



Designs on the Economy

Address by President Sara Diamond to the Economic Club of Toronto

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Let me begin with my thanks to the Economic Club of Toronto for providing me with the opportunity to speak with you today and demonstrate the dramatic difference that design can make to Canada's competitiveness and productivity.

Let us start with this room.

Please pause for a moment. Close your eyes, adjust your body to your chair, and breathe in and out. Is the chair comfortable? Does it support your back?

Open your eyes. Look at the colour scheme. What is it saying? Relax? Perk up? Do you think that chair was designed for someone your size, your shape?

Now find your mobile phone and take it out. Pick up that [BlackBerry] Bold or [BlackBerry] Pearl or [Apple] iPhone, or Nokia, and feel its weight. Can you see the keys well? Do your fingers fit well on this keyboard? How many of its features do you understand? How many do you use? How else might you want to use your smart phone? How do you respond when it vibrates or buzzes? What ring tones have you loaded? Do you know how to load ring tones? If you could describe your mobile phone as a person who might it be?

What is your neighbour wearing today? How much do you think it cost? What design features indicated this to you? What mobile device do they have? Based on their clothing and their phone, what car do they drive?

I'll stop now before I utterly annoy you! You have just undertaken the very beginnings of a design brainstorm. My point today is that we could spend hours exploring this room, all that is in it, from the weight of the cutlery, to the draping, to the shape of the water glass, and its social context — you, its inhabitants — and its context of use, all from the perspective of design.

Design, although fundamentally artificial, is multi-sensory. Design shapes our experiences as humans at the most basic levels and has an impact on the world that surrounds and informs the human experience. Yet our challenge is that design is ubiquitous and often invisible.

To be effective, design needs to be excellent and it needs to be consciously deployed. That the difference between Apple's iPod and other digital music players is design is oft cited. According to MacLeod et al. (2007), "the iPod (huge capacity, small size) helped to increase the dollar value of the Apple brand by 23.7% in just one year."¹ Joseph Crump, Executive Creative Director of Razorfish [formerly Avenue A | Razorfish], describes the BlackBerry Pearl moment, "Usability — once fetishized — is now merely the price of entry... The bar is getting raised every day for the way an object or an experience looks or feels; its tone of voice, its personality."²

What do designers do? Design is a set of intentional creative processes, or "designerly ways of knowing" that emerge concepts and bring these to result.³ Design, according to Richard Thomas is, "the process of initiating and representing relationships" — between people and things, things and things, networks and systems.⁴ The intention of design is processes, systems and products that can be generalized.

The introduction of variability into universality (a result of digital tools) allows consumers to feel control over products and their environment, in both symbolic and genuine ways. Contemporary design has in part focused on the introduction of personalization and localization of mass-market products to suit the specific nature of markets and individuals.

Yet design must also work from the ground up, finding expressed or hidden needs and filling gaps and addressing niche markets — the boutique hotel movement is such as design revolution. David Dunne of the Rotman School of Management believes design is correlative to competitiveness. Designers bring "an understanding of the customer experience through hands-on research," melding "the logic and the magic."⁵ Logic and magic are equally of critical importance for emerging markets — including "Design for the Other 90%." Designers work directly with the world's poor to develop inventions and systems such as a community solar kitchen or a portable light mat and workshop lantern that advance their standards of living, allowing them to become producers and consumers and jump over phases of invention. Please come to the OCAD Professional Gallery to see our current exhibition on this subject. Social benefits such as cohesion and education with related economic benefits are direct results of design intervention.

Effective variability (and complexity) requires deep understanding of people, their differences, their desires and their needs. Designers allow companies to stay ahead of where customers are. To this end, Jules Goss, Chair of OCAD's Industrial Design program, and Stephen Ospalak, TELUS' Vice-President of Mobile and Future Friendly Home Devices, recently led a collaboration entitled "Hard Cell," in order to answer the problem "How can wireless technology better suit the needs of Canadians in 2009?" OCAD students have studied the real-life uses of wireless devices, and the intuitive and functional design of their components (e.g., keys, screens, materials, and interfaces). The student designer, Victoria Ching, who demonstrated the strongest design abilities last year, was offered a four-month internship at TELUS this year. The project resulted not only in innovative hardware ideas but a keyboard for the elderly, and a wide variation of new software interfaces and mini service applications.

