



Europass Curriculum Vitae

Personal information

Surname / First name(s) BARBER, Michael James
Address AIT Austrian Institute of Technology GmbH, Innovation Systems Department
Donau-City-Strasse 1, 1220 Vienna, Austria
Telephone +43 (0)50550-4504
Fax +43 (0)50550-4599
E-mail michael.barber@ait.ac.at
Nationality USA
Date of birth September 7, 1971
Gender Male

Work experience

Dates 2006–Present
Occupation or position held Scientist
Main activities and responsibilities Scientific research in complex systems related to RTD policy: structure and function of EU collaboration networks, communication and innovation in social systems, geographical properties of R&D collaborations.
Name and address of employer AIT Austrian Institute of Technology, Vienna, Austria

Dates 2001–2006
Occupation or position held Researcher
Main activities and responsibilities Scientific research in complex systems: signal transduction in calcium channels, models of synaptic plasticity, interactions of learning and evolution in neural networks and genetic algorithms, information representation in neural networks, communication and innovation in social systems, structure and function of EU collaboration networks.
Name and address of employer Centro de Ciências Matemáticas, Universidade da Madeira, Funchal, Portugal

Dates 1999–2001
Occupation or position held Postdoctoral Member of the *Graduiertenkolleg* “Acentric Crystals”
Main activities and responsibilities Researched neural network models: applications of artificial neural networks to modeling acentric crystal databases, information representation in neural networks.
Name and address of employer Institut für Theoretische Physik, Universität zu Köln, Köln, Germany

Dates 1995–1999
Occupation or position held Research Assistant in the group of J. W. Clark
Main activities and responsibilities Studied neural networks: models of synapse elimination, representations of probabilistic models in neural networks, stochastic resonance in neural networks, statistical modeling of nuclear systematics with artificial neural networks
Name and address of employer Department of Physics, Washington University, Saint Louis, MO, USA

Dates 1993–1996
Occupation or position held Teaching Assistant
Main activities and responsibilities Taught laboratory sections, graded course work, and occasionally lectured for introductory physics

Name and address of employer classes for undergraduate students.
 Department of Physics, Washington University, Saint Louis, MO, USA

Awards 2010 Martin Beckmann Award for best article published in 2009 in *Papers in Regional Science*

Education and training

Dates 1993–1999
 Title of qualification awarded Ph.D.
 Principal subjects/occupational skills covered Physics
 Name and type of organisation providing education and training Washington University, Saint Louis, MO, USA

Dates 1989–1993
 Title of qualification awarded Bachelor of Science, *Summa Cum Laude*
 Principal subjects/occupational skills covered Physics
 Name and type of organisation providing education and training Michigan Technological University, Houghton, MI, USA

Dates 1996
 Title of qualification awarded Complex Systems Summer School
 Name and type of organisation providing education and training Santa Fe Institute, Santa Fe, NM, USA

Personal skills and competences

Mother tongue(s) English

Other language(s) German, Portuguese

Self-assessment
European level ()*

German

Portuguese

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
C1	Proficient User	C1	Proficient User	C1	Proficient User	C1	Proficient User	B2	Independent User
A1	Basic User	A2	Basic User	A1	Basic User	A1	Basic User	A1	Basic User

Social skills and competences Adapting to multicultural environments, gained though living abroad
 Effective public speaking to communicate results, gained from numerous scientific presentations

Technical skills and competences Analyzing problems quantitatively, developing mathematical models, investigating systems using analytical methods
 Understanding and evaluating competing scientific theories and models
 Written communication of technical results, gained through publication in scientific journals

Computer skills and competences

Highly skilled at programming in numerous languages (including Python, Matlab, Shell, Scala, C), with special emphasis on numerical methods, simulation, and machine learning

Use of office software such as word processors, spreadsheets, presentation software

Use of relational databases to organize and process information

Experienced at working with major operating systems (Mac OS X, Linux, Windows)

