

SETH FREY, PH.D.

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Frey sounds like 'fry'

SUMMARY

I am a cognitive scientist who studies social decision making using computational methods, large datasets, and web-based experiments. My specialties are computational approaches to institutional behavior and the cognitive science of strategic behavior. I am most interested in collective action and peer production in online communities.

EDUCATION

- 2013 **Ph.D. in Cognitive Science and Informatics**, Indiana University, Bloomington
Focus on cognitive science of strategic reasoning. *Advisor*: Robert L. Goldstone
- 2004 **B.A. in Cognitive Science**, University of California, Berkeley
Focuses in cognitive neuroscience and cognitive psychology.
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RESEARCH EXPERIENCE

POSITIONS

- 2015–present **Neukom Postdoctoral Fellow**, The William H. Neukom 1964 Institute for Computational Science, Dartmouth College
- 2013–2015 **Postdoctoral researcher**, Disney Research Zurich, Walt Disney Imagineering, The Walt Disney Company
- 2015 **Lecturer**, Department of Human, Social, and Political Sciences (D-GESS), Swiss Federal Institute of Technology (ETH), Zürich, Switzerland

OTHER TRAINING

- 2015–present Mentee, Luke Chang, Computational Social Affective Neuroscience, Dartmouth
- 2015–present Mentee, Mary Flanagan, Tiltfactor Game Lab, Dartmouth College, NH, USA
- 2016 Student, Consortium for Sociotechnical Systems (CSST) Summer Institute, WA, USA
- 2009–2013 Student, Robert L. Goldstone, Percepts and Concepts Lab, IU
- 2010–2013 Trainee, NSF/IGERT in the Dynamics of Brain-Body-Environment Systems, IU
- 2012 Student, Santa Fe Institute Complex Systems Summer School, Santa Fe, NM, USA
- 2012 Guest, Yuzuru Sato, RIES Complex Systems, Hokkaido University, Sapporo, Japan
- 2011 Guest, Tatsuya Kameda, Social Psych Lab, Hokkaido University, Sapporo, Japan
- 2009 Student, Elinor Ostrom & Michael McGinnis, Institutional Analysis and Design, Workshop on Political Theory and Policy Analysis, IU
- 2006–2008 Student, Yaneer Bar-Yam, New England Complex Systems Institute (NECSI)

PUBLICATIONS

ONGOING RESEARCH

Frey, S., Sumner, R.W. "Scaling of governance styles in designer societies."

IN REVIEW

Frey, S., Donnay, K., Helbing, D., Sumner, R. W., Bos, M. W. (*submitted*). "The social dimensions of self-influence in a young population online." Available at <http://enfascination.com/cloud/index.php/s/EvUFHnMvCycqPQR>.

Frey, S., Goldstone, R. L. (*submitted*). "Cognitive mechanisms for human flocking dynamics." Available at <https://arxiv.org/abs/1506.05410>

Frey, S., Bos, M. W., Sumner, R. W. (*submitted*) "'Blind' content moderation with human computation."

Frey, S., Williams, P., Albino, D. (*in review*). "Information encryption in the expert management of strategic uncertainty." Available at <https://arxiv.org/abs/1605.04233>

IN PRESS

Frey, S., Goldstone, R. L. (*in press*). "Does successful small-scale coordination help or hinder coordination at larger scales?" *Interaction Studies* 17(3). Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2779259

PUBLISHED

Baghestanian, S., Frey, S. (2016). "GO Figure: Analytic and strategic skills are separable." *Journal of Behavioral and Experimental Economics* 64(10) 71–80. <http://www.sciencedirect.com/science/article/pii/S2214804315000774>

Frey, S. (2014). "Mixed human/entity games and the anomalous effects of misattributing strategic agency." *Adaptive Behavior* 22(4) 266-276, <http://adb.sagepub.com/content/22/4/266.abstract>

Frey, S., Goldstone, R. L. (2013). Cyclic game dynamics driven by iterated reasoning. *PLoS ONE* 8(2): e56416. doi:10.1371/journal.pone.0056416. <http://dx.plos.org/10.1371/journal.pone.0056416>

Goldstone, R. L., Wisdom, T. N., Roberts, M. E., Frey, S. (2013). Learning along with others. In B. H. Ross (Ed.), *Psychology of Learning and Motivation* 58. (pp. 1-45). Academic Press, MA, USA.

Willer, R., Sharkey, A., Frey, S. (2012) Reciprocity on the Hardwood: Passing Patterns among Professional Basketball Players. *PLoS ONE* 7(12): e49807. <http://www.plosone.org/article/info:doi/10.1371/journal.pone.0049807>

Frey, S. (2013) "Complex collective dynamics in human higher-level reasoning. A study over multiple methods," Dissertation, Indiana University. Available at <http://gradworks.umi.com/35/99/3599175.html>

PEER-REVIEWED PROCEEDINGS

Müller, S., Solenthaler, B., Kapadia, M., Frey, S., Klingler, S., Mann, R. P., Sumner, R. W., Gross, M. (2015). "HeapCraft: Interactive Data Exploration and Visualization Tools for Understanding and Influencing Player Behavior in Minecraft." In *Motion in Games (ACM MIG)*

Müller, S., Kapadia, M., Frey, S., Klingler, S., Solenthaler, B., Mann, R. P., Sumner, R. W., Gross, M. (2015). "Statistical analysis of player behavior in Minecraft." In *Foundations of Digital Games*

(FDG), Pacific Grove, California.