Interaction designer Alexandra Deschamps-Sonsino is featured on the Metabolo website (<http://metabolo.org>). She relates the ways in which design is the fundamental feature in the shift to a world that is moving away from products and moving instead

1 See p. 111 of D. MacLeod, L. Muller, D. Covo, R. Levy (2007) *Towards a Design Nation*, In, P. Poletto, P. Beesley, C. Molner, *Ourtopias*. Waterloo: Riverside Architectural Press, pp. 109–120.

2 See J. Crump, "the new! Improved black box: four questions that should keep creative people up at night," in J. Lanctot (2008) *2008 Digital Outlook Report*, New York: Avenue A | Razorfish.

3 N. Cross (2000) *Designerly Ways of Knowing: Design Discipline versus Design Science*. Design and Research Symposium Paper, Milan: Politecnico di Milano.

4 I thank OCAD faculty member Greg Van Alstyne for his blog, entitled *Metabolo* (<http://metabolo.org/>) with its varying rich definitions of design.

5 Randolph Group (2004), *Industry Roundtable on Design and Competitiveness*. Toronto: DIAC, p.2.

towards services. Service design crosses virtual worlds and the tangible physical world to “create meaningful experiences for people.” Running your financial transactions off your PDA or mobile phone is an example of such an experience, in which the role of the designer is to bring human sensibilities and elegant ways of being to technology.

Professors Judith Doyle and Martha Ladly, two of OCAD’s faculty, one in Art, the other in Design, collaborate with Baycrest, one of the world’s premier academic health sciences centres focused on aging, to design “memory scaffolding systems” that assist cognitively impaired people to make their way through their daily activities by creating emotionally charged personal interfaces that act as memory triggers and reside on a smart phone.

Job Rutgers, another of our faculty, links physical architecture and virtual systems in hotels, hospitals and homes, where users can upload their personal images and interfaces to create familiar landscapes and interact with those at a distance. He notes that in a world of ubiquitous computing, the emphasis has shifted from designing objects to designing objects that are embedded in the ambient environment. Intelligent buildings with measurement and control systems will adapt to use and individual users, saving billions of dollars in energy costs and reducing carbon output.

In each of these instances, it should be clear that design is one of the most dynamic means to create unique intellectual property. But that IP and the knowledge to produce that IP needs to be concentrated in Canada in order for it to truly generate wealth in Canada.

Let’s move away from consumer products to the larger arena of technology and manufacturing. As promoters of innovation, we need to bring design to the forefront of every stage of product and process development. Designers are acutely aware of the physical properties of materials and are able to imagine new and combined applications of materials. Design is the fundamental core knowledge of technology transfer, new processes and new manufacturing methods. When I talk about contemporary design, I refer to a set of interventions that occur at all points of the supply chain and a set of associated methodologies. Hence, design process is relevant well beyond consumer products. Design covers “Ideation/Scoping, Research and Discovery, Development, Preference Research, Testing and Validation, Launching and Measurement,” with iteration of the process as a continued chain.⁶

According to FORA, Denmark’s Enterprise and Construction Authority’s Division for Research and Analysis, competitiveness and productivity must rely on concept design or strategic foresight in which, “concepts and business strategies are approached strategically and multidisciplinary work is performed using a combination of competencies from business management, social science and design.”⁷ Concept design focuses on what should be produced, resulting in new applications of existing technologies — an important role for innovation as it amortizes existing investment, as well as the invention of new technologies. Design now extends into business process analysis, an approach that can be called “transformation design.” RED, a Danish firm, emphasizes the interdisciplinary qualities of this approach — the reliance on participatory design (where end users are brought into the design process), the goal of “building capacity not dependency,” the extension “beyond traditional solutions” and the result being “fundamental change.”⁸

6 For an excellent breakdown of the value proposition see the following site, <http://www.ubiquitygroup.com/strategy.html>

7 J. Rosted, T. Lau, C. Høgenhaven & P. Johansen (2007) *Concept Design: How to solve complex challenges of our time*. Available on <http://www.foranet.dk/?lang=en> Copenhagen: FORA: The Danish Authority for Enterprise and Construction’s Division for Research and Analysis.

