

# Paul E. Cisek, Ph.D.

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**Personal data:** Born in Giżycko, Poland, on Sept. 25, 1968. Moved to United States in 1977, naturalized as a **U.S. citizen** in 1981. Fluent in Polish, English, and French. Intermediate in Italian.

## **Research Interests**

Neural mechanisms of decision-making, planning, and movement control, studied through an approach combining multi-electrode neural recordings, psychophysics, transcranial magnetic stimulation, functional neuroimaging, and computational modeling.

## **Education & Research Experience**

- 6/2013 – present: **Associate Professor**  
Département de physiologie, Université de Montréal, Montréal, Québec  
Neural, behavioral, and computational studies of decisions, planning, and movement control.
- 6/2010 – 5/2013: **Associate Professor (Research)**  
Département de physiologie, Université de Montréal, Montréal, Québec  
Neural, behavioral, and computational studies of decisions, planning, and movement control.
- 11/2004 – 5/2010: **Assistant Professor (Research)**  
Département de physiologie, Université de Montréal, Montréal, Québec  
Neural, behavioral, and computational studies of decisions, planning, and movement control.
- 7/2003 – 10/2004: **Research Associate**  
Département de physiologie, Université de Montréal, Montréal, Québec  
Studies of decision-making, planning, and movement control.
- 10/2002 – 6/2003: **Visiting Researcher**  
Laboratory of Systems Neuroscience, NIMH, Bethesda, MD  
Collaborative behavioral neurophysiological research on movement planning and control.
- 8/2001 – 9/2002: **Research Associate**  
Département de physiologie, Université de Montréal, Montréal, Québec  
Studies of decision-making, planning, and movement control.
- 6/1998 – 8/2001: **Postdoctoral Fellow**  
Supervisor: John F. Kalaska  
Département de physiologie, Université de Montréal, Montréal, Québec  
Single-unit recording from awake behaving monkeys, investigating the role of premotor and parietal cortex in response-selection, planning, and movement execution.
- 11/1996 – 5/1998: **Postdoctoral Fellow**  
Supervisor: Stephen H. Scott  
Département de physiologie, Université de Montréal, Montréal, Québec  
and Department of Anatomy and Cell Biology, Queen's University, Kingston, Ontario  
Single-unit recording from awake behaving monkeys, investigating the role of primary motor cortex in coordination of multi-joint torque production.
- 9/1992 – 9/1996: **Doctor of Philosophy, *Cognitive and Neural Systems***  
Degree conferred: January 25, 1997  
Boston University, Boston, Massachusetts  
Thesis: "*A neural model of voluntary reaching and postural control*"  
Supervisors: Daniel Bullock, Stephen Grossberg
- 9/1987 – 11/1991: **Bachelor of Science, *Computer Science – magna cum laude***  
Specializations: Physics, Psychology  
Rochester Institute of Technology, Rochester, New York

## Other Work Experience

12/1991 – 8/1992:	<b>Microsoft Corporation</b> – Redmond, WA Developed a general software controller for various types of electronic media, for use with the Encarta electronic encyclopedia. ( <i>C/C++</i> , <i>Windows</i> )
5/1991 – 8/1991:	<b>American University</b> – Washington, DC Extended the OPS5 expert system with a Truth Maintenance System. ( <i>LISP</i> , <i>OPS5</i> , <i>Unix</i> )
6/1990 – 5/1991: 9/1991 – 11/1991:	<b>RIT Research Corporation</b> – Rochester, NY Prototyped and developed software applications including an interactive geographical database, a free-text browser, and a virtual memory manager. ( <i>Smalltalk</i> , <i>C</i> , <i>Macintosh</i> )
12/1989 – 2/1990:	<b>PPG Biomedical Corporation</b> – Pleasantville, NY Wrote machine-level background test software for a cardiopulmonary monitoring system. ( <i>Machine-level EPROM code</i> )

## Scholarships

3/2000 – 3/2001	Post-doctoral fellowship from the National Institutes of Health	US \$35,232
6/1999 – 7/1999	McDonnell-Pew Summer Institute in Cognitive Neuroscience	tuition + expenses
9/1997 – 8/1999	Post-doctoral fellowship from the National Institutes of Health	US \$44,352
9/1993 – 9/1996	CNS Graduate Scholarship (BU)	US \$48,000 + tuition
9/1992 – 8/1993	Presidential University Graduate Fellowship (BU)	US \$10,200 + tuition
9/1990 – 8/1991	DuPont Scholarship in Computer Science (RIT)	US \$1500
9/1987 – 11/1991	Empire State Scholarship of Excellence (RIT)	US \$8000

## Grants

9/2014 – 8/2019	Canadian Institutes of Health Research (CIHR) Operating grant (PI: P. Cisek), rank 1/50	CAN \$1,125,130
7/2014 – 6/2017	Fonds de la Recherche en Santé Québec (FRSQ) Chercheur national (PI : P. Cisek – salary support), rank 2/22	CAN \$180,000
3/2013 – 8/2016	Fonds de Recherche Nature et Technologies Québec (FQRNT) Team grant (PI: J.B. Debrulle, Co-applicants: P. Cisek, M. Brodeur)	CAN \$140,850
7/2011 – 6/2014	Fonds de la Recherche en Santé Québec (FRSQ) Chercheur boursier Senior (PI: P. Cisek – salary support), rank 1/25	CAN \$175,362
3/2011 – 2/2016	Natural Sciences and Engineering Research Council (NSERC) Discovery Grant: (PI: P. Cisek)	CAN \$200,000
3/2010 – 2/2015	Canadian Institutes of Health Research (CIHR) Operating grant (PI: P. Cisek), rank 2/54	CAN \$842,987
10/2009 – 9/2012	Canadian Institutes of Health Research (CIHR) Collaborative Research in Computational Neuroscience (PIs: P. Cisek & A. Green)	CAN \$69,222
3/2009 – 2/2010	Canadian Institutes of Health Research (CIHR / INMHA) Operating grant – bridge funding (PI: P. Cisek)	CAN \$64,653
1/2007 – 3/2010	The EJLB Foundation Scholar Research Programme (PI: P. Cisek)	CAN \$350,000
3/2006 – 2/2011	Natural Sciences and Engineering Research Council (NSERC) Discovery Grant (PI: P. Cisek)	CAN \$125,000
2006	Canadian Foundation for Innovation (CFI) New Opportunities Fund (PI: P. Cisek)	CAN \$345,182
10/2005 – 9/2008	Canadian Institutes of Health Research (CIHR) Operating grant (PI: P. Cisek), rank 15/41	CAN \$231,774
2005 ( <i>declined</i> )	Fonds de la Recherche en Santé Québec (FRSQ) Chercheur boursier Junior 2 (PI: P. Cisek – salary support), rank 14/40	(declined)
7/2005 – 6/2010	Canadian Institutes of Health Research (CIHR) New Investigator Award (PI: P. Cisek – salary support), rank 10/54	CAN \$250,000
6/2005	University of Montréal startup-funds (PI: P. Cisek)	CAN \$60,000

3/2004 – 9/2004	National Institutes of Health SBIR Phase I Grant (PI: P. Cisek)	US \$98,868
3/2002 – 3/2007	Canadian Institutes of Health Research (CIHR) New Emerging Teams Initiative (PI: J. Kalaska, with Y. Bengio, T. Drew, S. Scott, P. Cisek)	CAN \$1,215,000

