

Causality in the language sciences

April 13 - 15, 2015

Max Planck Institute for Mathematics in the Sciences, Leipzig

Although the tenet of "correlation does not imply causation" is still an important guiding principle in language research, a number of techniques developed in the last few decades opened new scenarios where testing causal relations becomes possible. Recent advances in information theory, time series analysis, phylogenetics, stochastic processes, dynamical systems, graphical models and Bayesian inference (among many others) set the stage for a new and exciting chapter in the field.

In parallel, in the last few decades an unprecedented amount of data became available on a large number of language-related phenomena. We have massive matrices of voxel activation in the neural circuits involved in speech production and comprehension, several years of annotated conversations between young children and their caregivers, hundreds of hours of phonetic and anatomical measurements and multiple environmental, genetic, and demographic variables related to populations of speakers for a large number of the world's languages.

The aim of this workshop is to address these two issues: how do we properly test causal relations in (eventually noisy, sparse or incomplete) data, and how can we infer or test the mechanisms underlying them?

Following a half-day school on cutting-edge methods for causal analysis, world class scientists will present their research on topics ranging from language history, writing systems, speech processing, typology, lexical semantics, and others.

We invite contributions from researchers facing specific problems in determining causality in language systems and also from researchers offering perspectives from the methodological and theoretical point of view of causal inference.

Child care is available on request for the duration of the conference.

We strongly encourage women and minorities to apply.

The workshop is co-organized by the following Max Planck Institutes (MPI):

- [MPI for Mathematics in the Sciences, Leipzig](#)
- [MPI for Human History, Jena](#)
- [MPI for Evolutionary Anthropology, Leipzig](#)
- [MPI for Psycholinguistics, Nijmegen](#)


April 13 – 15, 2015



SPEAKERS

Balthasar Bickel
University of Zurich, Switzerland

Claire Bowers
Harvard, USA

Morten H. Christiansen
Cornell University, USA

Dan Dediu
Max Planck Institute for Psycholinguistics, Netherlands

Michael Dunn
Uppsala University, Sweden

T. Florian Jaeger
University of Rochester, USA

Gerhard Jaeger
Eberhard Karls University Tübingen, Germany

Anne Kandler
City University London, United Kingdom

Terry Regier
University of California, Berkeley, USA

Richard Sproat
Google, Inc., USA

ABSTRACT

Although the term of «correlation does not imply causation» is still an important guiding principle in language research, a number of techniques developed in the last few decades opened new scenarios where testing causal relations becomes possible. Recent advances in information theory, time series analysis, phylogenetics, stochastic processes, dynamical systems, graphical models and Bayesian inference (among many others) set the stage for a new and exciting chapter in the field.

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ORGANIZING COMMITTEE

Damián Blasi MPI for Mathematics in the Sciences & MPI for Evolutionary Anthropology, Leipzig

Jürgen Jost MPI for Mathematics in the Sciences, Leipzig

Peter Stadler Leipzig University, Interdisciplinary Center for Bioinformatics, Leipzig

Russell Gray MPI for Human History, Bonn

Bernard Comrie MPI for Evolutionary Anthropology, Leipzig

Stephan C. Levinson MPI for Psycholinguistics, Nijmegen

Nickel Ay MPI for Mathematics in the Sciences, Leipzig

Sean Roberts MPI for Psycholinguistics, Nijmegen

Lepoldo Lande MPI for Evolutionary Anthropology, Leipzig

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Simon Greenhill Australian National University, Canberra

Martin Haspelmath MPI for Evolutionary Anthropology, Leipzig

Sten Portinari University of Bonn, Bonn

Mala Polinsky Harvard University, Cambridge

Sarah Washman MPI for Evolutionary Anthropology, Leipzig

CO-ORGANIZED BY



LOCATION

Max Planck Institute for Evolutionary Anthropology
Seestraße 15a
04103 Leipzig

ADMINISTRATIVE CONTACT

Anja Vandenberg: avandeb@mis.mpg.de
MPI for Mathematics in the Sciences

MORE INFORMATION, REGISTRATION AND CALL FOR CONTRIBUTIONS

www.mis.mpg.de/coca



Confirmed speakers

- **Tanmoy Bhattacharya** (*Santa Fe Institute, USA*)
- **Balthasar Bickel** (*University of Zurich, Switzerland*)
- **Morten H. Christiansen** (*Cornell University, USA*)
- **Dan Dediu** (*Max Planck Institute for Psycholinguistics, Netherlands*)
- **Michael Dunn** (*Uppsala University, Sweden*)
- **T. Florian Jaeger** (*University of Rochester, USA*)
- **Gerhard Jaeger** (*Eberhard Karls University Tübingen, Germany*)
- **Anne Kandler** (*City University London, United Kingdom*)
- **Terry Regier** (*University of California, Berkeley, USA*)
- **Richard Sproat** (*Google, Inc., USA*)