8 See <http://www.ebst.dk/file/7260/designdenmark.pdf> for an overview of Danish Design policy.

Such business-oriented design approaches and skills are exactly what are needed in order to build innovation capacity in Canada's challenged manufacturing industries.

Design is fundamental to the realization of Ontario's research and innovation priorities and the stated focus of Canada's science and technology strategy. Information and communications technologies, digital media, green and clean technologies, medical services and devices — these are just a few examples of where design must be at the forefront. Rather than talk about "STEM" (Science, Technology, Engineering and Medicine), it is far more strategic to enact Microsoft's vision and describe the research and innovation knowledge set as STEM D (Science, Technology, Engineering, Medicine and Design) and our national strategy as DST — Design, Science and Technology.

Design is of particular importance in a context where the digital revolution is ubiquitous and where, according to the Rand's 2006 *The Global Technology Revolution Report: Bio/Nano Materials Trends and Their Synergies*, innovation will be increasingly fuelled by the link between biotechnology and computer science and engineering.⁹ Society requires new kinds of inventions that make use of new and sustainable materials, medical technologies, and biotechnology. Paolo Antonelli (2008), the renowned creator of the "Design and the Elastic Mind" exhibition at the Museum of Modern Art in New York City, proposes that the twentieth-century conversation between design and science has returned to the foreground in this century and become focused. She argues that this is in part a result of technologies that offer scientists the freedom to use their imaginations, particularly in the realm of biosciences, biotechnologies and nanotechnologies. Data visualization research, a growing priority at OCAD, is of essential value to cancer research, and at the core of discovery in genomic and bioinformatic research. It is a design and art field, with leaders such as Ben Fry. Fry has collaborated on breakthrough medical discovery. He and Casey Reas also initiated a new and fast-build software system entitled "Processing" as a result of his research.¹⁰ And more obviously, designers can provide valuable research insights such as human factors in medical research, lifestyle and wellness technologies, and messaging, home care and wearable technologies.

Designers are engaged in developing energy-efficient solutions in environmental and sustainable design. The following quote from an OCAD design research policy paper expresses this well: "Designing sustainable environments not only deals with the built environment but also extends to the form of cities, the systems and structures that form the human habitat and a host of new green and clean technologies." As was clear in the last Canadian election, "The pursuit of sustainability is not only dependent on how we can create sustainable solutions but also how it is represented and communicated. The challenge for designers is to use their analysis skills and people needs capability in new ways to generate innovative business opportunities."

⁹ www.rand.org/pubs/mongraph_reports/MR1307

¹⁰ See B. Fry (2008) *Visualizing Data*. Sabastopol, CA: O'Reilly Media, Inc.

¹¹ See <<http://www.nowhouseproject.com/>> for detailed descriptions of the project.

¹² era.on.ca/blogs/towerrenewal/pdf/TRPBasicinformation.pdf

Projects prove the theory. The Now House™ project is a collaboration of designers, architects, engineers, homeowners and sustainable-building experts who propose to turn a 60-year-old WWII house into a net zero energy home.¹¹ The design team includes OCAD alumnus Gonzalo Cardenas, and faculty members Harry Mahler and Todd Falkowsky, and has received research funding from the Canada Mortgage and Housing Corporation's Net Zero Energy Healthy House initiative. Toronto's Tower Renewal Project¹² led by E.R.A. Architects, the City of Toronto, OCAD, the University of Toronto,

Zerofootprint, the Ontario Climate Change Secretariat, the Canada Green Building Council and a host of technology companies, large and small, is such a living laboratory, as is the Institute for the Built Environment, a major collaborative project that OCAD is helping to initiate.

“Hard problems” in research are called “wicked problems” by designers; these challenges require intensive collaboration. A recent Finnish study of engineering and design collaboration indicated that collaboration skills are always provided by the designer on teams. Designers are multilingual — that is, they are able to facilitate dialogues between very wide disciplines such as business, engineering and materials science, and between researchers and investors.

