

Paula L.W. Sabloff, Stefan Thurner, Rudolf Hanel, and Hyejin Youn, “Demographics and Democracy: A Network Analysis of Mongolians’ Political Cognition,” *Journal of Anthropological Research* **73**, no. 4: 617-646.

Xue-Mei Cui, Chang No Yoon, Hyejin Youn, Sang Hoon Lee, Jean S. Jung, Seung Kee Han, “Dynamic burstiness of word-occurrence and network modularity in textbook systems”, *Physica A: Statistical Mechanics and its Applications* **487**, 103-110.

Hyejin Youn, Sutton, Eric Smith, Bill Croft, Jon Wilkins, Tammy Bhattacharya, Ian Maddieson, Cris Moore “On universal structure of human lexical semantics”, *Proc. Natl. Acad. Sci USA* **113** (7) 1766–1771.

Daniel Kim, Dan Cerigo, Hawoong Jeong, Hyejin Youn, “Technological novelty profile and invention’s future impact”, *EPJ Data Science* 2016 **5**:8.

Hyejin Youn, José Lobo, Deborah Strumsky, Horacio Samaniego, Geoffrey B. West, Luís M. A. Bettencourt “Scaling and universality in urban economic diversification”, *J. R. Soc. Interface* **13**:20150937.

Marcus Hamilton, José Lobo, Eric Rupley, Hyejin Youn, and Geoffrey B. West “The ecological and evolutionary energetics of hunter-gatherer residential mobility”, *Evolutionary Anthropology* **25** 124–132.

Hyejin Youn, José Lobo, Luís M.A. Bettencourt, Debora Strumsky “Invention as a combinatorial process: Evidence from U.S. Patents”, *J. R. Soc. Interface* **12** 20150272.

Elsa Arcaute, Erez Hatna, Peter Ferguson, Hyejin Youn, Anders Johansson, and Michael Batty, “Constructing cities, deconstructing scaling laws”, *J. R. Soc. Interface* **12** 20140745.

Vsevolod Salnikov, Daniel Schien, Hyejin Youn, Renaud Lambiotte, and Michal Gastner “The geography and carbon footprint of mobile phone use in Cote d’Ivoire”, *EPJ Data Science* **3** 3.

Luís Bettencourt, Horacio Samaniego, Hyejin Youn “Professional diversity and the productivity of cities”, *Scientific Reports* **4** 5393.

Andres Gomez-Lievano, Hyejin Youn, Luís M. A. Bettencourt “The Statistics of Urban Scaling and Their Connection to Zipf’s Law” *PLoS ONE* **7**(7) e40393.

Hyejin Youn, Michael T. Gastner, Hawoong Jeong, “Inefficiency in Networks with Multiple Sources and Sinks”, *Complex* ‘2009 (USST, Shanghai, China, Feb. 23-25).

Hyejin Youn, Michael T. Gastner, Hawoong Jeong, “The Price of Anarchy in Transportation Networks: Efficiency and Optimality Control”, *Phys. Rev. Lett.* **101** 128701.

Hyejin Youn, Fabian Roth, Matthew Silver, Marie-Helene Cloutier, Peter Ittzes, and Hawoong Jeong, “Price of Anarchy on Boston Road Network”, *J. Korean Phys. Soc.* **48** 217

Book

43 Visions for complexity *World Scientific* January, 2017

Edited by: Stefan Thurner (ISBN: 9789813206847)

In Review

Morgan R. Frank, Lijun Sun, Manuel Cebrian, HyeJin Youn, Iyad Rahwan, *Small cities face greater impact from automation, in review* .

Tanmoy Bhattacharya et al, *Studying language evolution in the age of Big Data, in review* .

Luís M. A. Bettencourt, Jose Lobo, Geoffrey B. West, Hyejin Youn “The Hypothesis of Urban Scaling: formalization, implications, and challenges”, arXiv: 1301.5919 [physics.soc-ph] *in review*

In Preparation

Hyunuk Kim, Marcus J. Hamilton, Woo-Sung Jung, Hyejin Youn, “The structure of mythologies and the humanexpansion out of Africa”

Hyejin Youn, “urban physics”, *EPJB* invited review paper

Hyejin Youn, Panjun Kim, Seungwoo Son, Hawoong Jeong, “Effective Population Density and Its Applications”, *in preparation*

Luís Bettencourt, Hyejin Youn, Anna Khasanova, Geoffrey B. West, “Citier: Bigger, Denser, Greener”, *in preparation*

Daniel Kim, Young-Ho Eom, and Hyejin Youn, “Quantifying the Stream of Technological Innovation” *in preparation*

