

## Curriculum Vitae

### **Damian G. Stephen**

Department of Psychology, Unit 1020

University of Connecticut,

406 Babbidge Road, Storrs, CT, 06269-1020

Contact: [damian.stephen@uconn.edu](mailto:damian.stephen@uconn.edu) (e-mail) / 703-300-3375 (cell) / 860-486-6880 (lab)

### Education

- 2010 (proj.) Ph.D., Experimental Psychology  
University of Connecticut, Storrs, CT
- 2009 Certificate in Quantitative Research Methods  
University of Connecticut, Storrs, CT
- 2005 B.S., Psychology College of William & Mary, Williamsburg, VA

### Honors and Awards

#### *University of Connecticut:*

- 2005-2007 Outstanding Scholarship Program Fellowship

#### *College of William and Mary:*

- 2005 Phi Beta Kappa, Alpha Chapter
- 2005 *Magna cum laude*
- 2005 Williams Award for Outstanding Psychology Student
- 2005 Highest Departmental Honors (Psychology)
- 2001-2005 James Monroe Scholar

### Publications

#### *In press:*

Stephen, D. G., Dixon, J. A., & Isenhower, R. W. (in press). Dynamics of representational change: Entropy, action, and cognition. *Journal of Experimental Psychology: Human Perception & Performance*.

Dixon, J. A., Stephen, D. G., Boncoddio, R. A., & Anastas, J. (in press). The self-organization of cognitive structure. *Psychology of Learning & Motivation*.

#### *In print:*

Stephen, D. G., Boncoddio, R. A., Magnuson, J. S., & Dixon, J. A. (2009). The

- dynamics of insight: Mathematical discovery as a phase transition. *Memory & Cognition*, 37, 1132-1149.
- Stephen, D. G., & Arzamarski, R. (2009). Self-training of dynamic touch: Striking improves judgment by wielding. *Attention, Perception, & Psychophysics*, 71, 1717-1723.
- Blau, J. J. C., Stephen, D. G., Frank, T. D., Turvey, M. T., & Carello, C. (2009). Nonlinear attractor dynamics and symmetry breaking in prism adaptation and re-adaptation. In J. Wagman, & C. Pagano (Eds.) *Studies in perception and action X: Proceedings from the fifteenth International Conference on Perception and Action* (pp. 1-4). New York: Erlbaum.
- Dotov, D. G., & Stephen, D. G. (2009). Variability of uni-manual pendulum oscillation at and away from resonance. In J. Wagman, & C. Pagano (Eds.) *Studies in perception and action X: Proceedings from the fifteenth International Conference on Perception and Action* (pp. 8-11). New York: Erlbaum.
- Stephen, D. G., Mirman, D., Magnuson, J. S., & Dixon, J. A. (2009). Lévy-like diffusion in eye movements during spoken-language comprehension. *Physical Review E*, 79, 056114. (Reprinted in *Virtual Journal of Biological Physics Research*, 17, June 1, 2009, URL: <http://www.vjbio.org>).
- Blau, J. J. C., Stephen, D. G., Carello, C., & Turvey, M. T. (2009). Prism adaptation of underhand throwing: Rotational inertia and the primary and latent aftereffect. *Neuroscience Letters*, 456, 54-58.
- Stephen, D. G., & Dixon, J. A. (2009). The self-organization of insight: Entropy and power laws in problem solving. *Journal of Problem Solving*, 2, 72-101. (Invited review).
- Stephen, D. G., Stepp, N., Dixon, J. A., & Turvey, M. T. (2008). Strong anticipation: Sensitivity to long-range correlations in synchronization behavior. *Physica A*, 387, 5271-5278.
- Stephen, D. G., & Dixon, J. A. (2007). Fractality and the attunement of perceptual systems. In S. Cummins-Sebree, M. A. Riley, & K. Shockley (Eds.), *Studies in perception and action IX: Proceedings from the fourteenth International Conference on Perception and Action* (pp. 172-175). New York: Erlbaum.
- Under review:*
- Dotov, D. G., & Stephen, D. G. Long-range correlated fluctuations in the continuous trajectory of a wrist-pendulum system driven at resonant and non-resonant rates. (Submitted to *Physica A*)

Hajnal, A., & Stephen, D. G. Transfer of calibration between hand and foot. (Submitted to *Journal of Motor Behavior*)

Stephen, D. G., Arzamarski, R., & Michaels, C. F. The role of fractality in perceptual learning: Exploration in dynamic touch. (Revise-and-resubmit at *Journal of Experimental Psychology: Human Perception & Performance*)

Stephen, D. G., & Mirman, D. Interactions dominate the dynamics of visual cognition. (Revise-and-resubmit at *Cognition*)

*In preparation:*

Anastas, J., Stephen, D. G., & Dixon, J. A. Fractality of perception-action in rule induction during the dimensional card sort.

