC website: <http://www.ic.gc.ca/cmb/welcomeic.nsf/cdd9dc973c4bf6bc852564ca006418a0/85256a5d006b97208525700500646b49!OpenDocument>
- 58 Ontario Ministry of Economic Development and Trade news release, June 24, 2004. MEDT website:<http://www.ontariocanada.com/ontcan/page.do?page=5883>*ibid.*
- 59 Institute for Competitiveness and Prosperity press release, November 25, 2005. ICAP website: <http://www.competeprosper.ca/public/release251105.html>
- 60 Although we also saw that there are some impending challenges for design education.
- 61 Keenan (2005)
- 62 Cawood et. al. (2004), p. 76
- 63 Kline and Rosenberg (1986)
- 64 Kline and Rosenberg (1986), p. 18
- 65 Design Council (2004)
- 66 Hertenstein and Platt (2001)
- 67 Industries were selected based on their production of outputs ‘well-known to the general public so that the designexperts would recognize the names of the firms and have insight about their design quality.’
- 68 Solum et. al. (1998)
- 69 Danish National Agency for Enterprise and Construction (2003)
- 70 Gould, Final Report (2004), p. 21
- 71 Ramlau and Melander (2004), p.49
- 72 City of Toronto Economic Development Department (2004)
- 73 NSERC website: http://www.nserc.gc.ca/indus_e.htm
- 74 CFI website: <http://www.innovation.ca/about/index.cfm?websiteid=5>
- 75 NCE website: http://www.nce.gc.ca/about_e.htm
- 76 Ontario Ministry of Research and Innovation website: <http://www.mri.gov.on.ca/english/programs/ORC-Program.asp>
- 77 Business Week, July 4 2005, p. 7078 Cho (2004), p. 12
- 79 Chung (1998), p. 11
- 80 Cho (2004), p. 17
- 81 Cho (2004), p. 17
- 82 Kwon (1998)
- 83 Rocks and Ihlwan (2004)
- 84 Cho (2004), p. 12
- 85 Design Council website: http://www.design-council.org.uk/webdav/servlet/harmonise?Page/@id=6020&Session/@id=D_rU2R0tBGD82bVtyRFuVW&Document/@id=4629
- 86 Design Council website: http://www.design-council.org.uk/webdav/servlet/harmonise?Page/@id=6026&Session/@id=D_rU2R0tBGD82bVtyRFuVW&Section/@id=1046
- 87 Design Council website: http://www.design-council.org.uk/webdav/servlet/harmonise?Page/@id=6052&Session/@id=D_SYzcuKp9GsXln0VV4BTM&Document/@id=7715
- 88 UK Government (1995)
- 89 Design Council website: http://www.design-council.org.uk/webdav/servlet/harmonise?Page/@id=6020&Session/@id=D_ax0VFqVwxBuB4sTiHbzi&Document/@id=4992
- 90 Ramlau and Melander (2004), p. 48
- 91 *ibid.*
- 92 Cawood et. al. (2004), p. 74
- 93 Cawood et. al. (2004) p. 75
- 94 Ramlau and Melander (2004), p. 54
- 95 Murray (2000), p. 12

- 96 see Engardio and Roberts (2004)
- 97 Friedman (2005), p. 36
- 98 Nussbaum (2004)
- 99 Tharp and Munson (2005)
- 100 Nussbaum (2004)
- 101 Tharp and Munson (2005). See for example Zhengzheng (2004) and Fowler (2003).
- 102 Tharp and Munson (2005)
- 103 Cawood et al, p. 72
- 104 Nussbaum (2004)
- 105 Pang (2002)
- 106 Pang (2002)
- 107 Skegg (2002) cited in Leslie and Rantisi (2005), p. 3
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- 109 Leslie and Rantisi (2005), p. 35
- 110 Gouvernement du Quebec (1992) cited in Leslie and Rantisi (2005), p. 28
- 111 Leslie and Rantisi (2005), p. 32
- 112 IDM website: <http://www.infodesigncanada.com/infodesign/en/institute/idm/objectives.html>
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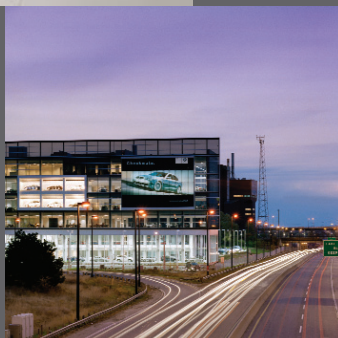
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