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Short Summary

I am a postdoc at the Northeastern Network Science Institute and a fellow at the Harvard Institute for Quantitative Social Science. My methodology of investigation brings together agent-based computer simulations and laboratory and online behavioral experiments. My current research agenda revolves around the study of human behavior in large-scale natural and ad-hoc-built virtual environments. I use bots to trigger specific conditions, and artificial intelligence to determine optimal experimental designs (Bayesian methods and advanced machine learning).

My research interests encompass:

- incentives schemes for collective intelligence, in particular peer review systems,
- optimal experimental designs, Bayesian optimization with Gaussian processes,
- consensus formation and social influence, in particular in epistemic communities,
- implementing noisy institutions,
- efficiency and equality in coordination and public-good games,
- philosophy of science, in particular Paul Feyerabend's body of work.

I am also an active *developer*. I created a JavaScript platform for conducting real-time online behavioral experiments directly in the browser called nodeGame (<http://www.nodegame.org>). I have also been project leader of the QScience platform for the QLectives project (<http://www.qlectives.eu>).

Current Position

- Postdoctoral fellow at Northeastern Network Science Institute and at Harvard Institute for Quantitative Social Science (IQSS).
1/1/2016 - current

Previous Professional Experience

- Postdoc researcher in the group of Computational Social Science at ETH Zürich
23/07/2015 - 31/12/2015

Education

- 20/11/2011 - 22/07/2015
PhD in Computational Social Science ETH Zürich. (advisor Prof. Dirk Helbing)
- *Dissertation Title*: "The Complex Systems of Science: Computer simulations, laboratory and online experiments."
- *Co-examiners*: Prof. Robert L. Goldstone (Indiana University), Prof. Andreas Flache (University of Groningen)
- 17/08/2009 - 20/11/2011
Research Assistant at the Chair of Sociology in particular Modelling and Simulation ETH Zürich

- 01/12/2005 - 04/07/2008
MA Economics and Corporate 1st Class (Final grade: 110/110 cum laude)
- 01/07/2002 - 29/11/2005
Internet Science Degree 1st Class (Final grade: 110/110 cum laude)
- 01/07/1998 - 01/07/2002
Scientific Liceo FM Campana (Final grade: 100/100)

Languages

Italian (mother tongue), English (fluent), Spanish—Castilian (fluent), German (intermediate), Romanian (intermediate), Swedish (basic)

Publications

- 2018** H.H. Nax, [S. Ballelli](#), R.O. Murphy, and D. Helbing
“Adding noise to the Institution: An Experimental Welfare Investigation of the Contribution-Based Grouping Mechanism” *Social Choice and Welfare* Volume 50, Issue 2, pp. 213-245 
- 2017** B. Anderson, T. Bernauer and [S. Ballelli](#)
“Effects of Fairness Principles on Willingness to Pay for Climate Change Mitigation” *Climatic Change* Volume 142, Issue 3-4, pp. 447-461 
[S. Ballelli](#)
“nodeGame: Real-Time, Synchronous, Online Experiments in the Browser” *Behavior Research Methods* Volume 49, Issue 5, pp. 1696–1715 
- 2016** [S. Ballelli](#), R.L. Goldstone, and D. Helbing
“Peer Review and Competition in the Art Exhibition Game” *Proceedings of the National Academy of Sciences (PNAS)* Volume 113, Number 30 8414-8419 
- 2015** [S. Ballelli](#), M. Mäs, D. Helbing
“On Disciplinary Fragmentation and Scientific Progress” *PLoS ONE* 10(3): e0118747. 
- 2012** D. Helbing, [S. Ballelli](#)
“Agent-Based Modeling” in *Social Self-Organization*. Series: Understanding Complex Systems. Helbing, Dirk (Ed.) Springer, 25–70. 
- 2011** D. Helbing, [S. Ballelli](#), S. Bishop and P. Lukowicz
“Understanding, Creating, and Managing Complex Techno-Socio-Economic Systems: Challenges and Perspectives” *The European Physical Journal - Special Topics*. Volume 195, Number 1, 165–186 
D. Helbing and [S. Ballelli](#)
“From Social Data Mining to Forecasting Socio-Economic Crises” *The European Physical Journal - Special Topics*. Volume 195, Number 1, 3–68. 
D. Helbing and [S. Ballelli](#)
“From Social Simulation to Integrative System Design” *The European Physical Journal - Special Topics*. Volume 195, Number 1, 69–100. 
D. Helbing and [S. Ballelli](#)
“How to Create an Innovation Accelerator” *The European Physical Journal - Special Topics*. Volume 195, Number 1, 101–136. 
- 2010** D. Helbing and [S. Ballelli](#)
“Fundamental and Real-World Challenges in Economics” *Science and Culture* 76(9-10), 399–417. 