## **Distinctions and Awards**

Dean's List (Rochester Institute of Technology, all semesters), Outstanding Undergraduate Scholar (RIT), Phi Kappa Phi (RIT), Boston University Teaching Fellow Award, Brain Star Award, May 2005 (CIHR Institute of Neuroscience, Mental Health, and Addiction), EJLB Scholar Award 2006 (\$350,000, EJLB Foundation)

## **Professional Activities**

**Society memberships:** *Groupe de recherche sur le système nerveux central, Groupe de recherche en science de la vision, Society for Neuroscience, Neural Control of Movement Society, Canadian Association for Neuroscience, Canadian Physiological Society, American Physiological Society, Canadian Action and Perception Network*

### **Board memberships:**

Elected Board Member of the *Society for Neural Control of Movement* (2008-2010, 2011-2013 terms),  
Councillor of the *Canadian Physiological Society* (2009-2011 term)

### **Peer-review committee memberships:**

*CIHR Operating Grants Committee – Behavioral Sciences C* (Sept 2012 – present)  
*CIHR Doctoral Research Awards Committee* (2010, 2011, 2012)  
*CIHR Masters Research Awards Committee* (2011, 2012)

**Journal editorial boards:** Section editor on computational modeling for the journal *Motor Control* (2007 – present),  
Editorial board of *Connection Science* (2013 – present)

**Ad-hoc reviewer for journals:** *Behavioral and Brain Sciences* (1), *Brain and Cognition* (1), *Brain Research* (1),  
*Cerebral Cortex* (6), *Current Biology* (2), *European Journal of Neuroscience* (1), *Experimental Brain Research* (3),  
*Frontiers in Decision Neuroscience* (2), *Frontiers in Systems Neuroscience* (1), *Journal of Cognitive Neuroscience* (3),  
*Journal of Consciousness Studies* (2), *Journal of Neurophysiology* (15), *Journal of Neuroscience* (23),  
*Journal of Rehabilitation Research and Development* (1), *Mathematical Modelling of Natural Phenomena* (1),  
*Motor Control* (1), *Nature* (4), *Nature Neuroscience* (8), *Neural Networks* (4), *Neuron* (6),  
*Neurocomputing* (1), *Neural Computation* (1), *Philosophical Transactions of the Royal Society B* (2), *PLoS Computational Biology* (2),  
*Proceedings of the National Academy of Sciences* (1), *Psychological Review* (1), *Scholarpedia* (1),  
*Trends in Cognitive Sciences* (1), *Trends in Neurosciences* (1)

**funding agencies:** *Canadian Institutes of Health Research* (4), *Natural Sciences and Engineering Research Council* (2),  
*National Science Foundation* (2), *New York State Spinal Cord Injury Research Program* (1), *Israel Science Foundation* (1),  
*Israel Ministry of Science and Technology* (1), *Korean Institute for Basic Science* (1), *Swiss National Science Foundation* (1)

**conferences and symposia:** *Advances in Computational Motor Control* (2002-2009), *Neural Control of Movement* (2009-2014),  
*COSYNE* (2010-2011, 2013, 2014)

### **Conference organization/Co-organization:**

*Computational Neuroscience, from theory to neurons and back again*, 28<sup>th</sup> International Symposium of the GRSNC / CRSN, University of Montréal, May 8-9, 2006 (<http://www.grsnc.umontreal.ca/XXVIII/>)

*Theoretical Ideas in Motor Systems Neuroscience and their Capacity for Falsification*, a satellite of the 19<sup>th</sup> Annual Meeting of the Society for the Neural Control of Movement, Waikoloa, Hawaii, April 26-28, 2009.

*Physiological mechanisms of perception, cognition, and action*, the 2011 Winter Meeting of the Canadian Physiological Society / Canadian Action & Perception Network, Saint-Adèle, QC, February 10-12, 2011.

*2012 Cognitive Science Institute Summer School on The Evolution and Function of Consciousness*, Université du Québec à Montréal, June 29-July 9, 2012.

*Progress in Motor Control IX*, McGill University, Montréal, QC, July 14-16, 2013.

**Organizer** of “MathNeuro” seminar series in computational neuroscience, Université de Montréal (2005 – present)

## **Teaching experience**

### 1. NRL-6084: **“Neurosciences computationnelles” (Computational neurosciences)**

Département de physiologie, Université de Montréal, Coordinator: Paul Cisek

Course material developed together with Drs. Andrea Green and Alain Vinet

**22.5 hours** of lectures developed and given by Paul Cisek each year in Fall 2007-2010, 2012-2013

- Lectures in the course PSL3061 **“Physiologie intégrée” (Integrated physiology)**  
Département de physiologie, Université de Montréal, Coordinator: Michel Lavalée  
**3 hour** lecture and **3 hours** discussion given in Winter 2011, Fall 2011-2012
- Lecture in the course Neur603 **“Introduction to Computational Neuroscience”**  
Department of Neurology & Neurosurgery, McGill University, Coordinator: Christopher Pack  
**3 hour** lecture developed and given each year in Spring 2008-2014
- Lecture in the course NRL6070 **“Neurophysiologie fonctionnelle” (Functional neuroscience)**  
Département de physiologie, Université de Montréal, Coordinator: John Kalaska  
**3 hour** lecture developed and given each year in Spring 2006-2013
- Lecture in the course KIN6832 **“Apprentissage du mouvement humain” (Human motor learning)**  
Département de kinésiologie, Université de Montréal, Coordinator: Julie Messier  
**3 hour** lecture developed and given in Spring 2006
- Lecture in the course CNS520 **“Principles and Methods of Cognitive and Neural Modeling II”**  
Cognitive and Neural Systems, Boston University, Coordinator: Paolo Gaudiano  
**1.5 hour** lecture developed and given in Fall 1993

## Supervisory experience

### Graduate students

- Ayuno Nakahashi, student in neurological sciences (M.Sc.) 05/2013 – present  
Primary supervisor: Paul Cisek
- Matthew Carland, student in neurological sciences (M.Sc.) 07/2011 – present  
Primary supervisor: Paul Cisek
- Alexandre Pastor-Bernier, student in neurological sciences (Ph.D.) 06/2007 – 12/2012  
Primary supervisor: Paul Cisek
- Pascal Lamblin, student in computer science (Ph.D.) 01/2005 – 03/2008  
Primary supervisor: Yoshua Bengio

### Postdoctoral fellows

- David Thura 07/2008 – present
- Ignasi Cos Aguilera 03/2008 – 04/2012  
Current position: **Research associate**, Université Pierre et Marie Curie
- Valeriya Gritsenko (co-supervised with J. Kalaska) 10/2008 – 12/2010  
Current position: **Assistant professor**, University of West Virginia
- Thomas Michelet (co-supervised with J. Kalaska) 09/2006 – 08/2008  
Current position: **Assistant professor**, Université Bordeaux 2
- Jean-Philippe Thivierge 06/2006 – 09/2007  
Current position: **Assistant professor**, University of Ottawa

### Other students

- Jean-François Cabana, undergraduate summer student 05/2014 – 08/2014
- Jessica Trung, undergraduate summer student 05–08/2012, 01–05/2013
- Encarni Marcos, visiting graduate student from Universitat Pompeu Fabra, Barcelona 01/2012 – 04/2012
- Elsa Tremblay, undergraduate summer student 05/2011 – 08/2011
- Farid Medleg, visiting undergraduate student from McGill 06/2010 – 10/2010
- Charles-William Fradet, undergraduate summer student 06/2010 – 08/2010
- Marianne Landry, undergraduate summer student (primary supervisor: Andrea Green) 06/2010 – 08/2010
- Nicolas Bélanger, undergraduate summer student 06/2009 – 09/2009
- Julie Beauregard Racine, undergraduate summer student 05/2009 – 08/2009
- Stephany El-Murr, undergraduate summer student 05/2007 – 08/2007
- Elisabeth Rounis, visiting graduate student from University College London 09/2006
- Geneviève Aude Puskas, undergraduate summer student 05/2006 – 08/2006