- Müller, S., Frey, S., Kapadia, M., Klingler, S., Mann, R. P., Solenthaler, B., Sumner, R. W., Gross, M. (2015). "Quantifying and Predicting Collaboration in Shared Virtual Worlds." In *Artificial Intelligence and Interactive Digital Entertainment 2015 (AAAI AIIDE)*
- Huber, R., Scheibehenne, B., Chapiro, A., Frey, S., Sumner, R. (2015). "The Influence of Visual Salience on Video Consumption Behavior: A Survival Analysis Approach." *ACM Web Science*, Oxford-United Kingdom, 2015.
- Galati, A., Bourchas T., Siby, S., Frey S., Olivares M., Mangold S. (2014) "Mobile-enabled delay tolerant networking in rural developing regions" In *IEEE Global Humanitarian Technology Conference (GHTC 2014)*.
- Galati, A., Vucadinovic V., Frey S., Olivares M., Mangold S. (2014) "Low-Cost Network Technologies for Socio-Economic Empowerment in Developing Areas" In *UNESCO Tech4Dev 2014*.
- Cox, G., Frey, S., Dye, M. (2012). The dynamics of sentence (in)comprehension. 2012 Cognitive Science Society.
- Frey, S. (2012). Learning transfer in small group coordination. *2012 Proceedings of the Cognitive Science Society*. <http://mindmodeling.org/cogsci2012/papers/0278/paper0278.pdf>
- Frey, S., Goldstone, R. L. (2011). Going with the group in a competitive game of iterated reasoning. 2011 Proceedings of the Cognitive Science Society. Available at <http://cognitrn.psych.indiana.edu/rgoldsto/pdfs/groupgoing2011.pdf>
- Frey, S., Goldstone, R. L. (2010). Group stratification and coordination failure in a continuous n-player Stag Hunt. 2010 Proceedings of the Cognitive Science Society. <http://cognitrn.psych.indiana.edu/rgoldsto/pdfs/freycogsci2010.pdf>
- Deaton, S., Frey, S. (2009). Investigations of attractor behavior over the decay of modular RBNs. 10th European Conference on Artificial Life. Available at <http://arxiv.org/pdf/1005.3510>
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GRANTS, HONORS, AND AWARDS

MAJOR GRANTS, HONORS, AND AWARDS

- 2015 Neukom Postdoctoral Fellowship, William H. Neukom 1964 Institute for Computational Science, Dartmouth College. *Two–three years of support.*
- 2012 Indiana Space Grant Consortium (NASA/INSGC) Fellowship. *One year of support.*
- 2010 NSF IGERT Traineeship in the Dynamics of Brain-Body-Environment Systems. *Two years of support.*
- 2008 Indiana University Arts and Sciences Graduate Fellowship. *One year of support.*
- 2006 NECSI Advanced Training Program Student Fellowship. *Two years of support.*

OTHER GRANTS, HONORS, AND AWARDS

- 2012 NSF IGERT Summer Internship Program. *One summer of support.*
- 2012 NSF IGERT Summer Travel Award. *One month of travel support.*
- 2012 NSF Travel Grant & Research Fellowship. *One month of travel support.*
- 2011 NSF EAPSI. *One summer of support.*
- 2011 JSPS Summer Program Fellowship, Hokkaido University. *One summer of support.*
- 2009 IU Cognitive Science Supplemental Research Fellowship. *One summer of support.*
- 2015 Conference on Complex Systems. *Notable talk.*

2014	Indiana University Cognitive Science Program. <i>“Outstanding dissertation” award.</i>
2012	IU NSF/IGERT Spring Research Showcase. <i>Best student paper award.</i>
2011	Midwest Cognitive Science Conference. <i>Best student paper award.</i>

TALKS

INVITED TALKS

Social cognition with large online game datasets. Keynote at MUCSC, *Bloomington, Indiana*; MIS Research Seminar, *MSU East Lansing*.

Governance of online designer societies. SEGS Talk, *University of Vermont*.

Behavioral science of user-generated content. Tech talk, *Disney Research*.

Expert information extraction and encryption in online poker. School of Computer Science Colloquium, *McGill University*; Behavioral Studies Colloquium, *ETH Zürich*; *VRVis Center for Visualization Research*, Austria; Economic Psychology, *University of Basel*; Business Administration, *University of Zurich*; Disney Data Analytics Conference, *The Walt Disney Company*.

Cyclic game dynamics driven by iterated reasoning. *International Conference on Computational Social Science (IC2S2 2015)*, Helsinki, Finland; Helbing Lab, *ETH Zürich*; Crisis Lab, *IMT Lucca*; Behavioral Group, *University of Warwick*; Cognition, Action, & Perception Speaker Series, *University of Cincinnati*; 2012 NSF/IGERT Competition, *NSF IGERT*, Washington DC; Behavioral Economics Seminar, *Indiana University*; Behavioral Sciences Group, *Hokkaido University*.