Working Papers

S. Ballelli and C. Riedl

The Market Structure for Innovation and Creativity

S. Ballelli, B. Klein and C. Riedl

Optimal Experimental Design: A Bayesian Framework

S. Ballelli, C. Chabris

Tournaments for Collective Intelligence: a Survey of the Literature

S. Ballelli, B. Jäeggli and K. Axhausen

Efficiency Gains in Coordination in Information Poor Environments

S. Ballelli

Against Peer Review: A Critical Interpretation of Paul Feyerabend's Philosophy Applied to the Case of Scholarly Peer Review

Book Reviews

S. Ballelli

Models of Science Dynamics: Encounters Between Complexity Theory and Information Sciences (Understanding Complex Systems) Scharnhorst, Andrea, Boerner, Katy and Besselaar, Peter van den (eds.) Springer-Verlag: Berlin, 2012. 🌐

Conferences

2018 *CompleNet18* Boston, MA, 5th–8st Mar

“Toward the Optimal Design of Social Network Experiments”

CompleNet18 Boston, MA, 5th–8st Mar

“The Market Structure of Innovation”

2017 *Code @ MIT 2017*, Cambridge, MA, 27th–28st Oct

“Mood, High Stakes and Dropouts in an Online Innovation Tournament”

Code @ MIT 2017, Cambridge, MA, 27th–28st Oct

“Optimal Design for Online Social Experimentation”

Code @ MIT 2017, Cambridge, MA, 27th–28st Oct

“nodeGame 4.0: Online Real-Time Synchronous Experiments (poster)”

North American Economic Science Association Conference ESA17, Richmond, VA, 19th–21st Oct

“The Market Structure for Innovation”

North American Economic Science Association Conference ESA17, Richmond, VA, 19th–21st Oct

“Adding Noise to the Institution: An Experimental Welfare Investigation of the Contribution-Based Grouping Mechanism”

North American Economic Science Association Conference ESA17, Richmond, VA, 19th–21st Oct

“Efficiency Gains in Coordination in Information Poor Environments”

2016 *Node.js Interactive North American*, Austin, TX, 29th Nov–2nd Dec

“Science Meets Industry: Online Behavioral Experiments with nodeGame”

International Conference on Social Informatics SocInfo-2016, Bellevue, WA, 15th–17th Nov

“The Market Structures for Innovation” (Best Lightening Talk Award)

North American Economic Science Association Conference ESA16, Tucson, AZ, Nov 10th–12th

“The Market Structures for Creativity”

Code @ MIT, Cambridge, MA, Oct 14th–15th

“The Market Structures for Innovation”

Workshop on the Economic Science with Heterogeneous Interacting Agents (WEHIA) 2016, Castellón de la Plana, Spain, 22nd–24th Jun

“Efficiency Gains in Coordination in Information Poor Environments”

2015 *International Conference on Computational Social Science IC2S2* Helsinki, Jun 8th–11th

“Competition Promotes Diversity and Innovation, but Undermines Fair Peer Review”

Social Norms and Institutions SNI2015 Monte Verità Ascona, May 10th - 15th, 2015

“Dissolving the Efficiency-Equality Tradeoff in Public-Good Games”

General Online Research GOR15, Cologne, Mar 18th–20th

“nodeGame: A Tool for Real-Time On-Line Behavioral Experiments”

2014 *European Conference on Complex Systems ECCS-2014*, Lucca, Sep 22st–26th

“On Fragmentation and Scientific Progress”

Social Simulation Conference SSC-2014, Barcelona, Sep 1st–5th

“On Fragmentation and Scientific Progress”

2013 *15th International Conference on Social Dilemmas*, Zurich, Jul 10th–13th

“The Art Exhibition Game”

Deutsche Physikalische Gesellschaft Conference DPG-2013, Regensburg, Mar 11th–15th

“A Model of Adaptive Convergence in Science”

2012 *New Developments in Signaling and Game Theory*, Ascona, Oct 14th–19th

“nodeGame: Social Experiments in the Browser (poster)”

SocInfo 2012, Geneve, Dec 5th–7th

“Online Social Experiments with Nodegame (tutorial presentation)”

Awards

Special mention in the "Exeter Prize for Research in Experimental Economics, Decision Theory and Behavioral Economics 2017," paper "Peer Review and Competition in the Art Exhibition Game"

Best Lightening Talk Award "The Market Structure For Innovation" SocInfo 2016

Workshops

Financial Inclusion, Innovation for Poverty Action, Yale University, New Haven, CT, 14th May 2016

Innovations in Online Experiments, University of Oxford, Nuffield Center for Experimental Social Sciences, Oxford (UK), 13th Mar 2015

Multi-Agent Simulation (MAS) and Global Issues, University of Tokyo, Komaba Campus I, Tokyo (JP), 19th Feb 2015

Lorentz Workshop “Simulating the Social Processes of Science”, Leiden (NL), 7th–11th Apr 2014

European Projects

PEERE: New Frontiers of Peer Review 2014-2015.