### Highly-qualified personnel

- Marie-Claude Labonté, research technician 01/2006 – present

### Evaluation committees

- Doctoral theses: N. Masse (McGill 2008/12/18), K. Lajoie (2010/03/31), F. Rivest (2010/04/14), C. Chapman (University of Western Ontario 2010/11/26), J. Bergstra (2011/06/07), J. Belisle (2011/12/13), T. Lennert (McGill 2012/4/9), J. Smith (McGill 2012/5/15), C. Gauthier (2012/12/05)
- Master’s theses: M. Khoshnejad (2009/11/24)

- Pre-doctoral exams: J-E Andujar (2005/06/15), P. Lamblin (2007/04/26), E. Coallier (2007/09/06), A. Dépeault (2008/08/20), T. Addou (2009/04/09), C. Gauthier (2009/08/07), A. Pastor-Bernier (2009/11/24), M. Khoshnejad (2011/06/21)
- Sponsor committees: Jean-Philippe Labelle (2006/07/19, 2007/07/11), Touria Addou (2007/07/11, 2009/10/29, 2013/08/29), Alexandre Pastor-Bernier (2008/07/21, 2009/07/20), Jean-Philippe Miron (2009/07/28, 2010/12/21), Ian Moreau-Debord (2012/05/07), Edmund Lam (2012/07/20, 2013/07/18), Mina Khoshnejad (2013/04/15)

## **Publications** (\*peer reviewed, †invited, trainees underlined)

### **Peer reviewed journal articles**

# citations

1. Cos, I., Duqué, J. and **Cisek, P.** (in press) "Rapid prediction of biomechanical costs during action decisions" *Journal of Neurophysiology*.
2. \*Thura, D. and **Cisek, P.** (2014) "Deliberation and commitment in the premotor and primary motor cortex during dynamic decision-making" *Neuron*. 81(6): 1401-1416.
3. Carbonell, F., Nagano-Saito, A., Leyton, M., **Cisek, P.**, Benkelfat, C., He, Y., Dagher, A. (2014) "Dopamine precursor depletion impairs structure and efficiency of resting state brain functional networks" *Neuropharmacology*. [Epub ahead of print: <http://www.ncbi.nlm.nih.gov/pubmed/24412649>]
4. \*Thura, D., Beauregard-Racine, J., Fradet, C-W., and **Cisek, P.** (2012) "Decision-making by urgency-gating: Theory and experimental support" *Journal of Neurophysiology*. 108(11): 2912-30. 1
5. \*Cos, I., Medleg, F., and **Cisek, P.** (2012) "The modulatory influence of endpoint controllability on decisions between actions" *Journal of Neurophysiology*. 108(6): 1764-80. 2
6. \*Nagano-Saito, A., **Cisek, P.**, Perna, A.S., Shirdel, F.Z., Benkelfat, C., Leyton, M., Dagher, A. (2012) "From anticipation to action, the role of dopamine in perceptual decision-making: an fMRI – tyrosine depletion study". *Journal of Neurophysiology*. 108(2): 501-12. 5
7. \*Pastor-Bernier, A., Tremblay, E., and **Cisek, P.** (2012) "Dorsal premotor cortex is involved in switching motor plans". *Frontiers in Neuroengineering*. 5(5). doi: 10.3389/fneng.2012.00005. 2
8. \*Gritsenko, V., Kalaska, J.F., and **Cisek, P.** (2011) "Descending corticospinal control of intersegmental dynamics". *Journal of Neuroscience*. 31(33): 11968-11979. 7
9. \*Cos, I., Bélanger, N., and **Cisek, P.** (2011) "The influence of predicted arm biomechanics on decision-making". *Journal of Neurophysiology*. 105(6): 3022-3033. 7
10. \*Thivierge, J-P. and **Cisek, P.** (2011) "Spiking neurons that keep the rhythm". *Journal of Computational Neuroscience*. 30(3): 589-605.
11. \*Pastor-Bernier, A. and **Cisek, P.** (2011) "Neural correlates of biased competition in premotor cortex". *Journal of Neuroscience*. 31(19): 7083-7088. 21
12. \*Michelet, T., Duncan, G. and **Cisek, P.** (2010) "Response competition in the primary motor cortex: Corticospinal excitability reflects response replacement during simple decisions". *Journal of Neurophysiology*. 104(1): 119-127. 15
13. \***Cisek, P.**, Puskas, G.A., and El-Murr, S. (2009) "Decisions in changing conditions: The urgency-gating model". *Journal of Neuroscience*. 29(37): 11560-11571. 51
14. \*Thivierge, J-P. and **Cisek, P.** (2008) "Non-periodic synchronization in heterogeneous networks of spiking neurons". *Journal of Neuroscience*. 28(32): 7968-7978. 22
15. \***Cisek, P.** (2007) "Cortical mechanisms of action selection: The affordance competition hypothesis" *Philosophical Transactions of the Royal Society B*. 362: 1585-1599. 154
16. \***Cisek, P.** (2006) "Integrated neural processes for defining potential actions and deciding between them: A computational model". *Journal of Neuroscience*. 26(38): 9761-9770. 100
17. \***Cisek, P.** & Kalaska, J.F. (2005) "Neural correlates of reaching decisions in dorsal premotor cortex: specification of multiple direction choices and final selection of action". *Neuron*. 45(5): 801-814. 253
18. \*†**Cisek, P.** (2005) "Neural representations of motor plans, desired trajectories, and controlled objects". *Cognitive Processing*. 6: 15-24. 36 (Google scholar)
19. \***Cisek, P.** & Kalaska, J.F. (2004) "Neural correlates of mental rehearsal in dorsal premotor cortex". *Nature* 431: 993-996. 90
20. \*Graham, K.M., Moore, K.D., Cabel, D.W., Gribble, P.L., **Cisek, P.**, and Scott, S.H. (2003) "Kinematics and kinetics of multi-joint reaching in non-human primates". *Journal of Neurophysiology*. 89 (5): 2667-2677. 46
21. \***Cisek, P.**, Crammond, D.J., and Kalaska, J.F. (2003) "Neural activity in primary motor and dorsal premotor cortex in reaching tasks with the contralateral versus ipsilateral arm". *Journal of Neurophysiology*. 89 (2): 922-942. 101
22. \***Cisek, P.** and Kalaska, J.F. (2002) "Modest gaze-related discharge modulation in monkey dorsal premotor cortex during a reaching task performed with free fixation". *Journal of Neurophysiology*. 88 (2): 1064-1071. 36
23. \***Cisek, P.** and Kalaska, J.F. (2002) "Simultaneous encoding of multiple potential reach directions in dorsal premotor cortex". *Journal of Neurophysiology*. 87(2): 1149-1154. 81

