

# Antoine Mandel

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## PERSONAL INFORMATION

Born November the 30th 1980. Married, 3 children.

## EDUCATION

- 2016 Habilitation "Essays on Economic Dynamics", University Paris 1.  
Committee: S. Battiston, J-M. Bonnisseau, J-P. Bouchaud, H. Dawid, C. Jaeger,  
A. Kirman, A. Rusinowska.
- 2007 Ph.D. in Mathematical Economics, University Paris 1.  
Committee: J-M. Bonnisseau, A. Chateauneuf, B. Cornet, B. Crettez,  
M. Czarnecki, M. de Lara, E. Jouini.
- 2004 Master in Applied Mathematics, University Paris 1 Panthéon-Sorbonne.

## EMPLOYMENT

- 2017- Professor of Applied Mathematics, University Paris 1 Panthéon-Sorbonne.
- 2012- Research fellow, Paris School of Economics.
- 2012-2013 Secondment at the CNRS.
- 2009-2016 Maître de conférences in Applied Mathematics, University Paris 1.
- 2007-2009 Post-doctoral fellow at the Potsdam Institute for climate impact research (PIK).
- 2004-2007 Doctoral fellow, Centre d'Économie de la Sorbonne.

## DEPARTMENT AND UNIVERSITY SERVICE

- 2018- Vice-dean of the department of mathematics and computer science,  
University Paris 1
- 2019- Member of the board of the "Centre d'économie de la Sorbonne"
- 2015- Member of the board of the doctoral school in Economics (Ecole doctorale  
d'économie), University Paris 1/EHESS.
- 2012-2016 Member of the mediation committee of the University Paris 1
- 2009- Elected member of the board of the department of Applied Mathematics

## GRANTS AND AWARDS

Since 2010, I have participated as unit and/or work-package leader in five collaborative European research projects and have obtained a number of competitive grants, in particular from the Institute for New Economic Thinking. This has allowed me to constitute a small research group within the Centre d'Economie de la Sorbonne, currently composed of four post-doctoral fellows.

- 2013- Scientific Excellence Award, University Paris 1
- 2021-2024 Unit Leader H2020 project "EPOC: Economic Policy in Complex Environments" (350k€)
- 2020-2023 Unit/WP Leader H2020 project "TIPPING+: Tipping Points towards clean-energy Transitions" (200k€)
- 2019-2020 Co-PI Inspire project on climate finance, Climate Works foundation (25k€)
- 2019-2020 Co-PI H2020 project "CLIMEX: Climate Exposure Tool for Financial Risk Analysis" (100 k€)
- 2017-2020 Co-PI H2020 project "EXSIDE: Expectations and Social Influence Dynamics in Economics (350k€)
- 2016-2018 Co-PI of the University Paris 1 interdisciplinary project "Mathematical Modeling and Artistic transformation of empirical data", with Yann Toma (20 k€).
- 2015-2018 Unit/WP leader H2020 project "GREENWIN: Green growth and win-win strategies for climate action" (300 k€)
- 2015-2018 Unit leader H2020 project "DOLFINS: Distributed Global Financial Systems for Society" (250 k€)
- 2015-2016 Grant of the Alliance program (Columbia University/University Paris 1) and of the "Ile-de-France" Regional council for the conference "social dynamics and Climate Change" and the exhibition "The climate meridian" (20 k€).
- 2013-2018 Unit leader FP7 project "IMPRESSIONS: Impacts and risks from higher-end Scenarios" (200 k€).
- 2013-2017 Unit/WP leader FP7 project "SIMPOL: Financial Systems Simulations and Policy Modeling" (300 k€).
- 2012-2014 Grant of the Institute for New Economic Thinking for the project "Analytical aspects of real-financial linkages in systems of heterogeneous agents," with H. Gintis, S. Landini and M. Gallegati (150k\$).
- 2010-2013 Unit/WP leader FP7 project "Global System Dynamics and Policy" (100k€).
- 2010-2011 Co-PI project "A new growth path for Europe" for the German ministry of the environment (30k€).

