

**Dr. Matthew Lutz**  
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## EDUCATION

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- 2010 - 2016* **Princeton University, Ph.D.** | Ecology and Evolutionary Biology  
Dissertation: *Dynamics of self-assembled structures in Eciton army ants*  
Advisor: Iain Couzin
- 2008 - 2009* **Columbia University, M.S.** | Advanced Architectural Design
- 2001 - 2004* **Southern California Institute of Architecture, B.Arch.** | Architecture
- 1998 - 2001* **Carnegie-Mellon University** | Architecture major, transferred

## RESEARCH / TEACHING EXPERIENCE

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- 2019 - 2020* **Max Planck Institute of Animal Behavior** | Dept. of Collective Behavior  
- Postdoctoral Researcher, Couzin Lab
- 2016 - 2017* **Max Planck Institute for Ornithology** | Dept. of Collective Behavior  
- Postdoctoral Researcher, Jordan Lab
- 2010 - 2016* **Princeton University** | Dept. of Ecology and Evolutionary Biology  
- Teaching Assistant – courses:
  - Ecology: Species Interactions, Biodiversity and Society
  - Integrative Dynamics of Animal Behavior
  - Animal Behavior
- 2009 - 2013* **Drexel University** | Westphal College of Media Arts and Design,  
- Adjunct Professor – courses:
  - Sustainable Built Environment I / II
  - Visualization I, III, IV: Computer Imaging / 3D Modeling
  - Advanced Representation IV
- 2008 - 2009* **Columbia University** | GSAPP  
- Master's research in algorithmic design, Advisor: Roland Snooks

## NON-ACADEMIC EXPERIENCE

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- 2017 - 2019 **Freelance / self-employed** | Berlin, Germany  
- Scientific Consultant
- 2017 - 2018 **Art & Science Node** | Berlin, Germany  
- Scientific Curator
- 2016 - 2017 **Studio Tomás Saraceno** | Berlin, Germany  
- Scientist-in-Residence
- 2004 - 2008 **AkarStudios** | Santa Monica, USA  
- Director of Design / Project Architect

## PUBLICATIONS

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- In prep* **Lutz MJ**, Reid CR, Powell S, Garnier S, & Couzin ID. Individual error correction drives responsive self-assembly of army ant scaffolding structures.
- In prep* **Lutz MJ**, Powell S, Couzin ID. An agent-based model to simulate the formation and dynamics of self-assembled structures in army ants.

### *Refereed journals*

- 2018 Kao AB, Berdahl A, **Lutz MJ**, Ioannou CC, Hartnett AT, Giam X, Couzin ID. Counteracting estimation bias and social influence to improve the wisdom of crowds. *Interface: Journal of the Royal Society*, 15(141): 20180130.
- 2016 **Lutz MJ**. Balancing general principles with fine-scale interactions in understanding the emergence of movement-driven spatial patterns: Comment on "Phase separation driven by density-dependent movement: A novel mechanism for ecological patterns" by Quan-Xing Liu et al. *Physics of Life Reviews*, 19, 125-127.
- 2015 Reid CR,\* **Lutz MJ**,\* Kao A, Powell S, Couzin ID, & Garnier S. Army ants dynamically adjust living bridges in response to a cost-benefit tradeoff. *Proceedings of the National Academy of Sciences*. 112(49), 15113-15118.
- 2013 Garnier S, Murphy T, **Lutz MJ**, Hurme E, Leblanc S, Couzin ID. Stability and responsiveness in a self-organized living architecture. *PLoS Computational Biology*. 9(3).

Tunstrøm K, Katz Y, Ioannou CC, Huepe C, **Lutz MJ**, Couzin ID. Collective states, multistability and transitional behavior in schooling fish. *PLoS Computational Biology*. 9(2).

#### *Conference proceedings*

2013 **Lutz MJ**, Koltick N. A field guide to generating architectural species. 101st ACSA Annual Meeting Proceedings, *New Constellations, New Ecologies*.

#### *Other publications*

2017 **Lutz MJ**. A Natural History of the Universe. *Exhibition catalog for Tomas Saraceno: How to Entangle the Universe in a Spider Web* at MAMBA, Argentina.

2013 **Lutz MJ**. Designing behavioral ecology. *Fresh Punches: Experimental architecture exhibition catalog*. Hume N, Hume A, eds.

#### *Exhibitions*

2019 *Those Who*. Pohflepp S, Nigretti A, **Lutz MJ**. NeurIPS 2019 Workshop on Machine Learning for Creativity and Design, AI Art Gallery.

*Strange Flatmates*. Rehm, MC, Ishida Y, **Lutz MJ**. Exhibition of finalists, Installation competition "Huts and Habitats", Tallinn Architecture Biennale.

#### INVITED TALKS AND PRESENTATIONS

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2019 **Association for the Study of Animal Behaviour (ASAB) 2019 Conference** (poster presentation) | Konstanz, Germany.

2018 **Conference on Collective Behavior**, Abdus Salam International Center for Theoretical Physics | Trieste, Italy.

**Distributed, Collective Computation in Biological and Artificial Systems**, Janelia Research Campus | Virginia, USA.

2017 **Architecture As a Presumed Future** (talk and panel discussion with Tomas Saraceno), ZKM Center for Art and Media | Karlsruhe, Germany.

**Invited seminar**, BBN / Raytheon Technologies | Cambridge, USA.

- 2015*      **Symposium on Collective Behavior**, Max Planck Institute for Ornithology | Konstanz, Germany.
- 2014*      **Invited seminar**, Smithsonian Tropical Research Institute | Barro Colorado Island, Panama.
- Animal Behavior Society, 51<sup>st</sup> Annual Conference** | Princeton, USA.
- 2013*      **101st Association of Collegiate Schools of Architecture (ACSA) Meeting** | San Francisco, USA.
- Social Insects in the Northeast Region, 2<sup>nd</sup> Symposium** | Rockefeller University, USA.
- 2010*      **INPUT-OUTPUT: Adaptive Materials and Mediated Environments** | Temple University, USA.

#### **ACADEMIC SERVICE**

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**Journal reviewer:** Philosophical Transactions of the Royal Society B; Behavioral Ecology and Sociobiology; Frontiers in Ecology and Evolution; Frontiers in Applied Mathematics and Statistics; Scientific Reports.

**Guest design critic:** AA Visiting School, Berlin; Columbia University; University of Pennsylvania; Rensselaer Polytechnic Institute; Southern California Institute of Architecture; Temple University; Drexel University.

#### **TECHNICAL SKILLS**

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**Programming:** R; Python; Matlab; NetLogo; Processing.

**Software:** Autodesk Maya, 3DS Max; Unity; Rhino; ImageJ; Adobe CS; Microsoft Office..