24. \*Cabel, D.W., **Cisek, P.**, and Scott, S.H. (2001) "Neural activity in primary motor cortex related to mechanical loads applied to the shoulder and elbow during a postural task". *Journal of Neurophysiology*. 86(4): 2102-2108. 52
25. \***Cisek, P.** and Scott, S.H. (1999) "An alternative interpretation of population vector rotation in macaque motor cortex". *Neuroscience Letters*. 272: 1-4. 10
26. \*†**Cisek, P.** (1999) "Beyond the computer metaphor: Behaviour as interaction". *Journal of Consciousness Studies*. 6(11-12): 125-142. 67 (Google scholar)
27. \*†**Cisek, P.** and Turgeon, M. (1999) "'Binding through the fovea': A tale of perception in the service of action". *Psyche*, 5. (<http://www.theassc.org/files/assc/2446.pdf>) 42 (Google scholar)
28. \*Bullock, D., **Cisek, P.**, and Grossberg S. (1998). "Cortical networks for control of voluntary arm movements under variable force conditions". *Cerebral Cortex*. 8: 48-62. 70
29. \***Cisek, P.**, Grossberg, S., and Bullock, D. (1998) "A cortico-spinal model of reaching and proprioception under multiple task constraints". *The Journal of Cognitive Neuroscience*. 10(4): 425-444. 24

### **Submitted and in preparation**

30. Thura, D., Cos, I., Trung, J., and **Cisek, P.** (submitted) "Context-dependent urgency influences speed-accuracy trade-offs in decision-making and movement execution"
31. Carland, M., Thura, D., and **Cisek, P.** (submitted) "The urgency-gating model can explain the effects of early evidence"
32. Marcos, E., Cos, I., **Cisek, P.**, Girard, B., and Verschure, P.F.M.J. (in preparation) "The role of motor cost in perceptual decision-making"
33. Carland M., Marcos, E., Thura, D., Verschure, P.F.M.J., and **Cisek, P.** (in preparation) "Perceptual decisions are better explained by urgency-gating than by evidence accumulation"
34. Pastor-Bernier, A., Labonté, M-C., and **Cisek, P.** (in preparation) "Space matters: The dynamics of embodied decisions in dorsal premotor cortex"

### **Review articles and commentaries**

# citations

1. \***Cisek, P.** (in press) "Brain networks and their origins. Comment on 'Understanding brain networks and brain organization'". *Physics of Life Reviews*.
2. \*†**Cisek, P.** and Pastor-Bernier, A. (in press) "On the challenges and mechanisms of embodied decision-making". *Philosophical Transactions of the Royal Society B*.
3. \*†**Cisek, P.** (2012) "Making decisions through a distributed consensus". *Current Opinion in Neurobiology*. 22(6): 927-936. 13
4. †Pastor-Bernier, A. and **Cisek, P.** (2011) "Making choices between rules or between actions". *Neuron*. 70(3): 382-384.
5. \*†**Cisek, P.** and Kalaska, J.F. (2010) "Neural mechanisms for interacting with a world full of action choices". *Annual Review of Neuroscience*. 33: 269-298. 136
6. †**Cisek, P.** (2008) "A remarkable facilitating effect of parietal damage". *Neuron*. 58(1): 7-9. 2
7. †**Cisek, P.** (2007) "The currency of guessing". *Nature*. 447(7148): 1061-1062. 2
8. †**Cisek, P.** (2006) "Preparing for speed. Focus on 'Preparatory activity in premotor and motor cortex reflects the speed of the upcoming reach'". *Journal of Neurophysiology*. 96: 2842-2843. 8
9. **Cisek, P.** and Kalaska, J.F. (2001) "Common codes for situated interaction". *Behavioral and Brain Sciences*. 24(5): 883-884. 4
10. **Cisek, P.** (2001) "Embodiment is all in the head". *Behavioral and Brain Sciences*. 24(1): 36-38. 6
11. †Kalaska, J.F., Scott, S.H., **Cisek, P.**, Sergio, L.E. (1997) "Cortical control of reaching movements". *Current Opinion in Neurobiology*. 7: 849-859. 192
12. †**Cisek, P.** (1997) "Global Workspace theory in the spotlight of evolution". *Journal of Consciousness Studies*, 4(4): 310-313.

### **Book chapters**

1. †**Cisek, P.** (2012) "Cortical mechanisms of action selection: The affordance competition hypothesis" In A. Seth, J. Bryson, and T. Prescott (Eds.) *Modeling Natural Action Selection*. (pp. 208-238). Cambridge University Press.
2. \*†**Cisek, P.** (2008) "The affordance competition hypothesis: A framework for embodied behavior" In R. Klatzky, M. Behrmann, and B. MacWhinney (Eds.) *Embodiment, Ego-Space, and Action*. (pp. 203-246). New York: Psychology Press.
3. **Cisek, P.** (2007) "A parallel framework for interactive behavior". In P. Cisek, T. Drew, and J.F. Kalaska (Eds.) *Computational Neuroscience: Theoretical Insights into Brain Function*. Progress in Brain Research, vol.165 (pp. 475-492), Amsterdam: Elsevier.
4. \*†**Cisek, P.** and Kalaska, J.F. (2003) "Reaching movements: Implications for computational models". In M. Arbib (Ed.) *Handbook of Brain Theory and Neural Networks, 2<sup>nd</sup> Edition*. (pp. 945-948). MIT Press.

5. †Kalaska, J.F., **Cisek, P.**, and Gosselin-Kessiby, N. (2003) "Mechanisms of selection and guidance of reaching movements in the parietal lobe". In Siegel, Andersen, Freund, Spencer (Eds.) *Advances in Neurology: The Parietal Lobe*. (pp. 97-119) Lippincott Williams & Wilkins.
6. †**Cisek, P.** (2001) "A computational perspective on proprioception and movement guidance in parietal cortex". In Nelson, R. (ed) *The Somatosensory System: Deciphering the Brain's own Body Image*. (pp. 275-297). CRC Press.
7. †Kalaska, J.F., Sergio, L.E., and **Cisek, P.** (1998) "Cortical control of whole-arm motor tasks". In Glickstein, M. (ed) *Sensory Guidance of Movement, Novartis Foundation Symposium #218*. Chichester, UK: John Wiley & Sons.
8. **Cisek, P.**, Bullock, D., and Grossberg, S. (1997). "Cortical circuits for control of voluntary arm movements". In Bower, J. (ed) *Computational Neuroscience: Trends in Research, 1997*. pp 287-292. New York: Plenum Press.

## **Books**

1. **Cisek, P.**, Drew, T., and Kalaska, J.F. (2007) *Computational Neuroscience: Theoretical Insights into Brain Function*. Progress in Brain Research, vol.165, Amsterdam: Elsevier.
2. †**Cisek, P.** (under contract, in preparation) *Recipe for a Brain: An Evolutionary Perspective on the Organization of Behavior*. Amsterdam: John Benjamins Press.