Hyejin Youn, “Paradox of Taxation”, *in preparation*

TALKS

Keynote, and Colloquium

Urbanisation and Innovation,

Institutions, Industry Structure, Evolution at CCS 17, Cancun, Mexico

Sep 21, 2017

Collective creativity,

2017 KDD Workshop on Datadriven Discovery Halifax, Nova Scotia, Canada

Aug 14, 2017

Collective knowledge,

Takeda: complex systems theory retreat Santa Fe Institute, Santa Fe, NM

July 12, 2017

Urban physics: scaling in physics, biology, society and beyond

Indiana University Bloomington, Indiana, USA

Apr 17, 2017

Scaling in urban systems,

Land & Housing Institute, Korea

Jun 3, 2016

Combinational inventions as nature of innovation,

Merck KGaA, Darmstadt, Germany

Sep 23, 2015

The nature of invention,

The Future of Fund Management, London, UK

Mar 10, 2015

Invention as a combinatorial process of technological change

DISC (*Daegu Gyeongbuk International Social Network Conference*), Daegu, Korea Dec 11, 2014

Invited Talks

On universal structure of human lexical semantics <i>Conference on Complex Systems</i> , Cancun, Mexico	Sep 19, 2017
Lost and found in translations <i>Network Science Institute</i> , Northeastern University, Boston, MA	July 20, 2017
Diversification in urban economy <i>Updating the Production Function for the Algorithmic Economy</i> , Menlo Park, CA	Feb 28, 2017
Innovation and urbanisation <i>International Workshop: Frontiers of Physics</i> , Pohang, Korea	Dec 12, 2016
Scaling and universality in urban economic diversification <i>Cities as complex systems symposium (VW-Foundation)</i> , Hanover, Germany	July 13, 2016
Big Data in social physics <i>Grand open conference, Complexity Science HUB</i> , Vienna, Austria	May 23, 2016
Physics in urban systems: scaling, Zipf's law, fractality and beyond <i>City Analytics: Future Cities Catapult</i> , Urban Innovation Centre, London, UK	Sep 10, 2015
Understanding Innovation by Mapping Technology Space, <i>Complex Networks Network Seminar</i> , King's College, University of Cambridge, UK	Feb 17, 2015
Invention as a Combinatorial Process, <i>the 4th International Symposia: Green, Smart, Development & Vision</i> , Seoul National University, Korea	Dec 22, 2014
Recipes and Inventions as Combinatorial Process, <i>Computational Gastronomy–Food in the Age of Data</i> Kavli Royal Society International Centre, UK	Sep 29, 2014
Cities: Emergence of Order, Erice International Seminars on Planetary Emergencies, <i>47th sessions, Energy, Cities, and the Control of Complex Systems Workshop</i> , the Ettore Majorana Centre, Erice, Italy	May 12, 2014
Understanding technological change as dynamics in ecosystem, <i>seminar of Center for International Development</i> , Harvard University, USA	Apr 2014
Cities as Complex Systems: Universal Structure of Urban Economic Diversity, <i>Quantitative & Applied Spatial Economic Research Lab.</i> , UCL, London, UK	Mar 2014
Towards the Scientific Theory of Cities, Measuring Up Cities, <i>the Long Finance Symposium</i> , the Museum of London, UK	Jan 2014
Cities as Emergence of Order, London Mathematical Laboratory, UK	Dec 2013
Panel discussion in Women in Physics Session, <i>XXV IUPAP International Conference on Statistical Physics</i> , Seoul, Korea	Jul 2013
The Hidden Structure in Urban Economic Complexity, <i>International Workshop on Social Computing</i> , Seoul, Korea	Jul 2013
Cities: Emergence of Order, <i>seminar</i> at Los Alamos National Lab, US	Sep 2012

**MEDIA
COVERAGES**

Nature “Languages have common structure,” *Nature* **530**, 133, 2016
The Economist:
“The process of invention: Now and then,” April 25, 2015
“Queuing conundrums,” September 13, 2008
Nature Physics “Innovation Slowdown,” Mark Buchanan, **11**, 2, 2015
MIT Technology Review:
“In these small cities, AI advances could be costly,” Oct 23, 2017
“Data Mining 200 Years of Patent Office Records To Reveal The Nature of Invention,” June 16, 2014
Forbes “The hidden universal rule that helps govern the way businesses grow in a city,” Feb 10, 2016
Smart Planet “How will our cities grow?” July 27, 2011
NEXT CITY: Science of Cities “When it comes to making money, Big Data reveals cities have a pattern” Jan 29, 2016
National Geographic “Do languages ‘think’ alike?” Feb, 2016
QUARTZ “Scientists say the ways humans describe nature transcends culture and geography” Feb 2016
Scientific American “Detours by Design” January, 2009
Others: Gizmodo, Phys.org, News and Tribune, Ars technica, SpringerOpen, National Geography, Mathematical Institute at the University of Oxford, News in Santa Fe Institute, Highlights in PNAS.