Program

All lectures will be held in the Lecture hall (2nd floor),
Max Planck Institute for Evolutionary Anthropology (Leipzig, Deutscher Platz 6).

Monday, April 13, 2015

08:45 - 09:00 Welcome address

09:00 - 11:00 *Mini-school*

Nihat Ay (*Max Planck Institute for Mathematics in the Sciences, Germany*)

Concepts and formal tools for causality studies

[abstract](#)

11:00 - 11:30 *Coffee & tea in the entrance hall of the institute*

11:30 - 12:30 **Dan Dediu** (*Max Planck Institute for Psycholinguistics, Netherlands*)

Across levels and timescales: causally linking genes, language processing and cultural evolution

[abstract](#)

12:30 - 14:30 *Lunch break at the institute's canteen in the entrance hall*

14:30 - 15:30 **Anne Kandler** (*City University London, United Kingdom*)

Inferring cultural transmission processes from frequency data

[abstract](#)

15:30 - 16:30 **Gerhard Jaeger** (*Eberhard Karls University Tübingen, Germany*) (joint work with *Katarina Harvati and Hugo Reyes-Centeno*)

Words and bones. Combining linguistic and phenotypic data to probe deep history

[abstract](#)

16:30 - 17:00 *Coffee & tea in the entrance hall of the institute*

17:00 - 17:30 **Fermin Moscoso del Prado** (*University of California, Santa Barbara, USA*)

Granger causality, information theory, and language change: assessing the causal relations for change across the tiers of Icelandic grammar

[PDF-abstract](#)

17:30 - 18:00 **Christine Cuskley** (*Institute for Scientific Interchange, Italy*)

Frequency and stability in linguistic rule dynamics

[PDF-abstract](#)

Tuesday, April 14, 2015

09:00 - 10:00 **Morten H. Christiansen** (*Cornell University, USA*)

The now-or-never bottleneck: a fundamental constraint on language

[abstract](#)

10:00 - 10:30 *Coffee & tea in the entrance hall of the institute*

10:30 - 11:30 **T. Florian Jaeger** (*University of Rochester, USA*)

Pressures for processing and communicative efficiency bias language

development: evidence from big(ish) data and direct causal manipulation
[abstract](#)

11:30 - 13:30 *Lunch break at the institute's canteen in the entrance hall*

13:30 - 14:00 **Jasmeen Kanwal** (*University of California, San Diego, USA*)
The Principle of Least Effort and diachronic lexical change
[PDF-abstract](#)

14:00 - 14:30 **Eduardo Altmann** (*Max Planck Institute for the Physics of Complex Systems, Germany*)
Quantifying the strength of factors leading to lexical change
[abstract](#)

14:30 - 15:30 **Tanmoy Bhattacharya** (*Santa Fe Institute, USA*)
Language change and layered systems
[abstract](#)

15:30 - 16:00 *Coffee & tea in the entrance hall of the institute*

16:00 - 17:00 **Terry Regier** (*University of California, Berkeley, USA*)
Word meanings across languages support efficient communication
[abstract](#)

17:00 - 18:30 **Poster session in the entrance hall of the institute**
[List of the posters with abstracts](#)

19:30 **Dinner (à la carte and on individual payment) in [Gasthaus Barthels Hof](#)**

Wednesday, April 15, 2015

09:00 - 10:00 **Richard Sproat** (*Google, Inc., USA*)
The statistics of non-linguistic symbol systems.
[abstract](#)

10:00 - 10:30 *Coffee & tea in the entrance hall of the institute*

10:30 - 11:00 **Aleksandrs Berdicevskis** (*UiT The Arctic University of Norway, Norway*)
Social structure and linguistic complexity: experimental modelling
[PDF-abstract](#)

11:00 - 11:30 **Christian Bentz** (*University of Cambridge, England*)
Causality in historical language change: The co-evolution of population structure and lexical diversity
[PDF-abstract](#)