## **Conference proceedings / Published abstracts**

1. Thura, D. and **Cisek, P.** (2014) "Micro-stimulation of premotor and motor cortex delays the commitment to an action choice" *Society for Neuroscience Abstracts*. (poster)
2. Nahakashi, A. and **Cisek, P.** (2014) "Are value-based action choices made by a central executive or through a distributed consensus?" *Society for Neuroscience Abstracts*. (poster)
3. Thura, D. and **Cisek, P.** (2014) "Micro-stimulation of premotor and motor cortex affects choice duration during dynamic decision-making" *8<sup>th</sup> Annual Canadian Neuroscience Meeting*, Montréal, QC, May 25-28, 2014. (oral presentation)
4. **Cisek, P.** and Thura, D. (2013) "Neural activity build-up during decision-making is not caused by evidence accumulation but by a growing urge to act" *Society for Neuroscience Abstracts*. (poster)
5. Carland, M., Marcos, E., Thura, D., Verschure, P.F.M.J., and **Cisek, P.** (2013) "Decision-making is influenced by a context-dependent urgency signal" *Society for Neuroscience Abstracts*. (poster)
6. Pastor-Bernier, A., Labonté, M.C., and **Cisek, P.** (2013) "Premotor cortical activity reflects value and effort biases during reach decisions" *Society for Neuroscience Abstracts*. (poster)
7. Thura, D., Trung, J., and **Cisek, P.** (2013) "A common urgency/vigor signal governs speed-accuracy trade-offs in both decision-making and movement execution" *Society for Neuroscience Abstracts*. (poster)
8. Marcos, E., Cos, I., **Cisek, P.**, Girard, B., and Verschure, P.F.M.J. (2013) "Biomechanical costs of reaching movements bias perceptual decisions" *Computational Neuroscience 2013*, Paris, France, July 13-18, 2013. (poster)
9. **Cisek, P.**, and Thura, D. (2013) "Neural activity build-up during decision-making is not attributable to evidence accumulation but to a growing urge to act" *7<sup>th</sup> Annual Canadian Neuroscience Meeting*, Toronto, ON, May 21-24, 2013. (poster)
10. Thura, D., Trung, J., and **Cisek, P.** (2013) "An urgency/vigor signal governs speed-accuracy trade-offs in both decision-making and movement execution" *7<sup>th</sup> Annual Canadian Neuroscience Meeting*, Toronto, ON, May 21-24, 2013. (poster)
11. Carland, M., Marcos, E., Thura, D., Verschure, P.F.M.J., and **Cisek, P.** (2013) "Decision-making is influenced by a context-dependent urgency signal: model and experimental data" *7<sup>th</sup> Annual Canadian Neuroscience Meeting*, Toronto, ON, May 21-24, 2013. (poster)
12. Thura, D., Trung, J., and **Cisek, P.** (2013) "A common urgency/vigor signal governs speed-accuracy trade-offs in both decision-making and movement execution" *23<sup>rd</sup> Annual Meeting on Neural Control of Movement*, San Juan, Puerto Rico, April 16-20, 2013. (poster)
13. Thura, D. and **Cisek, P.** (2012) "Neural bases of speed/accuracy trade-off adjustments during decision-making and movement execution in monkeys" *Society for Neuroscience Abstracts*. (oral presentation)
14. Marcos, E., Carland, M., Thura, D., **Cisek, P.**, Verschure, P.F.M.J. (2012) "Decision-making depends on an urgency signal modulated by context" *Society for Neuroscience Abstracts*. (poster)
15. Cos, I. and **Cisek, P.** (2012) "A study of the time-course of integration of biomechanics and visual information during motor decision-making" *8<sup>th</sup> FENS Forum*, Barcelona, Spain, July 14-18, 2012. (poster)
16. Cos, I. and **Cisek, P.** (2012) "Revealing the time-course of biomechanics and visual information during motor decision-making" *2<sup>nd</sup> Symposium on Biology of Decision-Making*, Paris, France, May 10-11, 2012 (poster)
17. Thura, D. and **Cisek, P.** (2012) "Monkey premotor and motor cortex reflect the decision process and determine the commitment to initiate a reaching movement" Oral presentation at the *22<sup>nd</sup> Annual Meeting on Neural Control of Movement*, Venice, Italy, April 22-29, 2012. (oral presentation)

18. Cos, I. and **Cisek, P.** (2012) "A study of the influence of biomechanics on decisions between reaching movements" *22<sup>nd</sup> Annual Meeting on Neural Control of Movement*, Venice, Italy, April 22-29, 2012. (poster)
19. Pastor-Bernier, A., Tremblay, E., and **Cisek, P.** (2011) "Dorsal premotor cortex is involved in switching motor plans". *Society for Neuroscience Abstracts*. (poster)
20. Thura, D. and **Cisek, P.** (2011) "Neural activity during modulations of the speed-accuracy trade-off in reach decisions". *Society for Neuroscience Abstracts*. (poster)
21. Thura, D. and **Cisek, P.** (2011) "Monkey frontal cortex reflects the time course of changing evidence for reach decisions". *Canadian Association for Neuroscience Annual Meeting 2011*, Québec, May 29-June 1, 2011. (poster)
22. Cos, I., Medleg, F. and **Cisek, P.** (2011) "The influence of biomechanical anisotropies in decision-making". *Canadian Physiological Society Winter Meeting 2011*, Saint-Adèle, Québec, February 10-12, 2011. (oral presentation)
23. Thura, D., and **Cisek, P.** (2011) "Monkey frontal cortex reflects the time course of changing evidence for reach decisions". *Canadian Physiological Society Winter Meeting 2011*, Saint-Adèle, Québec, February 10-12, 2011. (oral presentation)
24. Cos, I. and **Cisek, P.** (2010) "The influence of arm biomechanics on decision-making". *Society for Neuroscience Abstracts*. (poster)
25. Thura, D. and **Cisek, P.** (2010) "Monkey frontal cortex reflects the time course of changing evidence for reach decisions". *Society for Neuroscience Abstracts*. (poster)
26. Pastor-Bernier, A. and **Cisek, P.** (2010) "Neural correlates of biased competition between response options in dorsal premotor cortex". *Society for Neuroscience Abstracts*. (poster)
27. Cos, I., and **Cisek, P.** (2010) "The influence of biomechanics on decision-making". *7<sup>th</sup> FENS Forum of European Neuroscience*, Amsterdam, the Netherlands, July 3-7, 2010. (poster)
28. Pastor-Bernier, A. and **Cisek, P.** (2010) "Neural correlates of biased competition between response options in dorsal premotor cortex". *7<sup>th</sup> FENS Forum*, Amsterdam, the Netherlands, July 3-7, 2010. (poster)
29. \*Gritsenko, V., Kalaska, J.F., and **Cisek, P.** (2010) "The mechanism of compensation for intersegmental dynamics includes cortical control of biarticular muscles". Oral presentation at the *20<sup>th</sup> Annual Meeting on Neural Control of Movement*, Naples, FL, April 20-25, 2010. (oral presentation)
30. Pastor-Bernier, A. and **Cisek, P.** (2010) "Neural correlates of biased competition between response options in dorsal premotor cortex". *20<sup>th</sup> Annual Meeting on Neural Control of Movement*, Naples, FL, April 20-25, 2010. (poster)
31. Thura, D., **Cisek, P.** (2009) "Human perceptual decisions in noisy, changing conditions". *Society for Neuroscience Abstracts*. (poster)
32. Gritsenko, V., Duncan, G., Kalaska, J.F., and **Cisek, P.** (2009) "Control of intersegmental dynamics by the primary motor cortex". *Society for Neuroscience Abstracts*. (poster)
33. Nagano, A., **Cisek, P.**, Perna, A.S., Shirdel, F.Z., Leyton, M., Benkelfat, C., and Dagher, A. (2009) "Reward expectation modulates motion discrimination performance via the decision-making threshold and evidence-accumulation speed. A dopamine-depleted fMRI study". *Society for Neuroscience Abstracts*. (poster)
34. Nagano, A., **Cisek, P.**, Perna, A.S., Shirdel, F.Z., Leyton, M., Benkelfat, C., and Dagher, A. (2009) "Reward expectation modulates motion discrimination performance via the decision-making threshold and evidence-accumulation speed. A dopamine-depleted fMRI study". *15<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping*, San Francisco, CA, June 18-23, 2009. (poster)
35. Cos, I. and **Cisek, P.** (2009) "Biomechanical influences on decision-making". *19<sup>th</sup> Annual Meeting on Neural Control of Movement*, Waikoloa, HI, May 1<sup>st</sup>, 2009. (poster)
36. <sup>†</sup>**Cisek, P.** (2009) "Attention and action selection through a distributed consensus", *Computational and Systems Neuroscience (COSYNE) Workshops*, Snowbird, Utah, March 3<sup>rd</sup>, 2009. (oral presentation)
37. Pastor-Bernier, A. and **Cisek, P.** (2008) "Kinematic consequences of decision-making in monkeys". *Society for Neuroscience Abstracts*, Vol. 34. (poster)
38. **Cisek, P.**, El-Murr, S. and Puskas, G. A. (2008) "Decision-making in changing conditions: Evidence against temporal integration models". *Society for Neuroscience Abstracts*, Vol. 34. (oral presentation)
39. Gritsenko, V., Duncan, G., Kalaska, J.F., and **Cisek, P.** (2008) "Primary motor cortex is involved in compensation for limb dynamics". *Transcranial Magnetic Stimulation and Neuroimaging in Cognition and Behavior*, Montréal, QC, September 25-26, 2008. (poster)
40. Pastor-Bernier, A. and **Cisek, P.** (2008) "Kinematic effects of decision-making in monkeys". *2<sup>nd</sup> Annual Canadian Neuroscience Meeting*, Montréal, QC, May 25-28, 2008. (poster)
41. Michelet, T., Théoret, H. and **Cisek, P.** (2008) "Corticospinal excitability reflects response competition during a decision-making task". *2nd Annual Canadian Neuroscience Meeting*, Montréal, QC, May 25-28, 2008. (poster)
42. El-Murr, S., Puskas, G.A., and **Cisek, P.** (2008) "Making decisions as the evidence is changing". *2nd Annual Canadian Neuroscience Meeting*, Montréal, QC, May 25-28, 2008. (poster)