**PROFESSIONAL
SERVICE**

Workshops (Organizer or co-organizer)
Frontiers of Physics: Push the Envelope of Statistical Physics
APCTP Headquarter, Pohang, Korea
organised with W. Jung, S. Son, J. Jo Dec 12-14, 2016
Building an integrated framework for innovation, organizations, and society
Caucus session at Academy of Management (AOM), Anaheim, CA, USA
organised with K. Kim Aug 8, 2016
Networks and technology evolution,
Satellite Workshop at NetSci16, Seoul, Korea
organised with J. McNerney, I. Rahwan, and C. Hidalgo May 30, 2016
Technological change,
the satellite meeting at the Conference of Complex System (CCS’15)
Arizona State University, USA
organised with J. Alstott, B. Yan, F. Lafond, G. Triulzi Sep 30, 2015
Theory and practice of innovation: Different perspectives under the same name
University of Oxford, UK
organised with L. Bloom (Oxford) and G. Zanella (Oxford) Feb 27, 2015
Program Committees
Social Informatics (SocInfo 2017)
Oxford, UK Sep 13-15, 2017
The 3rd International Conference on Computational Social Science (IC2S2 2017)
Cologne, Germany Jul 10-13, 2017
Conference on Complex Systems (CCS’17)
Cancun, Mexico Sep 19-23, 2017
International School and Conference on Network Science (NetSci-17)
Indianapolis, Indiana June 19-23, 2017
The 11th International AAI Conference on Web and Social Media (ICWSM-17)
Montreal, Canada May 15-18, 2017
The 10th International AAI Conference on Web and Social Media (ICWSM-16)
Cologne, Germany May 17-20, 2016
The 9th International AAI Conference on Web and Social Media (ICWSM-15)
University of Oxford, UK May 26-29, 2015
Institutional Committees
University of Oxford, Postdoc Fellow Search Committee 2015
University of Oxford, Research Fellow Search Committee 2014
University of Oxford, Research Fellow Search Committee 2013

EDITORIAL WORK	Review Editor, <i>Big Data</i> , special section of <i>Frontiers in ICT</i>	
REFEREE WORKS	<p>Funding Agencies: U.S. National Science Foundation (NSF)</p> <p>General: Science, PNAS, Scientific Reports, PLOS One, Journal of the Royal Society Interface</p> <p>Physics: Physical Review Letter, Physical Review E, Physical A, European Physical Journal B, European Physical Letter, JSTAT</p> <p>Network Science: Journal of Complex Networks</p> <p>Economics: GECON 2015</p> <p>Computer Science: ICWSM-15, ICWSM-16</p>	
TEACHING & ADVISING & FUNDING	<p>Advising</p> <p>Hyunuk Kim (Visiting Fellow of Santa Fe Institute), Postech 2016 – current</p> <p>Inho Hong (Visiting Fellow of Santa Fe Institute), Postech 2016 – current</p> <p>Minjin Lee (Graduate in Energy Science), SKKU 2016 – current</p> <p>Alex McCormick (Undergraduate in Physics), University of Oxford 2015 – 2016</p> <p>Daniel Burkhardt Cerigo (Undergraduate in Physics), University of Oxford 2015 – 2016</p> <p>Daniel Kim (Graduate Fellow of Santa Fe Institute), KAIST 2013 – 2016</p> <p>Kelvin Carlson (NSF-REU), Indiana University 2011</p> <p>Funding</p> <p>Ross Richardson (Postdoc), University of Oxford 2015 – 2016</p> <p>Daniel Kim (Visiting Postdoc Fellow), University of Oxford 2016</p> <p>Tutoring</p> <p>Network Analysis of UK Patent Data, University of Oxford 2016</p> <p>Physics and Urban Scaling, University of Oxford 2014</p> <p>Lecture</p> <p>Guest lecture for econometrics, School of Future Strategy, KAIST June 2016</p> <p>Guest lecture for scalable cooperation, MIT Mar 2016</p> <p>Lecture for high school students at Hertford College, University of Oxford Oct 2015</p> <p>Lecture for undergraduate students, the Department of Mathematics and Statistics the University of New Mexico July 2012</p> <p>Teaching Assistant</p> <p>Statistical Mechanics, KAIST (best teaching award in the department) 2005</p> <p>Thermodynamics, KAIST 2005</p> <p>General Physics II, KAIST 2004</p> <p>General Physics I, KAIST 2004</p>	
OTHER HONORS & AWARDS	<p>D4D (Data for Development) Challenge from Orange (Mobile phone data in Ivory Coast) 2012</p> <p>Congress Fellowship of XVI International Congress on Mathematical Physics 2009</p> <p>The Best prize of CYRAM Social Network Analysis competition 2008</p> <p>Springer Prize for the Best Presentation at APPC10 (The 10th Asia Pacific Physics Conference) 2007</p> <p>Distinguished Teaching Award, Dept. of Physics 2007</p> <p>The Best Student of the Year 2001, Dept. of Physics 2001</p>	