Multiple methods in collective behavior. Tech talk, *Disney Research*.

Institutional analysis of cooperative experience. Fagerstrom Fund, *Oberlin College*.

OTHER TALKS

2016 Workshop in the Woods, Hanover, NH; *2015 Conference on Complex Systems (CCS)*, Tempe, Arizona, USA; *2015 AIII AIIDE Player modeling workshop*, Santa Cruz, CA, USA; *2015 FDG*, CA, USA; *2015 International Conference on Computational Social Science (IC2S2)*, Helsinki, Finland; *2015 WebSci*, Oxford, UK; *2015 Cognitive Futures*, Oxford, UK; *2014 Workshop on interaction networks and collective motion*, Aalto University, Helsinki, Finland; *2012 Workshop on perceiving and conceiving natural and non-natural agents*, Vanderbilt University, Nashville, TN, USA; *2012 Cognitive Science Society*; *IGEL 2012*, July 10, 2012, Montreal, QC, Canada; *Midwest CogSci*, Bloomington, IN, USA; *3rd IGERT Spring Research Showcase*, April 13, 2012, Bloomington, IN, USA; *NASCO Institute*, Ann Arbor, MI, USA; *Midwest CogSci*, East Lansing, MI, USA; *NASCO Institute*, Ann Arbor, MI, USA; *2010 INSNA Sunbelt*, Trento, Italy; *NetSci 2010*, Cambridge, MA, USA; *2009 Institutional Analysis and Design Miniconference*, Bloomington, IN, USA.

TEACHING

FORMAL

Courses: Science of Anarchy, 2017; Social Modeling and Mechanism Design, 2015; Brain and Cognition in Cognitive Science, 2013; Experiments and Models in Cognitive Science, 2012; Autonomous Robotics, 2010; Experiments and Models in Cognitive Science, 2009.

Theses and interns supervised: Rafael Huber, intern, Disney Research, 2014; Álvaro Marco, ETH Zürich Bachelor's thesis, 2014; Stephan Müller, ETH Zürich Master's thesis, 2015.

OTHER TEACHING

2009–2013 Organizer, undergraduate summer reading group, IU
2006 English teacher, Mah'ed Inglizi, Irbid, Jordan
2005 Organizer and teacher, Jamaica Plain Free School Project, Boston, MA
2005 Substitute teacher, Boston Public Schools, Boston, MA
2001–2004 Facilitator of multiple self-designed courses, large and small, UC Berkeley

ACADEMIC SERVICE

Journal reviewing: Proceedings of the Royal Society B: Biological Sciences; Journal of the Royal Society: Interface; Cognitive Science; PLoS ONE; Journal of Experimental Psychology: General.

Conference reviewing and committees: CHI LBW PC; International Conference on Computational Social Science (IC2S2) PC; Cognitive Futures; European Conference on Cognitive Science; Cognitive Science Society; ACM SIGGRAPH; Collective Intelligence; Midwest Cognitive Science Conference.

Guest editor: *Grassroots Economic Organizing*, Ostrom Special Issue: <http://geo.coop/issue/9>

MEDIA AND PUBLIC OUTREACH

POPULAR ARTICLES AND TALKS

Frey, S., House, P., (2016). "The Unexpected Humanity of Robot Soccer." *Nautilus* 39.
Available at <http://nautil.us/issue/39/sport/the-unexpected-humanity-of-robot-soccer>
Hinchliffe, J.P., Frey, S. (2014). "Shakespeare's Genius is Nonsense." *Nautilus* 18.
Available at <http://nautil.us/issue/18/genius/shakespeares-genius-is-nonsense>
Frey, S. (2011) *TEDxBloomington*, Bloomington, IN, USA.
Video available at <http://www.youtube.com/watch?v=DoO2WQMzCm4>

PRESS

Governance of designer societies. Featured in *New York Times Magazine*, 14 April 2016.

Cyclic dynamics driven by iterated reasoning. Interviewed in *BBC Radio 4* documentary, 5 Aug, 2015; Featured on *Smithsonian Magazine blog*, 21 Feb, 2013; Featured on *NBCnews.com*, 19 Feb, 2013; Interviewed in *Indiana University Alumni Magazine*, Summer 2013; also *The Globe and Mail*, www.farsnews.ir, and *Science Daily*.

Institutional analysis of cooperative experience. Interviewed in *Ryder Magazine*, 2011.

OTHER ACTIVITIES

2005-present Hobbyist in printing and book arts
2015-present Consulting for major media company, engagement in user-generated content
2015 Inventor on two filed patents, area of predictive video analytics
2008–2013 Co-founder and board of directors, Bloomington Cooperative Living Inc.
Grew organization's membership to 50, and its assets from \$10,000 to \$1 million
2010–2013 Board of directors, National Association of Students of Cooperation (NASCO)

Development Services

2008–2010

Paid to solve puzzles for Jerry Slocum Collection of puzzles at IU's Lilly Library

2006

Fired by Buddhists; scientific career begins