43. Michelet, T., Théoret, H. and **Cisek, P.** (2008) "Corticospinal excitability reflects response competition during a decision-making task". *18<sup>th</sup> Annual Meeting on Neural Control of Movement*, Naples, FL, April 29-May 4, 2008. (poster)
44. Puskas, G.A., Thivierge, J.-P., El-Murr, S., and **Cisek, P.** (2007) "Making decisions as the evidence is changing". *Society for Neuroscience Abstracts*, Vol. 33. (poster)
45. Thivierge, J.-P. and **Cisek, P.** (2007) "Exploring the mechanisms of aperiodic synchronization: A biophysical approach". *Society for Neuroscience Abstracts*, Vol. 33. (poster)
46. <sup>†</sup>**Cisek, P.** and Puskas, G.A. (2007) "Making decisions as the evidence is changing", *Canadian Physiological Society Winter Meeting 2007*, Beaupré, Québec, January 31 – February 3, 2007. (oral presentation)
47. **\*Cisek, P.** (2005) "A computational model of reach decisions in the primate cerebral cortex", Modeling Natural Action Selection 2005 – An interdisciplinary workshop at the International Joint Conference on Artificial Intelligence, Edinburgh, Scotland, July 30-31, 2005. (oral presentation)
48. **Cisek, P.** (2005) "Pragmatic neural representations for reach decisions: A computational model", *Program and Abstracts of the 15<sup>th</sup> Annual Meeting on Neural Control of Movement*. Key Biscayne, FL, April 14<sup>th</sup>, 2005. (poster)
49. **Cisek, P.**, Michaud, N., and Kalaska, J.F. (2004) "Integration of motor planning and sensory feedback in area 5." *Society for Neuroscience Abstracts*, Vol. 30. (poster)
50. **Cisek, P.** and Kalaska, J.F. (2004) "Specification and selection of possible reach targets in primate cerebral cortex". *Program and Abstracts of the 14<sup>th</sup> Annual Meeting on Neural Control of Movement*. Sitges, Spain, March 29<sup>th</sup>, 2004. (poster)
51. **Cisek, P.** (2003) "A model of action specification and selection in the cerebral cortex". *Society for Neuroscience Abstracts*, Vol. 29. (poster)
52. **\*Cisek, P.** (2003) "A computational model of reach decisions in the primate cerebral cortex". *Advances in Computational Motor Control II*, a Satellite Symposium of the 33<sup>rd</sup> Annual Meeting of the Society for Neuroscience. New Orleans, LA, November 7<sup>th</sup>, 2003. (oral presentation)
53. **Cisek, P.** & Kalaska, J.F. (2002) "Neural activity in dorsal premotor cortex (PMd) during observation of instructed-delay tasks" *Society for Neuroscience Abstracts*, Vol. 28. (poster)
54. **\*Cisek, P.** (2002) "Think before you act, but prepare an assortment of partial actions before you think". *Advances in Computational Motor Control*, a Satellite Symposium of the 32<sup>nd</sup> Annual Meeting of the Society for Neuroscience. Orlando, FL, November 2<sup>nd</sup>, 2002. (oral presentation)
55. **Cisek, P.** & Kalaska, J.F. (2001) "Activity in dorsal premotor cortex (PMd) reflects anticipation of the likely response choice during a selection task". *Society for Neuroscience Abstracts*, Vol. 27. (poster)
56. **Cisek, P.** and Kalaska, J.F. (2000) "Modest gaze-related discharge modulation in primate dorsal premotor cortex (PMd) during a response-selection task without controlled gaze fixation". *Society for Neuroscience Abstracts*, 26(1):957. (poster)
57. Kalaska, J.F., **Cisek, P.**, and Crammond, D.J. (2000) "Effector-independent activity in primate dorsal premotor cortex (PMd) during instructed-delay tasks". *Society for Neuroscience Abstracts*, 26(1):957. (poster)
58. **\*Cisek, P.** (2000) "The 'Two Action Systems' model of behavior". The 26<sup>th</sup> annual meeting of the Society for Philosophy and Psychology, Columbia University, June 17<sup>th</sup>, 2000. (oral presentation)
59. **Cisek, P.** and Kalaska, J.F. (1999) "Neural correlates of multiple potential motor actions in primate premotor cortex". *Society for Neuroscience Abstracts*, 25(1):381. (poster)
60. **Cisek, P.** and Scott, S.H. (1998) "Cooperative action of mono- and bi-articular arm muscles during multi-joint posture and movement tasks in monkeys". *Society for Neuroscience Abstracts*, 24(1):420. (poster)
61. Scott, S.H. and **Cisek, P.** (1998) "The use of KINARM to quantify and manipulate the mechanics of multi-joint arm movements of monkeys". *Society for Neuroscience Abstracts*, 24(1):420. (poster)
62. Scott, S.H. and **Cisek, P.** (1997) "Population vector rotation without mental rotation". *Society for Neuroscience Abstracts*, 23(2):274. (poster)
63. **Cisek, P.**, Grossberg, S. and Bullock, D. (1997) "A cortico-spinal model of reaching and proprioception under multiple task constraints". *Society for Neuroscience Abstracts*, 23(2):369. (poster)
64. **Cisek, P.**, Bullock, D., and Grossberg, S. (1996) "Cortical circuits for control of voluntary arm movements". *Program and Abstracts of the 6<sup>th</sup> Annual Meeting on Neural Control of Movement Vol 1*, CI-1 p. 30. (poster)
65. **Cisek, P.**, Bullock, D., and Grossberg, S. (1995) "Cortical networks for control of voluntary arm movements under variable force conditions". *Society for Neuroscience Abstracts*, 21:269. (poster)
66. Chey, J., **Cisek, P.**, Gaudiano, P., and Wood, R. (1994) "Are learned biases in Aplysia headwaving due to associative or non-associative mechanisms?" *Society for Neuroscience Abstracts*, 20:1073. (oral presentation)
67. Bullock, D., **Cisek, P.**, and Grossberg, S. (1994) "A neural model of voluntary movement and proprioception". *Society for Neuroscience Abstracts*, 20:1405. (poster)
68. **Cisek, P.** and Gray, M. (1992). "Extending the Reasoning Ability of Expert Systems". *Proceedings of the Sixth National Conference on Undergraduate Research Vol II*:762-767. (oral presentation)