FuturICT: Participatory Computing for Our Complex World, 2010-2013.

QLectives: Quality Colletives, 2009-2013.

VISIONEER: Envisioning a Socio-Economic Knowledge Collider, 2009-2010.

Reviewer for

Journals: Games, PLoS ONE, JASSS, Frontiers in Psychology – section Theoretical and Philosophical Psychology, Journal of Computational Science, International Studies in the Philosophy of Science,

Evolutionary and Institutional Economics Review, EPJ Data Science, Journal of Economic Interaction and Coordination.

Conferences: ICACI 2012, ESSA 2013, World Congress Social Simulation 2014, Social Simulation Conference (SSC) 2014, SSC 2015, SSC 2016, SSC 2017, CompleNet 2018

Invited Presentations

Harvard Political Psychology Graduate Panel, Cambridge (MA) 2017-10-06

Peer Review, Competition and Market Structure

Percepts and Concepts Laboratory Colloquium (IU), Bloomington (IN) 2012-10-05

Imitation and Innovation in Networked Groups, and a New Experimental Framework for Collective Behavior Experiments

International MSc and PhD Programs in Complexity Sciences ISCTE Seminar, Lisbon (PT) 2010-10-30
Scholarly Peer-Review Process (Pros And Cons) and Possible Alternatives for the Selection of Quality in Science

QLectives Winter Workshop on Web Technologies, Fribourg (CH) 2010-10-19

HTML5 Nice to Meet You

Teaching

Block Course: Programming Synchronic Online Experiments using NodeGame, 16-17 Nov 2015 @ CESS Nuffield College Oxford:

Block Course: Modeling and Simulating Social Systems with MATLAB and Other Open Source Tools, 19 - 23 Oct 2015 @ ETH Singapore Center SEC

Modeling and Simulating Social Systems with MATLAB, 2015 Fall Semester

Modeling and Simulating Social Systems with MATLAB, 2012 Fall Semester

Modeling and Simulating Social Systems with MATLAB, 2012 Spring Semester

Modeling and Simulating Social Systems with MATLAB, 2011 Fall Semester

Modeling and Simulating Social Systems with MATLAB, 2011 Spring Semester

Modeling and Simulating Social Systems with MATLAB, 2010 Fall Semester

Software Development

nodeGame - Real-Time Social Experiments in the Browser: <http://www.nodegame.org>

NDDB.JS - Javascript N-Dimensional Database: <http://nodegame.github.io/NDDB>

JSUS - Javascript Utils (JSUS Helps!): <http://nodegame.github.io/JSUS>

SocialBib - Collection of BibTex Files: <https://github.com/shakty/socialbib>

QScience - <http://www.github.com/QScience>

Patterns - <http://drupal.org/project/patterns>

msssm - Modeling and Simulating Social Systems with MATLAB: <http://www.github.com/msssm>

Other Programming Competences

General programming languages: JavaScript, Node.JS, JAVA, PHP, Python.

Statistical programming languages: R, MATLAB.

Scripting: BASH, AWK, SED.

Markup and Style: HTML5, CSS3, SASS.

Computer-cluster systems: LSF, SLURM.

Database: SQL/MySQL, MongoDB.

Cloud: Heroku, Digital Ocean, Openshift, Google Cloud.

Art Projects

Warsaw Center for Contemporary Art. Ten Percent White. “Faces of Change.” (Dec 18, 2012 - Feb 10, 2013)

Public Writings

Here’s How Competition Makes Peer Review More Unfair, *The Conversation*, and Science Is Suffering Because of Peer Review’s Big Problems *New Republic*. (Aug. 8/9 2016)

Media Coverage

Linux.com Blog. Online Behavioral Experiments Happening With nodeGame and Node.js. (Nov 14, 2016)

Times Higher Education. Peer Review System ‘leads to Good Research Going Unpublished’ (Jul 26, 2016)

Ars Technica. Can we trust peer review? New study highlights some problems. (Jul 20, 2016)

Il Blog di Caccia al Fotone. Quando l’Economia Incontra la Fisica. (Jan 7, 2011)

Tages Anzeiger. Geheimhaltung ist fuer das Wohl einer Gesellschaft entscheidend. (Dec 12, 2010)

News.ch. Wikileaks wirft ethische Grundfragen auf. (Dec 6, 2010)

MIT Technology Review. The 70 Online Databases that Define Our Planet (Dec 3, 2010)