Dixon, J. A., Holden, J. G., Mirman, D., & Stephen, D. G. Development of cognition from the multifractality of perception-action. (For upcoming debate issue in *Topics in Cognitive Science*).

Stephen, D. G., & Dixon, J. A. Strong anticipation: Multifractal cascade dynamics modulate synchronization behaviors. (Draft available)

Stephen, D. G., & Hajnal, A. Fractality predicts the transfer of learning across anatomically different limbs. (Draft available)

Stephen, D. G., & Van Orden, G. C. Complexity science in cognitive science. (For upcoming debate issue in *Topics in Cognitive Science*).

Stephen, D. G., Whitney, P. G., Green, J. A., & Dixon, J. A. Self-organization of newborn crying. (Draft available)

## Teaching

*Training:*

Spring 2008 Course in Teaching Experimental Psychology

*Experience:*

Fall 2009 Introductory Psychology Laboratory Instructor (2 sections)

Spring 2009 Research Methods Laboratory Instructor (1 section)

Fall 2008 Research Methods Laboratory Instructor (1 section)

Spring 2008 Cognition Laboratory Teaching Assistant

Spring 2008 “Nonlinear Dynamics in Gottlieb’s Probabilistic Epigenesis” Discussion Co-Leader (Graduate students and faculty)

Fall 2007      Statistics Consultant for Research Methods Laboratory  
 Fall 2006      Graduate Statistics Teaching Assistant  
 Spring 2006    Introductory Psychology Discussion Leader (2 sections)  
 Fall 2005      Introductory Psychology Laboratory Instructor (2 sections)

*Prepared to teach:*

Introductory Psychology (Undergraduate)  
 Research Methods (Undergraduate)  
 Statistics (Undergraduate/Graduate)  
 Cognition (Undergraduate/Graduate)  
 Learning & Memory (Undergraduate/Graduate)  
 Sensation & Perception (Undergraduate/Graduate)  
 Developmental Psychology (Undergraduate/Graduate)  
 Special Topics in Complexity, Emergence, and Embodiment (Graduate)

Presentations

*Invited Colloquia:*

Stephen, D. G., & Arzamarski, R. (2008, February). A nonlocal anatomy of error and learning. Invited colloquium for the Perception-Action Workshop at University of Connecticut, Storrs, CT.

Stephen, D. G. (2007, December). Dynamics of problem solving. Invited colloquium for the Workshop for Complexity, Cognition, and Coordination at University of Connecticut, Storrs, CT.

Blau, J. J. C., Turvey, M. T., Carello, C., & Stephen, D. G. (2007, November). Perception and action in the context of prism adaptation and weighted limbs. Invited colloquium for the Perception-Action Workshop at University of Connecticut, Storrs, CT.

Stephen, D. G. (2007, February). Cognitive representation as a thermodynamic phenomenon. Invited colloquium for the Perceptual-Motor Dynamics Lab at University of Cincinnati, Cincinnati, OH.

Stephen, D. G. (2007, January). Cognitive representation as a thermodynamic phenomenon. Invited colloquium for the Perception-Action Workshop at University of Connecticut, Storrs, CT.

Stephen, D. G., Dixon, J. A., & Isenhower, R. W. (2006, March). In search of the dynamics of representation. Invited colloquium for Perception-Action Workshop at University of Connecticut, Storrs, CT.

*Invited Symposium Papers:*

- Stephen, D. G. (2008, July). Cognition as the breaking and reforming of constraints. Invited symposium paper presented at the 29<sup>th</sup> annual meeting of the International Congress of Psychology, Berlin, Germany.
- Stephen, D. G., Sullivan, R. A., Dixon, J. A., & Isenhower, R. W. (2007, July). Dynamics in development: New structures through self-organization. Invited symposium paper presented at the 14<sup>th</sup> International Conference of Perception and Action, Yokohama, Japan.

