Sitting in a Design Chair
Reflections on the NSERC Chairs in Design Engineering Program

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The Natural Sciences and Engineering Research Council of Canada
Cause and effect

- Concern re design education existed/exists in Canadian industry and engineering profession
- the program was/is Dr. Tom Brzustowski’s unique response
“NSERC’s goal in setting up the Chairs is to expand and improve Canada’s capacity and performance in all aspects of design engineering, including environmental design.”
Program initiated in 2001

- 5 chairs awarded, one in Manitoba
- currently 12 active Chairs
- NSERC Goal is 16 concurrent Chairs
Individual Chair resources

- $1 000 000 over 5 years
- primarily matched “externally”
- some university match accepted
At minimum, this provides the Chairholder
- $400,000 per year
- over 5 years
Beyond individual campuses

- NSERC arranges semi-annual meetings of all Design Chairs
- Permits sharing experiences and ideas
Chair structure

“. . . partnership with industry, federal and provincial governments, and other private or public sector organizations.”

rather ill defined
Design Engineering definition

. . . a creative, iterative and often open-ended process subject to constraints which may be governed by . . .”

rather ill defined
And some Engineering “philosophy” considerations that impacted our Manitoba Chair
Billy Koen’s Engineering Method

“... the strategy for causing the best change in a poorly understood or uncertain situation within available resources.”
Henry Petroski

“Science is about knowing
Engineering is about doing”
Philosophy notwithstanding,

Consider the Manitoba NSERC program
What did we do (try to do)?
Our initial conditions

- a research based Faculty
- few profs with design experience
- a “full” curriculum
- Accreditation pressure
- relatively unknown “potential”
Our reactions

• Establish the Chair as a DESIGN CENTRE
• Accept responsibility for First Year Design Class
• Employ a computer literate Draughtsman
More reactions

created Engineers in Residence positions

- Retired engineers, hired part time
- Provide design experienced staff
- Provide personal connections with local industry
- Provide Student Club Leaders
And

- Provided staff to teach Technical Communications
- Introduced design “influence” in classes taught by Design Group staff
And

- Employed a Public Relations person to assure our “message” got out
- Provided public relations services to the Faculty in general
And

- Provided staff to teach Technical Communications classes
- Provided staff support for Faculty Committee dealing with accreditation concerns
Fortunately
- we received twice the required “matching” funds
- we grew into a “regular” part of the Faculty budget
Links to profession in Manitoba


In grad school

• Created, and taught, an Engineering philosophy class
• In recent years, the largest non-required grad class in the Faculty
• attracted MBA and PhD Education students
The Canadian Engineering Education Association was created by Chairholders across Canada
But outside of NSERC definitions, a recent philosopher’s perspective might have helped shape our Manitoba proposal.
In his book, *Intuition Pumps and Other Tools for Thinking*, Daniel Dennett suggested “A tool wielded well becomes almost as much a part of you as your hands and feet, and this is especially true of tools of thinking.”
If design is engineering’s “tool of thinking”, is assisting students as they hone that “tool”, a reasonable target for a Design Chair program?
Nonetheless
Manitoba has benefited from 15 years of NSERC Design Chair support

- 2001 – 2011 Ron Britton
- 2012 – 2017 Doug Ruth

- we hope our good luck is not over
Looking back, was it worth the effort?
I believe the 15 years of NSERC Design Engineering Chair support at the University of Manitoba have started us toward meeting Dennett’s “tools” suggestion.
I believe that NSERC Design Engineering Chair support at many universities in Canada has allowed them to make similar strides.
I believe that some Design Chairs missed the opportunity that the NSERC Design Engineering Chairs program provided
I believe Tom Brzustowski can take pride in the impact his initiative has had on Design Engineering Education in Canada
I believe Tom Brzustowski’s Design Engineering Chair idea could be transplanted to other jurisdictions.

Canadians like to share our successes
Thank you