



## THE CENTRAL ROLE OF DESIGN IN OUR ECONOMY

by: J.E. Lockyer, FCAE

### THE NATURE OF DESIGN:

**Design is an essential component of progress – the art or profession of creating something which is yet to be, from finite resources and within a finite time.**

“Something” may be a work of art, a manufactured product, a manufacturing process, a societal system, a business system or the structure of an organization. Design is an integration of theory and practice; of knowledge, skill and imagination.

Design is often viewed too narrowly – it is much broader than engineering or any of the other disciplines which practice design. It touches everyone, because everyone belongs to one or more of three communities:

- The users of designed products, processes and services
- The users of design talent
- The practitioners of design

Excellent design is crucial to our economy, particularly in the development of products, processes and systems which can compete in the global market. Canada is part of that global market; so a product which competes successfully in Canada can, by replacing an import, give the same economic benefit as a successful export.

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*Excellent design is crucial  
to our economy*

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### NEEDS:

**The basic need is to get Canadian products, processes and systems designed better so that Canadian industry can compete better in global markets.**

This in turn requires

- Better sources of advice and help for small and medium firms which are seeking to establish or upgrade their design capability.

- Better management of the design process by user industries.
- Better awareness by user industries of the availability of all types of design talent, and how best to use it.
- More and better training of *all* types of designers.
- Better understanding within the overall design community of the roles played by each design discipline, and how they need to interact to ensure a successful outcome.
- Better understanding by Canadian governments, industries, universities and taxpayers of the central role played by design in the welfare and prosperity of Canada.

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*Training in all design disciplines  
is an urgent need*

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### THE DESIGN COMMUNITY:

In much earlier times, design and construction were regarded as one coherent, all-encompassing skill. Unfortunately, we have now managed to take design and divide it into separate compartments or disciplines labelled artistic, industrial, interior, landscape, graphic, textile, materials, architectural, engineering and such like. Others often contribute to the design process, such as artists, social scientists, technologists and technicians.

In complex undertakings such as the Toronto Skydome or an urban transit system, many of these disciplines are needed; the design of simple products may only need one or two. A typical design needs the participation *and interaction* of at least three disciplines, working as a team.

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*Modern design uses teams  
with many skills*

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There is an underlying *process of design* which applies for all disciplines; this commonality of process extends much further than many imagine. Recognizing and building on the common elements of the process can help designers and managers optimize their particular version of the process.

#### THE CURRENT ENVIRONMENT:

It is only recently that design has been recognized as an essential component of progress. In the seventies and eighties, attention was focused on the process of introducing new products, particularly the careful selection of the right product for the firm's reachable market and production capability. The role of design in this process tended to be either ignored or incorrectly assumed to be a stable and orderly process in the midst of market and financial turmoil.

More recently, *how well* design is done, managed and integrated into the overall business process of the firm has been recognized as an important differentiator in business success. At the same time, the needs of industry for good design, good designers, and resources for training designers and the managers of design have never been greater. In particular, the small and medium firms, which are the nation's focus for innovation and job creation, find it increasingly difficult to identify sources of advice or help in upgrading, or even establishing, their design capability.

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***Focus on the design capabilities  
of small and medium firms***

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There is a misconception by some that design is optional and that "applying" design to a product or process will confer a business benefit. The reality is that *all* products and services are designed – some well, some badly; some with intent and some by happenstance; some by professionals and some by amateurs. But all are *designed*; what matters is the *appropriate* application of design talent to the evolution of a product that is going to happen anyway, thereby improving its chances of success.

#### EDUCATION:

All design disciplines rely on some education process for their practitioners. These needs are met, in varying degree, by the present educational structure. Getting most attention at the present time is the need to improve the teaching of engineering design in universities. The current report by the Academy on "*Engineering Education in Canadian Universities*"

refers to the rising ferment in engineering education and the need for broader undergraduate programs with increased emphasis on design.

Non-engineering aspects of design are taught in schools, colleges of art, community colleges and CEGEP's, university faculties of art, schools of architecture and of industrial design. Many designers are self-taught, building on the basic knowledge acquired at one or more of the above institutions.

The overall picture is one of moderate but variable success in teaching design *skills* but limited understanding or teaching of the design *process*. Unfortunately, the compartmentalization of the practitioner communities is reflected in the educational structure. There is much to be done.

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***The process of design  
must be understood and taught***

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#### ROLE OF THE ENGINEERING PROFESSION:

While engineering design is only part of the design spectrum, its central role in Canada's industrial infrastructure places two obligations on the engineering profession – practitioners, managers and educators alike. The first, and perhaps the easier, is to ensure that information about the best methods of doing, teaching and managing engineering design are freely available to all, especially that information which is applicable to all design disciplines – not just engineering.

The second, and perhaps more important, is to undertake a leadership role in recognizing and promoting the important and inseparable contributions of design talent from *all* disciplines.

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***Design is broader than engineering,  
but engineering must lead***

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Editors: **Gordon Slemon**                      **Mark Abbott**  
Tel: (416) 978-3185                              Tel: (416) 769-8942  
Fax: (416) 978-7423                              Fax: (416) 769-1109

Secretary: **Leopold M. Nadeau**  
130 Albert Street, Suite 1414,  
Ottawa, Ontario, K1P 5G4  
Tel: (613) 235-9056                              Fax: (613) 230-5759