

TEACHING DOSSIER
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1. TEACHING AWARDS:

Name of Award	Year	Awarded by:
McCalla Professorship	2007-2008	Faculty of Arts, University of Alberta
Academic Staff Award	1999	Graduate Students Association, University of Alberta
Teaching Award	1998	Department of Psychology, University of Alberta

2. TEACHING PHILOSOPHY:

***Certum quod factum* (Giambattista Vico, 1710) – “one is certain only of what one builds”.** I create an environment in which students learn by building – reading, discussing, writing, programming, simulating, experimenting – as they explore the exciting interdisciplinary ideas at the foundation of cognitive science.

Some Implications of My Philosophy for Undergraduate Students

- ✓ Exposing students to readings and topics from the core disciplines of cognitive science (psychology, linguistics, philosophy, computer science, and neuroscience)
- ✓ Providing students hands-on experience with advanced technology (artificial neural network simulations, robot construction and programming)
- ✓ Creating opportunities for collegial and collaborative research with students in my lab, from project inception to journal publication. Some recent examples of projects with undergraduate students as authors are:
 - Dawson, M.R.W., Dupuis, B., & Wilson, M. (2010). *From Bricks to Brains: The Embodied Cognitive Science of LEGO Robots*. Athabasca University Press, Edmonton.
 - Dawson, M.R.W., Kelly, D.M, Spetch, M.L., & Dupuis, B. (2010). Using perceptrons to explore the reorientation task. *Cognition*, 114, 207-226.

Some Implications of My Philosophy for Graduate Students

- ✓ Training in a truly interdisciplinary environment, which mixes together students from different disciplines
 - I have graduated PhD students in Psychology, Philosophy, and Computing Science
 - My graduates can be found as academic members of psychology, educational psychology, philosophy, neuroscience, and computer science departments
- ✓ Exposure to a wide variety of research practices, including psychophysical experimentation, computer programming and simulation, robot construction and programming, multivariate statistics, formal analysis
- ✓ Learning in a supportive environment that attempts to foster all aspects of students' professional development (research, teaching, communicating, writing, career decisions)
- ✓ Working in a setting that views graduate students as apprentices, as colleagues, and as collaborators
 - Financial support for research equipment and for attending national and international conferences
 - Many of my research articles are co-authored with my graduate students, and they are frequently first authors on these papers
 - My students are free to pursue independent projects, and many have published single-authored manuscripts while members of my lab

3. MAJOR UNDERGRADUATE TEACHING ACTIVITIES (Past 5 Years):

In the table below, the “Rating” is the median rating for the statement “Overall, the instructor was excellent”. “Honor Roll” indicates being listed on the Department of Psychology’s Honor Roll for teaching. “Honor Roll + distinction” indicates being listed on the Department of Psychology’s Honor Roll With Distinction for teaching

Course		2006	2007	2008	2009	2010
PSYCO 354 “Foundations of Cognitive Science	Enrollment	85		82	44	
	Rating	4.1		4.4	4.3	
	Recognition	Honor Roll	Not taught, McCalla Professorship	Honor Roll	Honor Roll	SABBATICAL
PSYCO 452 “Minds and	Enrollment	8	15		16	8
	Rating	4.8	4.9		4.8	

Machines”	Recognition		Honor Roll + distinction	Not taught, McCalla Professorship	Honor Roll + distinction	Honor Roll + distinction
PSYCO 403 “Research in Cognitive Science”	Enrollment	15	14	13	12	
	Rating	4.8	4.9	4.8	4.5	
	Recognition	Honor Roll + distinction	Honor Roll + distinction	Honor Roll + distinction	Honor Roll + distinction	SABBATICAL

4. COURSES TAUGHT:

Undergraduate Courses

Introductory Psychology, Introduction to Statistics, Perception, Cognitive Psychology, Advanced Cognitive Psychology, Topics in Theoretical Psychology, Foundations of Cognitive Science, Advanced Perception, Workshop on Artificial Neural Networks, Minds and Machines, Research in Cognitive Science, Independent Studies

Graduate Courses

Computation and Cognition, Critical Appraisal of the New Connectionism, Varieties of Connectionism: A Critical Survey, Advanced Perception, Research in Cognitive Science, Advanced Topics in Cognitive Science, Independent Studies