Selected Publications

Publications in Peer-Reviewed Journals

2013

Barber, M. J. (2013)

Detecting hierarchical and overlapping network communities using locally optimal modularity changes. *European Physical Journal B*, 86:385

Barber, M. J., Scherngell, T. (2013, online 2011)

Is the European R&D network homogeneous? Distinguishing relevant network communities using graph theoretic and spatial interaction modeling approaches. *Regional Studies*, 47, 1283–1298

2011

Barber, M. J., Fischer, M. M. and Scherngell, T. (2011)

The community structure of R&D cooperation in Europe: evidence from a social network perspective. *Geographical Analysis* 43(4), 415–432

Scherngell, T., Barber, M. J. (2011)

Distinct spatial characteristics of industrial and public research collaborations: Evidence from the 5th EU Framework Programme. *Annals of Regional Science*, 2011, 46 (2), 247-266

Lee, C., Scherngell, T., Barber, M. J. (2011)

Investigating an online social network using spatial interaction models. *Social Networks*, 33, 2, 129-133

2010

Scherngell, T., Barber, M. J. (2010)

Distinct spatial characteristics of industrial and public research collaborations: Evidence from the 5th EU Framework Programme. *Annals of Regional Science*, 2011, 46 (2), 247-266

2009

Barber, M. J., Clark, J. W. (2009)

Detecting network communities by propagating labels under constraints. *Physical Review E*, 80, 2, 026129

Scherngell, T., Barber, M. J. (2009)

Spatial interaction modelling of cross-region R&D collaborations: empirical evidence from the 5th EU framework programme. *Papers in Regional Science*, 88, 3, 531-547

2008

Roediger-Schluga, T., Barber, M. J. (2008)

R&D collaboration networks in the European Framework Programmes: Data processing, network construction and selected results. *International Journal of Foresight and Innovation Policy*, 4, 3/4, 321-347

2007

Barber, M. J. (2007)

Modularity and community detection in bipartite networks. *Physical Review E*, 76, 6, 066102

2006

Barber, M. J., Blanchard, P., Buchinger, E., Cessac, B. and Streit, L. (2006)

Expectation-driven interaction: a model based on Luhmann's contingency approach. *JASSS Journal of Artificial Societies and Social Simulation*, 9, 4

Barber, M. J., Krüger, A., Krüger, T. and Roediger-Schluga, T. (2006)

Book Chapters

2013

Barber, M. J., Scherngell, T.

The community structure of European R&D collaboration. In Scherngell, T. (Ed.), *Advances in Spatial Science: The geography of networks and R&D collaborations*. Springer, Cham, 151-173

2010

Obermeier, U., Barber, M. J., Krüger, A. and Brauckmann, H. (2010)

Comparing University Organizational Units and Scientific Co-Authorship Communities. Ahrweiler, P. (Ed.), *Innovation in Complex Social Systems*, Routledge, London, 217-232

2009

Barber, M. J., Paier, M. and Scherngell, T. (2009)

Analyzing and Modelling European R&D Collaborations: Challenges and Opportunities from a Large Social Network. Dehmer, M., Emmert-Streib, F. (Eds.), *Analysis of Complex Networks: From Biology to Linguistics*, Wiley-VCH, Weinheim, 401-423

Conference Papers

2012

Barber, M.J., Scherngell, T. (2011)

Inter-regional betweenness centrality in the European R&D network. 52nd Congress of the European Regional Science Association, Bratislava, Slovakia, 21–25 August, 2012.