## Invited talks & seminars

1. "Neural mechanisms of real-time decisions", NIH Neuroscience Seminar Series, **Bethesda, MD**, May 18, 2015 (seminar)
2. "Neural mechanisms of real-time decisions", University of Rochester, **Rochester, NY**, April 29, 2015 (seminar)
3. "Neural mechanisms for making decisions in a dynamic world", 2<sup>nd</sup> I.N.T. Neuroscience conference, **Marseille, France**, Oct 2-3, 2014 (invited talk)
4. "Neural mechanisms for making decisions in a dynamic world", 10<sup>th</sup> Conference of the Bernstein Network for Computational Neuroscience, **Göttingen, Germany**, September 2-6, 2014 (invited talk)
5. "Neural mechanisms for making decisions in a dynamic world", McGill University, **Montréal, Québec**, April 30, 2014 (seminar)
6. "Neural mechanisms of interactive behaviour", University of Utah, **Salt Lake City, UT**, April 7-9, 2014 (seminar)
7. "Who makes the decision?", Groupe d'étude interdisciplinaire sur la nature humaine, Université de Montréal, **Montréal, Québec**, April 1-2, 2014 (invited talk)
8. "Inferring the mechanisms of decisions" Quantifying Structure in Large Neural Datasets, Grossman Center for the Statistics of Mind, Columbia University, **New York, NY**, October 16-18, 2013 (invited talk)
9. "An integrated neural mechanism of speed/accuracy tradeoffs in decision-making and action execution" Progress in Motor Control IX, McGill University, **Montréal, Québec**, July 14-16, 2013 (invited talk)
10. "On the challenges and mechanisms of embodied decision-making" Perceptual Expertise Network XXVI Workshop, Carnegie-Mellon University, **Pittsburgh, PA**, April 12-13, 2013 (invited talk)
11. "Integrated neural mechanisms of decision-making and action planning" 2013 NECOTIS workshop, University of Montréal, **Montréal, Québec**, March 1, 2013 (invited talk)
12. "Moving beyond the computer metaphor for the brain" Canadian University Software Engineering Conference, **Montréal, Québec**, January 17-19, 2013 (invited talk)
13. "The vanishing central executive: Distributed neural mechanisms for decision-making", Summer Institute in Cognitive Science, Université du Québec à Montréal, **Montréal, Québec**, June 30-July 9, 2012 (invited talk)
14. "Neural mechanisms for committing to a decision about action". University College London, **London, United Kingdom**, May 2<sup>nd</sup>, 2012 (seminar)
15. "Neural mechanisms for committing to a decision about action". Johns Hopkins University, **Baltimore, MD**, February 6, 2012 (seminar)
16. "Neural mechanisms for committing to a decision about action". University of West Virginia, **Morgantown, WV**, January 18, 2012 (seminar)
17. "Neural mechanisms for committing to a decision about action". University of Minnesota, **Minneapolis, MN**, December 9, 2011 (seminar)
18. "Computational mechanisms of decision-making". 2011 Summer School in Computational Sensory-Motor Neuroscience, Queen's University, **Kingston, Ontario**, August 7-21, 2011 (invited talk)
19. "Committing to a choice: Neural correlates of action selection in the premotor cortex". Workshop of the Center for Studies in Behavioral Neurobiology, Concordia University, **Montréal, Québec**, April 7-8, 2011. (invited talk)
20. "Neural dynamics of action competition in premotor cortex". Annual Meeting of the Physiological Society of Japan, **Yokohama, Japan**, March 28-30, 2011. (invited talk, *cancelled due to earthquake*)
21. "Neural mechanisms for committing to a decision about action". NSF-IGERT Special Symposium on Motor Control, **Stanford, CA**, March 2, 2011. (invited talk)
22. "Biased competition between actions in dorsal premotor cortex". Tohoku International Symposium on Multidisciplinary Neuroscience, **Sendai, Japan**, January 22-23, 2011. (invited talk)
23. "Neural mechanisms of sensorimotor decisions in the cerebral cortex". Centre for Brain and Mind, University of Western Ontario, **London, Ontario**, November 26, 2010. (seminar)
24. "Neural mechanisms of sensorimotor decisions in the cerebral cortex". Centre for Vision Research, York University, **Toronto, Ontario**, October 22, 2010. (seminar)
25. "Integrated neural processes of decision-making and sensorimotor planning". Cognitive and Physical Models of Speech Production, Speech Perception and Production-Perception Interaction, **Berlin, Germany**, Sept 27-October 1, 2010. (invited talk)
26. "Decision-making at early stages of action preparation". Oral presentation at the 7<sup>th</sup> FENS Forum of European Neuroscience, **Amsterdam, the Netherlands**, July 6, 2010. (invited talk)
27. "Integrated neural processes of decision-making and sensorimotor planning", Seventh Motor Control Summer School, **Wislá, Poland**, June 24-28, 2010. (invited talk)
28. "Decisions in changing conditions: The urgency-gating model". Bordeaux Workshop on Decision Making, **Bordeaux, France**, June 9-10, 2009. (invited talk)