11:30 - 13:30 *Lunch break at the institute's canteen in the entrance hall*

13:30 - 14:00 **Annemarie Verkerk** (*University of Reading, United Kingdom*)
Correlational causality with phylogeny
[PDF-abstract](#)

14:00 - 14:30 **Harald Hammarström** (*Max Planck Institute for Psycholinguistics, Netherlands*)
Simple correlated evolution of typological features
[PDF-abstract](#)

- 14:30 - 15:00 **Jeremy Collins** (*Radboud University, Nijmegen, Netherlands*)
Controlling for language contact when inferring causality in linguistics
[PDF-abstract](#)
- 15:00 - 15:30 **Christophe Coupé** (*Laboratoire Dynamique du Langage, France*)
Testing the acoustic adaptation hypothesis with GIS and spatial regression models
[PDF-abstract](#)
- 15:30 - 16:00 *Coffee & tea in the entrance hall of the institute*
- 16:00 - 17:00 **Michael Dunn** (*Uppsala University, Sweden*)
Overestimating correlation between typological features
[abstract](#)
- 17:00 - 18:00 **Balthasar Bickel** (*University of Zurich, Switzerland*)
Moving beyond Pāṇini: causal theories in linguistics
[abstract](#)
- 18:00 - 18:30 Closing ceremony

Confirmed participants

1. **Eduardo Altmann** (*Max Planck Institute for the Physics of Complex Systems, Germany*)
2. **Nihat Ay** (*Max Planck Institute for Mathematics in the Sciences, Germany*)
3. **Sebastian Bank** (*Max Planck Institute for Evolutionary Anthropology, Germany*)
4. **Agata Barcik** (*University of Leipzig, Germany, Germany*)
5. **Caroline Beese** (*Max Planck Institute for Human Cognitive and Brain Sciences, Germany*)
6. **Philipp Benner** (*Max Planck Institute for Mathematics in the Sciences, Germany*)
7. **Christian Bentz** (*University of Cambridge, England*)
8. **Aleksandrs Berdicevskis** (*UiT The Arctic University of Norway, Norway*)
9. **Tanmoy Bhattacharya** (*Santa Fe Institute, USA*)
10. **Balthasar Bickel** (*University of Zurich, Switzerland*)
11. **Damián Blasi** (*Max Planck Institute for Mathematics in the Sciences, Germany*)
12. **Gonzalo Castillo** (*Universitat de Barcelona, Spain*)
13. **André Castro** (*Max Planck Institute for Mathematics in the Sciences, Portugal*)
14. **Daniel Chen** (*ETH Zurich, Switzerland*)
15. **Rong Chen** (*Max Planck for Evolutionary Anthropology, Germany*)
16. **Jean-Pierre Chevrot** (*Université Stendhal, France*)
17. **Morten H. Christiansen** (*Cornell University, USA*)
18. **Jeremy Collins** (*Radboud University, Nijmegen, Netherlands*)
19. **Bernard Comrie** (*Max Planck Institute for Evolutionary Anthropology, Germany*)
20. **Christophe Coupé** (*Laboratoire Dynamique du Langage, France*)