5. STUDENT SUPERVISION (GRADUATE AND UNDERGRADUATE):

PhD Students

Name, Year, Degree	Thesis Title	Cosupervisor	Current Position
Stefan Kremer 1992-1995, Ph.D. Computing Science	<i>A theory of grammatical induction in the connectionist paradigm.</i>	Dr. Rene Elio, Computing Science	Associate Professor, Computing Science, Guelph University
Istvan Berkeley. 1993-1997, Ph.D. Philosophy	<i>On connectionism.</i>	Dr. Jeff Pelletier, Computing Science	Associate Professor, Philosophy, University of Louisiana at Lafayette
Dave Medler, 1994-1998, Ph.D. Psychology	<i>The crossroads of Connectionism: Where do we go from here?</i>		Sessional Instructor, University of Victoria
Corinne Zimmerman, 1998-2000 Ph.D., Psychology	<i>A network interpretation approach to the balance scale task.</i>	Dr. Gay Bisanz, Psychology	Associate Professor, Psychology, Illinois State University
Jacqueline Leighton, 1998-99 Ph.D., Psychology	<i>Reasoning according to the path of least resistance</i>	Dr. Don Heth, Psychology	Professor and Chair, Educational Psychology, University of Alberta
Monica Valsangkar, 1996-2001, Ph.D., Psychology	<i>Hemispheric processing in object-based visual attention</i>	Dr. Alan Kingstone, Psychology	Sessional Instructor, University of Alberta and Queen’s University
Leanne Willson, 1997-2001, Ph.D. Psychology	<i>Connectionist models of discrimination learning</i>		Associate Professor, Psychology, King’s University College
Patricia Boechler, 1998-2002, Ph.D., Psychology	<i>Hypertext navigation tools as mechanisms for the investigation of hyperspace properties</i>		Associate Professor, Educational Psychology, University of Alberta
Darren Piercey, 1998-2002, Ph.D. Psychology	<i>The referent model of lexical decision</i>		Associate Professor, Psychology, University of New Brunswick
Reiko Graham, 2001-2002, Ph.D. Psychology	<i>Characterizing general and face specific ERP correlates of face memory</i>	Dr. Roberto Cabeza, Psychology	Assistant Professor, Psychology, Texas State – San Marcos
Paul Siakaluk, 2001-2002, Ph.D.	<i>Strategic control of semantic processing in visual word</i>		Associate Professor, Psychology, University of

Psychology	<i>recognition</i>		Northern British Columbia
Greg Sadesky, 2002 – 2007, Ph.D. Educational Psychology	<i>Determining structure in test performance: An artificial neural network approach</i>	Dr. Jackie Leighton, Educational Psychology	Psychometrician, Spire Psychometrics Edmonton

Masters Students

Name, Year, Degree	Thesis Title	Current Position
Andrew Macquistan 1988-1990, M.A.	<i>A theory of grammatical induction in the connectionist paradigm.</i>	Research assistant, UBC Center for Community Child Health Research
Kevin Shamanski 1992-1994, M.Sc.	<i>On connectionism.</i>	Owner and Director, Transmogrification Services Inc.
David Medler, 1992-1994 M.Sc.	<i>The crossroads of connectionism: Where do we go from here?</i>	See above, PhD supervision
Brian Dupuis 2010 -, M.Sc.	In progress, began Fall, 2010	Graduate student, Psychology, University of Alberta

Honours Students

Name, Year, Degree	Thesis Title	Current Position
Matthew Duncan, 1990-1992, B.Sc. Psychology	Modeling mental rotation in a Hopfield net.	Head, Collaborative Performance and Learning Section, DRDC Toronto
Tim Gannon, 91-93 B.Sc. Supervisor	A connectionist model of the early visual pathway.	Teacher, Tempo School, Edmonton
Tom Cervenka, 93-95 B.Sc. Supervisor	Autonomous delta-rule and backpropagation networks.	Java/web instructor and programmer, Edmonton

6. SUPERVISORY/EXAMINING COMMITTEES FOR GRADUATE STUDENTS:

Membership On PhD Committees

Cameron Wild , Psychology, 1988 – 1993	Josie Aubrey, Psychology, 1991 - 1992	David Hall, Psychology, 1992 – 1994
Karsten Loepelman, Psychology, 1992 - 1995	Michael Carbonaro, Educational Psychology, 1995 - 1997	Janice Snyder, Psychology, 1997 - 2000
Mason Cash , Philosophy, 1998 - 2000	Anthony Chaston, Psychology, 1998 - 2002	Christopher Peet, Psychology, 2000

Examiner, PhD Candidacy Exam

S. Hensch, Psychology, 1989	S. Downes, Philosophy, 1991	B. Giesbrecht, Psychology, 1999
Michael Kieffe, Linguistics, 1999	Adriel Lau, Electrical and Computer Engineering, 2005	Ying Cui, Educational Psychology, 2006