29. "The blurry borders between deciding and doing". Jerusalem Motor Days, **Jerusalem, Israel**, June 7<sup>th</sup>, 2009. (invited talk)
30. "The blurry borders between deciding and doing", The 13<sup>th</sup> International Conference on Cognitive and Neural Systems, Boston University, **Boston, MA**, May 27-30, 2009. (invited talk)
31. "Action selection and the motor system". Oral presentation at the 19<sup>th</sup> Annual Meeting on Neural Control of Movement, **Waikoloa, HI**, April 29<sup>th</sup>, 2009. (invited talk)
32. "Reaching decisions through a distributed consensus", CNRS, Université Victor Segalen-Bordeaux 2, **Bordeaux, France**, March 30<sup>th</sup>, 2009. (seminar)
33. "Deciding about actions: The affordance competition hypothesis", School of Physical and Occupational Therapy, McGill University, **Montréal, Québec**, March 10<sup>th</sup>, 2009. (seminar)
34. "Changing evidence about decision models", *Canadian Physiological Society Winter Meeting 2009*, **Mont-Sainte-Anne, Québec**, February 5, 2009. (invited talk)
35. "Reaching decisions through a distributed consensus", Workshop on Open Problems in the Neuroscience of Decision Making, OIST Seaside House, **Okinawa, Japan**, October 16-18, 2008. (invited talk)
36. "Making decisions as the evidence is changing", Okinawa Institute of Science and Technology, **Okinawa, Japan**, October 14, 2008. (seminar)
37. "Cognition through sensorimotor competition", Barcelona Cognition, Brain and Technology Summer School, **Barcelona, Spain**, Sept 8-22, 2008. (invited talk)
38. "The blurry borders between deciding and doing", Fifth Motor Control Summer School, Camp Maromac, **Val Des Lacs, Québec**, July 11-15, 2008. (invited talk)
39. "Deciding about actions: The affordance competition hypothesis", Department of physiology, Queen's University, **Kingston, Ontario**, March 31<sup>st</sup>, 2008. (seminar)
40. "Deciding about actions: The affordance competition hypothesis", Neuroscience Institute, Stanford University, **Stanford, CA**, March 20<sup>th</sup>, 2008. (seminar)
41. "Deciding about actions: The affordance competition hypothesis", Smith-Kettlewell Eye Research Institute, **San Francisco, CA**, March 19<sup>th</sup>, 2008. (seminar)
42. "Cerebral cortical mechanisms of decision-making and action planning", *The EJLB Foundation Scholars Symposium*, **North Hatley, Québec**, October 12-14, 2007. (invited talk)
43. "Some old and some new ideas in neuroscience", *St. Paul's Lodge*, **Montréal, Québec**, October 9, 2007. (lecture to lay audience)
44. "Cortical mechanisms of reach decisions", *First Annual Meeting of the Canadian Association of Neuroscience*, **Toronto, Ontario**, May 23-25, 2007. (invited talk)
45. "Computational and neurophysiological studies of simple decisions", *Frontiers of Theoretical Neuroscience Workshop*, University of Waterloo, **Waterloo, Ontario**, April 13, 2007. (invited talk)
46. "Deciding about actions". Oral presentation at the 17<sup>th</sup> Annual Meeting on Neural Control of Movement, **Seville, Spain**, March 30<sup>th</sup>, 2007. (invited talk)
47. "Deciding about actions: The affordance competition hypothesis", Bernstein Center for Computational Neuroscience, **Göttingen, Germany**, March 23, 2007. (seminar)
48. "Deciding about actions: The affordance competition hypothesis", Institute of Movement Neuroscience, University College London, **London, United Kingdom**, March 21, 2007. (seminar)
49. "Cortical dynamics of action specification and selection", *The 10<sup>th</sup> Tamagawa-Riken Dynamic Brain Forum – DBF'07*, **Hakuba, Japan**, March 5-9, 2007. (invited talk)
50. "Cognitive processes in the primate premotor cortex", École d'Optométrie, Université de Montréal, **Montréal, Québec**, November 27<sup>th</sup>, 2006. (seminar)
51. "La planification et la prise de décision dans le cortex cérébral", *2<sup>nd</sup> Annual GRSNC retreat*, Far Hills Inn, **Val-Morin, Québec**, September 23, 2006. (seminar)
52. "Deciding about actions: The affordance competition hypothesis", *The 34<sup>th</sup> Carnegie Symposium on Cognition*, Carnegie-Mellon University, **Pittsburgh, PA**, June 3, 2006. (invited talk)
53. "Deciding about actions: The affordance competition hypothesis" Montréal Neurological Institute, **Montréal, Québec**, January 26<sup>th</sup>, 2006. (seminar)
54. "Think before you act, but prepare multiple afforded actions before you think", *An Anniversary Conference Celebrating Steve Grossberg@65 and CNS@15*, **Boston, MA**, September 17, 2005. (invited talk)
55. "A computational model of reach decisions in the primate cerebral cortex", *International Joint Conference on Neural Networks*, **Montréal, Québec**, July 31 – August 4, 2005. (invited talk)
56. "Premotor activity predicting observed actions". *Perception-Action Paris 2005: A symposium on the prediction and perception of action*. **Paris, France**, May 20<sup>th</sup>, 2005. (invited talk)
57. "Neural mechanisms for deciding between actions". Dept. of Physiology, McGill University, **Montréal, Québec**, January 21<sup>st</sup>, 2005. (seminar)
58. "Making decisions about actions" 3<sup>rd</sup> Annual Meeting of the Institute of Neuroscience, Mental Health, and Addiction – Canadian Institutes of Health Research. **Ottawa, Ontario**, November 26<sup>th</sup>, 2004. (invited talk)

59. "Premotor activity during mental rehearsal of learned actions". Dept. of Physiology, Queen's University, **Kingston, Ontario**, August 26<sup>th</sup>, 2004. (seminar)
60. "Neural mechanisms for deciding between actions". Dept. of physiology, Université de Montréal, **Montréal, Québec**, June 22<sup>nd</sup>, 2004. (seminar)
61. "Neural mechanisms for deciding between actions". Krieger Mind/Brain Institute, Johns Hopkins University, **Baltimore, MD**, April 7<sup>th</sup>, 2003. (seminar)
62. "Response selection in premotor cortex and implications for the functional architecture of behavior". Center for Neuroscience, University of California, **Davis, CA**, April 2<sup>nd</sup>, 2002. (seminar)
63. "Response selection in premotor cortex and implications for the functional architecture of behavior". Dept. of Cognitive Science, University of California, **Irvine, CA**, March 4<sup>th</sup>, 2002. (seminar)
64. "Response selection in premotor cortex and implications for the functional architecture of behavior". Dept. of Biomedical Engineering, Johns Hopkins University, **Baltimore, MD**, October 24<sup>th</sup>, 2001. (seminar)
65. "Progressive specification of movement in dorsal premotor and primary motor cortex". Oral presentation at the *11<sup>th</sup> Annual Meeting on Neural Control of Movement*, **Seville, Spain**, March 27<sup>th</sup>, 2001. (invited talk)
66. "Response selection in premotor cortex and implications for the functional architecture of behavior". Dept. of Kinesiology, University of Maryland, **College Park, MD**, February 9<sup>th</sup>, 2001. (seminar)
67. "Response selection in premotor cortex and implications for the functional architecture of behavior". Dept. of Biomedical Engineering, Johns Hopkins University, **Baltimore, MD**, February 12<sup>th</sup>, 2001. (seminar)
68. "A 'two action systems' theory of behavior". Dept. of Physiology, Queen's University, **Kingston, Ontario**, November 17<sup>th</sup>, 2000. (seminar)
69. "The two action systems: specification and selection in the cerebral cortex". The 10<sup>th</sup> Anniversary of the Dept. of Cognitive and Neural Systems, Boston University, **Boston, MA**, May 23<sup>rd</sup>, 2000. (invited talk)
70. "Action selection in the premotor cortex". The 68<sup>th</sup> meeting of l'Association canadienne-française pour l'avancement des sciences, Université de Montréal, **Montréal, Québec**, May 16<sup>th</sup>, 2000. (seminar)
71. "Succumbing to the influence: Making decisions in an uncertain world". Workshop organized (by P. Cisek) at the 10<sup>th</sup> Annual Meeting on Neural Control of Movement, **Key West, FL**, April 12<sup>th</sup>, 2000. Speakers: P. Cisek, M. Basso, P. Glimcher, and M. Shadlen. (oral presentation)
72. "The two action systems: specification and selection in the cerebral cortex". Dept. de physiologie, Université de Montréal, **Montréal, Québec**. January 25<sup>th</sup>, 2000. (seminar)
73. "The two action systems: specification and selection in the cerebral cortex". Dept. of Cognitive and Neural Systems, Boston University, **Boston, MA**, September 24<sup>th</sup>, 1999. (seminar)