21. **Christine Cuskley** (*Institute for Scientific Interchange, Italy*)
22. **Aymeric Daval-Markussen** (*Aarhus University, Denmark*)
23. **Dan Dediu** (*Max Planck Institute for Psycholinguistics, Netherlands*)
24. **Johannes Dellert** (*Universität Tübingen, Germany*)
25. **Marisa Delz** (*University Tübingen, Deutschland*)
26. **Michael Dunn** (*Uppsala University, Sweden*)
27. **Aaron Ecaj** (*University of Pennsylvania/University of York, USA*)
28. **Ramon Ferrer-i-Cancho** (*Universtat Politècnica de Catalunya, Spain*)
29. **Martin Gerlach** (*Max Planck Institute for the Physics of Complex Systems, Germany*)
30. **Fakhteh Ghanbarnejad** (*Max Planck Institute for the Physics of Complex Systems, Germany*)
31. **Dariya Goranskaya** (*Max Planck Institute for Human Cognitive and Brain Sciences, Germany*)
32. **Tomás Goucha** (*Max Planck Institute for Human Cognitive and Brain Sciences, Germany*)
33. **Sven Grawunder** (*Max Planck Institute for Evolutionary Anthropology, Germany*)
34. **Russell Gray** (*Max Planck Institute for History and the Sciences, Germany*)
35. **Iulia Grosman** (*Université catholique de Louvain, Belgium*)
36. **Matías Guzmán Naranjo** (*Universität Leipzig, Germany*)
37. **Harald Hammarström** (*Max Planck Institute for Psycholinguistics, Netherlands*)
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40. **Christian Höner zu Siederdisen** (*Leipzig University, Germany*)
41. **T. Florian Jaeger** (*University of Rochester, USA*)
42. **Gerhard Jaeger** (*Eberhard Karls University Tübingen, Germany*)
43. **Jörg D. Jescheniak** (*Universität Leipzig, Germany*)
44. **Jürgen Jost** (*Max Planck Institute for Mathematics in the Sciences, Germany*)
45. **Jaroslav Jozefowski** (*The University of Sheffield, United Kingdom*)
46. **Anne Kandler** (*City University London, United Kingdom*)
47. **Jasmeen Kanwal** (*University of California, San Diego, USA*)
48. **Seung-Goo Kim** (*Max Planck Institute for Human Brains and Cognitive Sciences, Germany*)
49. **Mark Kirstein** (*TU Dresden, Germany*)
50. **Jana Klaus** (*Universität Leipzig, Germany*)
51. **Haidee Kruger** (*Macquarie University, Australia*)
52. **Leonardo Lancia** (*Max Planck Institute for Evolutionary Anthropology, Germany*)
53. **Evelina Leivada** (*Universitat de Barcelona, Spain*)
54. **Stephen C. Levinson** (*MPI for Psycholinguistics, Netherlands*)
55. **Natalia Levshina** (*F.R.S.-FNRS, Université catholique de Louvain, Belgium*)
56. **Fermin Moscoso del Prado** (*University of California, Santa Barbara, USA*)
57. **Andreas Mädebach** (*Universität Leipzig, Germany*)
58. **Lydia Müller** (*University of Leipzig, Germany*)
59. **Marek Nagy** (*Palacký University, Czech Republic*)

60. **Lyubov Nechaj** (*Donetsk physical-technical Institute of the NAS of Ukraine named after A.A. Galkin, Ukraine*)
61. **Jakob Neels** (*University of Leipzig, Germany*)
62. **Bruno Pace** (*Max Planck Institute for Mathematics in the Sciences/Leipzig University, Germany*)
63. **Michał B. Paradowski** (*University of Warsaw, Poland*)
64. **Paolo Perrone** (*Max Planck Institute for Mathematics in the Sciences, Germany*)
65. **Andrea Ravignani** (*Vrije Universiteit Brussel, Belgium*)
66. **Terry Regier** (*University of California, Berkeley, USA*)
67. **Nancy Retzlaff** (*University of Leipzig, Germany*)
68. **Sean Roberts** (*Max Planck Institute for Psycholinguistics, Netherlands*)
69. **Benjamin Rosenbaum** (*Max Planck Institute for Evolutionary Anthropology, Germany*)
70. **Carmen Saldana** (*University of Edinburgh, United Kingdom*)
71. **Estefania Santacreu Vasut** (*ESSEC Business School, France*)
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74. **Julek Sienkiewicz** (*Max Planck Institute for the Physics of Complex Systems, Germany*)
75. **Richard Sproat** (*Google, Inc., USA*)
76. **Peter Stadler** (*Leipzig University, Germany*)
77. **Kevin Stadler** (*The University of Edinburgh, United Kingdom*)
78. **Omri Tal** (*Max Planck Institute for Mathematics in the Sciences, Germany*)
79. **Peeter Tunits** (*Tallinn University, Estonia*)
80. **Tat Dat Tran** (*Max Planck Institute for Mathematics in the Sciences, Germany*)
81. **Edlira Troplini (Abdurahmani)** (*"Aleksander Moisiu" University, Faculty of Education, Albania*)
82. **Albertus van Rooy** (*North-West University, South Africa*)
83. **Annemarie Verkerk** (*University of Reading, United Kingdom*)
84. **Johannes Wahle** (*Universität Tübingen, Germany*)
85. **Shengwei Wang** (*Universität München, Germany*)
86. **Alena Witzlack-Makarevich** (*University of Kiel, Germany*)
87. **Yaqiong Xiao** (*Max Planck Institute for Cognitive and Brain Sciences, Germany*)