*Conference papers:*

- Blau, J. J. C., Stephen, D. G., & Carello, C. (2009, July). Fractal structure in event perception: Lessons from film editing. Paper presented at the 15<sup>th</sup> International Conference of Perception and Action, Minneapolis, MN.
- Stephen, D. G., & Dixon, J. A. (2009, July). A multifractal approach to development in *D. discoideum*. Paper presented at the 15<sup>th</sup> International Conference of Perception and Action, Minneapolis, MN.
- Dotov, D. G., Stephen, D. G., Frank, T. D., & Turvey, M. T. (2009, March). Dynamics of rhythms at resonance: Variability of Unimanual pendulum oscillation at and away from resonance. Paper presented at the 19<sup>th</sup> annual meeting of New England Sequencing and Timing at Haskins Laboratories, New Haven, CT.
- Dixon, J. A., & Stephen, D. G. (2008, August). Thermodynamics of a developmental system. Paper presented at the 3<sup>rd</sup> annual Cognition & Dynamics Workshop at University of Connecticut, Storrs, CT.
- Stephen, D. G., Mirman, D., Kukona, A. P., Magnuson, J. S., Rueckl, J., & Dixon, J. A. (2008, August). Scale-invariant foraging at the vision-language interface. Paper presented at the 3<sup>rd</sup> annual Cognition & Dynamics Workshop at University of Connecticut, Storrs, CT.
- Stephen, D. G., Boncoddò, R. A., Dixon, J. A., & Magnuson, J. S. (2007, November). Cognitive dynamics from eye-movements: Representational change as a phase transition. Paper presented at the annual meeting of the Psychonomic Society, Long Beach, CA.
- Boncoddò, R. A., Stephen, D. G., & Dixon, J. A. (2007, August). Dynamics of representational change in preschoolers. Paper presented at the 2<sup>nd</sup> annual Cognition & Dynamics Workshop at University of Connecticut, Storrs, CT.
- Stephen, D. G., Stepp, N., Dixon, J. A., & Turvey, M. T. (2007, August). Strong

anticipation strikes back: Data and more. Paper presented at the 2<sup>nd</sup> annual Workshop for Dynamics and Cognition at University of Connecticut, Storrs, CT.

Stephen, D. G., & Dixon, J. A. (2006, August). Negentropy and the emergence of novel representation. Paper presented at the 1<sup>st</sup> annual Cognition & Dynamics Workshop at University of Connecticut, Storrs, CT.

*Poster Sessions:*

Stephen, D. G., & Dixon, J. A. (2009, November). Timing emerges from multifractality of perception-action. Poster session at the annual meeting of the Psychonomic Society, Boston, MA.

Anastas, J., Stephen, D. G., & Dixon, J. A. (2009, November). Fractal dynamics of perception-action in the dimensional card sort. Poster session at the annual meeting of the Psychonomic Society, Boston, MA.

Blau, J. J. C., Stephen, D. G., Frank, T. D., Turvey, M. T., & Carello, C. (2009, July). Nonlinear attractor dynamics and symmetry breaking in prism adaptation and re-adaptation. Poster session at the 15<sup>th</sup> International Conference of Perception and Action, Minneapolis, MN.

Dotov, D. G., & Stephen, D. G. (2009, July). Variability of uni-manual pendulum oscillation at and away from resonance. Poster session at the 15<sup>th</sup> International Conference of Perception and Action, Minneapolis, MN.

Boncoddo, R. A., Stephen, D. G., & Dixon, J. A. (2008, November). Embodied relations self-organize into representations. Poster session at the annual meeting of the Psychonomic Society, Chicago, IL.

Boncoddo, R. A., Stephen, D. G., & Dixon, J. A. (2008, May). Self-organization and embodiment: Evidence from preschoolers' problem solving. Poster session at the annual meeting of the Association for Psychological Science, Chicago, IL.

Stephen, D. G., & Dixon, J. A. (2007, July). Fractality and the attunement of perceptual systems. Poster session at the 14<sup>th</sup> International Conference of Perception and Action, Yokohama, Japan.

Stephen, D. G., Whitney, P. G., Green, J. A., Dixon, J. A. (2007, March). Dynamical organization of infant crying. Poster session presented at the biannual meeting of the Society for Research in Child Development, Boston, MA.

Stephen, D. G., Dixon, J. A., & Isenhower, R. W. (2006, November). Dynamic emergence of new cognitive structure. Poster session presented at the annual meeting of the Psychonomic Society, Houston, TX.

Dixon, J. A., & Stephen, D. G. (2006, May). Getting time on your side: Modeling microgenetic data with longitudinal methods. Poster session presented at the annual meeting of the Association for Psychological Science, New York, NY.

Stephen, D. G., & Ball, C. T. (2005, February). What are the cognitive determinants of a coincidence? Poster session presented at the annual meeting of the North Carolina Cognition Group, Winston-Salem, NC.

### Quantitative methods

Analysis of variance

Multiple regression

Hierarchical linear modeling (also known as growth-curve or multi-level modeling)

Survival analysis (also known as event-history analysis)

Vector autoregression

Phase-space reconstruction

Recurrence quantification analysis

Detrended fluctuation analysis

Multifractal detrended fluctuation analysis

Diffusion entropy analysis