How do designers work their practical magic? They use scenarios to look into the future (far and very near), define trends and then build and test scenarios with end-users or derive technology sketches from these. Personas are character types that allow designers to work through all manner of questions around a new process or product by placing it against a character type. Participatory design is also described as user-centred design, recognizing the importance of the end-user, incorporating them into the design process from the conception to the evaluation of the final product. Charettes are intensive design workshops that result in tangibles — low-tech prototypes or design sketches that are ways of creating concepts that can be touched, interacted with and critiqued without the investment of onerous amounts of time or technology. Social media sites such as Facebook now include end-users into product development at all stages and allow fast product review; these add to online evaluation forums that design companies and brands often run.

Collaborative leadership is of crucial value as business and manufacturing processes occur across fast-speed networks, with the “visualisation and virtualization” (MacLeod et al., 2007) facilitating interdisciplinary teams over long distances. MacLeod et al. also note that networked co-design allows teams of experts to problem-solve and design, integrating large- and small-scale companies.

What is the quantitative evidence that design has an impact on the economy? The U.K. Design Council’s Design Index tracked 63 firms that used design as quality leverage to compete. These firms outperformed the London Stock Exchange FTSE Index by 200 percent in variable economic conditions.

Countries with a high innovation and competitiveness ranking invest in design. Finland has a strong focus on design. It rates fourth in global innovation and second in competitiveness (2007). For the country’s Design Year 2005, \$40.9 million was invested in design research, education, and promotion.¹³

The recent report, *Product Design and Development: A Canadian Manufacturing Perspective*, produced by Industry Canada, the Design Exchange, and Canadian Manufacturers & Exporters, is a comparative study of Canada and the United States that provides additional quantitative evidence that the need for product design and development (that is, the design of all goods and services that compose the process through which a good or service is created) has been brought to the forefront of international competitiveness.¹⁴

¹³ MacLeod et al (2007).

¹⁴ See http://www.ic.gc.ca/epic/site/dsib-dsib.nsf/en/h_oq01747e.html

According to the World Economic Forum's *Global Competitiveness Report*, falling productivity is one of Canada's largest challenges. *Product Design and Development: A Canadian Manufacturing Perspective* identifies design as the critical element in achieving better productivity. Firms identify design as being of value in effecting "time to market, new product success rate, and percentage of revenue from new products" (Industry Canada, p. 14).¹⁵ A faster time to market reflects a better integration of the design, manufacturing and managing processes, as well as a more effective application of design and design-management principles. This is translated by fewer amendments and modifications, which allows for first-to-market advantages and thus the potential for higher profit.

Hence, close to 60 percent of North American firms have global design strategies in place and more than 40 percent are currently pursuing global design networks.¹⁶ Best-in-class firms in Canada, in aerospace, ICT, new media and furniture design (Umbra being one) show significantly more product design- and development-dedicated teams than their less successful competitors. This report indicates that time-to-market measures for Canada lag behind the U.S. but clearly accelerate when design capacity is added to a firm.¹⁷ Although increased since 1991, product design- and development-investment levels in Canada were still below those of the U.S. in 2003.

This and all the other cited reports underscore the fact that design competitiveness includes the fields of communication and advertising. Communications skills, marketing and branding are key tools for the current and next era, and include challenges in bridging local cultures into global markets. Design is a full-cycle enterprise.

On a different note, Canada's growing cultural and entertainment industries are capable not only of valuable innovation but of developing new fast-tracked research cycles that combine basic research, application research and business models. Design drives research and innovation in gaming, mobile experience, interactive design and Web 2.0 and 3.0, interactive entertainment, e-learning, digital film and animation, and graphics software. These cultural industries accelerate economic capacity in many regions. Firms include micro-businesses and SMEs. Industry in British Columbia and Quebec has acted as a magnet for large-scale industries. Small firms aggregate. These content-based design innovations are complemented by ICT capacity across Canada. The innovation-to-market ratio in these sectors is very fast (for example, in the mobile experience and technology industries we began the talk with) but requires diligent support. And cultural industry and university research and development clusters such as CONCERT [the Consortium on New Media, Creative, and Entertainment R&D in the Toronto Region] or OCAD's Mobile Experience Innovation Centre are proving successful in driving advanced design innovation.