Graduate Thesis Examiner

- E. Howe, Philosophy. *Rational acceptability and coherence theories of justification*, (M.A., 1989).
- S. Winestock, Psychology. *The role of the frame reference in propositional representation of spatial displays*, (M.A., 1987).
- D. Perl, Computing Science. *ANNIE: An artificial neural network for image enhancement*. (M.Sc., 1992).
- A. Sharpe, Computing Science. *THINK: Thoughtful Hypotheses for incorporating new knowledge*. (MSc, 1993).
- Z. Fang, Mathematical Sciences. *Robust extrapolation designs for linear models*. (PhD, 1999).
- M. Kieffe, Linguistics. *The perception of spectrally and temporally distorted prevocalic stop consonants* (PhD, 2000).
- T. Aviran, Philosophy. *On content and truth-conditions*. (PhD, 2002).
- A.M. Grbavec, Computer Science, Simon Fraser University. *Second-Order Generalization in Neural Networks* (PhD, 2004).
- J. Stenberg, Philosophy. *Virtual Reality and McDermott's Model of the Mind*. (M.A., 2005).

- O. Ellefson, Humanities Computing. *A Posthuman Investigation: Assessing the Suitability of Consciousness to Digital Duplication*. (M.A., 2005)
- V. Kumar, Philosophy. *Knowing-How*. (M.A., 2007)
- Y Cui, Educational Psychology. *The Hierarchy Consistency Index: A Person-fit Statistic for the Attribute Hierarchy Method*. (Ph.D, 2007)
- A. Lau, Electrical and Computer Engineering. *Immune Programming*. (PhD, 2009)

7. TEACHING INNOVATION

- ✓ Wrote four cognitive science textbooks, three published by Blackwell: *Understanding Cognitive Science* (1998), *Minds and Machines: Connectionism and Psychological Modeling*, (2004), and *Connectionism: A Hands-on Approach* (2005), one by Athabasca University Press: *From Bricks To Brains: The Embodied Cognitive Science of LEGO Robots* (2010)
- ✓ Developed extensive web support for my classes for delivery of lecture materials, margin notes on text, exam feedback, and software for my lab cours. Access to my course web sites is available from: http://www.bcp.psych.ualberta.ca/%7emike/Pearl_Street/Course/index.html
- ✓ Introduced building, programming, and observing of LEGO robots to undergraduate psychology students. Examples of student videos can be seen at: <http://www.bcp.psych.ualberta.ca/%7emike/StudentRobot.html>
- ✓ Developed web-based and widely accessed Dictionary of Cognitive Science as well as a Gallery of Cognitive Scientists. Both are available from my home page: <http://www.bcp.psych.ualberta.ca/~mike/>

8. ADMINISTRATION ASSOCIATED WITH TEACHING AND STUDENTS

Departmental

- 2007 – 2011 Arts Library Representative
- 2006 – 2011 Manager, D.E. Smith Reading Room In Psychology
- 2006 Member, Ad Hoc Committee To Review Graduate Student Assessments
- 2004 - 2005 Member, Ad Hoc Committee On Graduate Evaluation And Timelines
- 2000 – 2001 Member, Graduate Curriculum Committee
- 1997 - 1998 Member, Graduate Recruitment Committee
- 1988 - 1990 Member, Graduate Admissions Committee

Faculty

- 2006-2009 Member, Mactaggart Writing Award Adjudication Committee

Regional/National/International

- Appraiser of the Cognitive Science Graduate Program at Carleton University for the Ontario Council On Graduate Studies (January, 2004)
- Appraised Carleton University's proposed PhD program in cognitive science for the Ontario Council On Graduate Studies (September, 1996)

9. REFEREED ARTICLES CONCERNED WITH EDUCATION

- Boechler, P.M., & Dawson, M.R.W. (2005). The effects of spatial layout on relationships between performance, path patterns and mental representation in a hypermedia information search task. *Interactive Technology and Smart Education*, 2, 31-45.
- Boechler, P., Steffler, D., Dawson, M., & Mansour, J. (2005). Incidental learning in hypemedia environments: The impact of individual differences and spatial overviews. In *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2005* (pp. 3789-3794). Norfolk, VA: AACE.
- Boechler, P., & Dawson, M. (2003). The effects of navigation tools on student performance and recall in a hypermedia information search task. In *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2003* (pp. 1534-1535). Norfolk, VA: AACE.
- Boechler, P.M., Dawson, M.R.W., & Boechler, K.R. (2002) An introduction to custom WebBrowsers for the qualitative study of hypertext navigation. *Journal of Educational Multimedia and Hypermedia*, 11, 221-235.
- Boechler, P.M., Dawson, M.R.W. (2002). The effects of navigational tool information on hypertext navigation behavior: A configural analysis of page-transition data. *Journal of Educational Multimedia and Hypermedia*, 11, pp. 95-115.
- Dawson, M. R. W., & Medler, D. A. (1999). The Dictionary of Cognitive Science: One approach to teaching students how to create their own WWW instructional materials. *International Journal of Educational Telecommunications*, 5, 65-78.