2011

Barber, M.J., Scherngell, T. (2011)

Is the European R&D Network Homogeneous? Spatial Interaction Modeling of Network Communities Determined Using Graph Theoretic Methods. EAEPE Conference 2011—Schumpeter's heritage: the evolution of the theory of evolution. October 27–30, Vienna

Barber, M.J., Scherngell, T. (2011)

Is the European R&D Network Homogeneous? Spatial Interaction Modeling of Network Communities Determined Using Graph Theoretic Methods. 51st Congress of the European Regional Science Association, 30 August – 3 September, Barcelona

2010

Barber, M. J., Streit, L. and Strogan, O. (2010)

NetzCope: a tool for displaying and analyzing complex networks. Proceedings of ICQBIC2010, World Scientific (forthcoming), Noda-City, Chiba, Japan

Barber, M. J., Fischer, M. M., Scherngell, T. (2010)

The community structure of R&D cooperation in Europe: evidence from a social networks perspective, ERSA 2010, Jönköping, Sweden

2008

Barber, M. J., Faria, M., Streit, L. and Strogan, O. (2008)

Searching for communities in bipartite networks. Bernido, C.C., Carpio-Bernido, V. (Eds.), *Proceedings of the 5th Jagna International Workshop: Stochastic and Quantum Dynamics of Biomolecular Systems.*, January, 3rd - 5th, Bohol, Philippines

Barber, M. J., Faria, M., Streit, L. and Strogan, O. (2008)

Community Structure and Topical Differentiation in European RTD Collaborations. 1st ICC International Conference on Network Modelling and Economic Systems, October, 9th - 11th, Lisbon, <http://arxiv.org/abs/1003.6032v1>

Scherngell, T. und Barber, M. J. (2008)

The Geography of Cross-Region R&D Collaborations in Europe: Evidence from the EU Framework Programmes. European Regional Science Association (Eds.), Conference Proceedings of the 48th Congress of the European Regional Science Association "Culture, Cohesion and Competitiveness: Regional Perspectives", August, 27th - 31st, Liverpool, CD-ROM

Scherngell, T., Barber, M. J. (2008)

Spatial Interaction Modelling of Cross-Region R&D Collaborations: Empirical Evidence from the EU Framework Programmes. 1st ICC International Conference on Network Modelling and Economic Systems, October, 9th - 11th, Lisbon, http://www.listaweb.com.pt/icc/icc-nmes2008/ICC-NMES_2008_papers.html

2006

Roediger-Schluga, T., Barber, M. J. (2006)

The structure of R&D collaboration networks in the European Framework Programmes. 11th ISS Conference "Innovation, competition and growth: Schumpeterian perspectives", June, 21st - 24th, Sophia-Antipolis, <http://www.schumpeter2006.org>

Reports

2010

Heller-Schuh B., Barber M., Henriques L., Paier M., Pontikakis D., Scherngell Th., Schoen A., Veltri G. and Weber M. (2010): Analysis of Networks in European Framework Programmes (1984-2006). IPTS Technical Report Series [forthcoming]

Scherngell, T., Paier, M., Weber, M., Heller-Schuh B. and Barber, M. (2010): NEMO - Network Models, Governance and R&D Collaboration Networks. Deliverable D8.1: Full project documentation

Scherngell Th., Barber M., Heller-Schuh B., Paier M., Weber M., Cowan R. and van Tunzelmann N. (2009): Network Analysis study on participations in Framework Programmes. Brief document on future research directions - D3. ETEPS/IPTS, ETEPS/IPTS Research Report.

Barber M., Heller-Schuh B., Paier M., Scherngell Th. and Weber M. (2009): NEMO - Network Models, Governance and R&D Collaboration Networks. Deliverable D4.2: Structural features and temporal evolution of R&D collaboration networks. Austrian Research Centers GmbH – ARC.

Barber M., Heller-Schuh B., Roediger-Schluga Th., Scherngell Th. (2008) NEMO - Network Models, Governance and R&D Collaboration Networks. Deliverable D4.1: The sysres EUPRO database manual. Austrian Research Centers GmbH – ARC

Selected Projects

The spatial and temporal evolution of R&D Networks, 08/09-01/12, Austrian Science Fund (FWF)

NEMO – Network Models, Governance and R&D Collaboration Networks, 09/06-11/09, European Commission

Network Analysis Study on participations in Framework Programmes, 09/08-03/09, European Commission