Developed nations have prided themselves on the production of original thinking, intellectual property in the form of patents and copyrights, and the know-how to drive innovation. We face sharp competition.

China is moving up the value chain in evolving to a country in which goods are both designed and manufactured. Chinese policy proposes an intertwined relationship between growth in the creative industries, digital design capacity and economic success. In 2005, China set a target of 10 percent growth per year in jobs in the creative industries.

¹⁵ Aberdeen Group (2006), "The mechatronics systems design and benchmark report"

¹⁶ Aberdeen Group (2006), "Global Design benchmark report"

¹⁷ According to the report, "Although increased since 1991, product design and development investment levels in Canada were still below those of the USA in 2003. Time-to-market measures for Canada have improved between 1999 and 2004. Yet at the aggregate level Canada is still below the US for percentage of revenue from new products."

India adopted a national design strategy in 2007 that is driven by making the axiom “designed in India, made for the world” a reality. Measures include the strengthening of IP policy, a focus on the export of Indian design rather than service provision, enabling design applications by SMEs, branding Indian design, and large-scale investment in education and research at the National Institute of Design and in animation schools. Bringing design education into early grades, an upswing in design focus at its world class institutes of technology, and public sector procurement of designed in India goods are also part of the mix.

Korea has pursued three five-year plans that were a response to the drop in demand for Korean goods in the 1990s. The goal was to bring Korea’s design capacity to that of developed nations. Korea is now almost on par with Canada in innovation and global competitiveness.

Denmark adopted a design policy in order raise productivity. Their design policy argues that, “Design should not be used solely for the finishing touches, but instead be pivotal for innovation in companies.” The strategy has brought Denmark to third place in the world’s competitive ranking.¹⁸

Many Canadians fear that we will be unable to withstand growing competition in goods and services, but Germany abundantly demonstrates that a high-wage country can also be a successful manufacturer, exporter and high-end service provider. Canada must embrace a new federal manufacturing strategy that recognizes the value of contemporary design, fosters its application in tangible ways, and safeguards the work of our designers through effective policy-making.

But are we capable? Canada has a comprehensive network of post-secondary institutions, including colleges and universities like my own, that are engaged in all of the fields of design education. Canada houses the third-largest design capacity in North America, with the largest concentration in Toronto, and an outstanding cultural industry capacity, with a high percentage of designers. *Design Matters*, a 2004 report by the Design Industry Advisory Committee (DIAC) — a committee formed by the City of Toronto, funded in part by the Government of Canada’s Labour Market Partnerships program, and comprised of design industry stakeholders, the Design Exchange, and the Ontario Ministry of Economic Trade and Development — indicated that the City of Toronto (not to be confused with the Greater Toronto Area) has the third-largest design workforce in North America, following New York and Boston. Another 2004 DIAC research report, *Designing the Economy*, conducted by Meric Gertler and Tara Vinodrai provides a comprehensive overview of the design labour force in Ontario. This young, well-educated demographic is as culturally diverse and immigrant-rich as the rest of the GTA labour force. In addition to their professional capacities, they can form a bridge to their originating cultures. From 1994 to 2004, this labour force grew by 4.6 percent, four times the rate of the overall labour force.

¹⁸ See <http://www.weforum.org/documents/GCR0809/index.html>

But are designers pointed in the right direction? Not! *Design Matters* warns, “While Ontario produces some of the best designers in the world, they are basically a hidden resource within the province.” Unless industry engages designers at every turn in the rethinking of manufacturing, business processes and consumer engagement, they are an underutilized force.

Let’s point our design labour force and our students at our “wicked problems”:

- The conversion of automobile manufacturing capabilities into a competitive base for green and clean building technologies;
- The transformation of our built environment by converting aging eyesores into iconic zero-carbon architecture;
- The redesign of hospital systems to be patient friendly and efficient; and
- The transformation of a significant portion of our consumer export market towards the Southern Hemisphere.

The future is STEM D. Design is the new economy.

Thank you.