## DOCTORAL AND POST-DOCTORAL SUPERVISION

Post-doctoral fellows: Solmaria Halleck-Vega (2016-2018), Amir Sani (2015-2017), Tomas Balint (2014-2017), Andreas Karpf (2013-2016), Vipin Veetil (2017-2019), Géraldine Bouveret (2019), Saptorshee Chakraborty (2020-)

Doctoral Fellows: Pascal Assmuth (2011-2015), Kerstin Hötte (2017-2020), Alessandro de Sanctis (2017-2020), Alexandre Cornet (2017-2020), Fernando Garcia Alvarado (2017-2020), Emmanuel Bovari (2017-2020)

Doctoral Committees: Luca Colombo (HDR, Paris 1, 2020), Paola Labrecciosa (HDR, Paris

1, 2021), Jose Moran (EHES, 2020), Raffaele Giammetti (UP Ancona, 2018), Dan Tran (University of Bordeaux, 2019), Celian Colon (Ecole Polytechnique, 2016), Francesco Lamperti (SSSA Pisa, 2016), Amir Sani (Inria Lille, 2015), Tania Treibich (Univ. Nice, 2013).

### **COURSES TAUGHT (Last five years)**

Foundations of Mathematics (Bachelor 2015-)  
Advanced Microeconomics (Master 2017-)  
Economic and Financial Networks (Master 2018-)  
Sustainable Finance (Doctorate 2019, 2020)  
Financial Economics (Master 2016-2018)  
Optimisation (Master, 2015-2019)

### **EDITORIAL AND SCIENTIFIC RESPONSABILITIES**

2019- Associate editor, Journal of Economic Dynamics and Control  
2019- Member of the steering committee of the Alliance Program Initiative on Climate Change  
2019- Member of the steering committee of the UNA-Europa program on sustainable development.  
2015- Member of the scientific committee of the WEHIA conference  
2012- Expert evaluator for the European Commission (FET program), Belgian Research Agency, German ministry of Research, French Research Agency, Italian Research Agency.  
2009- Referee for Annals of Operations Research, Ecology and Society, Economic Bulletin, Games and Economic Behavior, International journal of game theory, Journal of Economic Behavior and Organization, Journal of Economic Dynamics and Control (excellence in refereeing award), Journal of Evolutionary Economics, Journal of Economic Interaction and Coordination, Journal of Economic Theory, Journal of Mathematical Economics, Journal of Public Economics, Macroeconomic Dynamics, NIPS 2016, PLOS one, Scandinavian Journal of Economics, Studies in Nonlinear Dynamics and Econometrics.

### **ORGANIZATION OF CONFERENCES**

I have organized a dozen interdisciplinary and/or economic workshops and conferences since 2010. In particular, in the context of the COP21, I have led the organization of a joint conference and exhibition on "social dynamics and climate change", which has received the official COP 21 label from the French government.

2019 Workshop "A data driven approach to the costs of climate change", Paris School of Economics, University Paris 1  
2018 Workshop "Computational Approaches to games and decisions, Paris School of Economics, University Paris 1  
2017 Colloque "art et mathématiques", Université Paris 1  
2017 Workshop on Production Networks, University Paris 1  
2016 Second General Assembly of the GREENWIN project, Fondation Royaumont.

- 2016 Satellite Workshop of StatPhys26, "Statistical Physics of Financial and Economic Networks ", University Paris 1.
- 2016 Second General Assembly of the IMPRESSIONS project, Villa Finaly, Florence.
- 2015 Conference "Social Dynamics and Climate Change", University Paris 1.
- 2015 Exhibition "The climate meridian", University Paris 1.
- 2015 MAGECO workshop on agent-based modeling, EHES.
- 2014 Workshop "Towards a research agenda for Policy-Making Challenges after 2008", University Paris 1.
- 2013 Workshop "Uncertainty, Digital Science and the Long Term", Villa Finaly, Florence.
- 2013 Second open Global Systems Science Conference, Brussels.
- 2012 First open Global Systems Science Conference, Brussels.
- 2012 WEHIA "Workshop on Economics with Heterogeneous Interacting Agents", University Paris 1 and 2.
- 2012 Global systems as networks of networks, Villa Finaly, Florence
- 2011 GSDP Paris Agent-Based Modeling workshop, University Paris 1.
- 2011 Spain-Italy-Netherlands Meeting on Game Theory, University Paris 1 (local organizing committee)
- 2010 Third Euro-African conference in economics and finance, University Paris 1 (local organizing committee)

#### **INVITED CONFERENCES AND SEMINARS<sup>1</sup>:**

- 2020: Sustainable Finance Conference (University of Zürich), Cours Bachelier (IHP Paris) Labex Dynamite Seminar, Queen Mary university London Seminar, Workshop Coupled climate-ecology- economy modeling and model hierarchies, UNEP-FI seminar.
- 2019 Annual conference, Europlace Finance Institute (Paris), IHP semester on mathematics and the environment, Seminaire Fime PSL, Conference "Global warming, society and responsibility" (College de France, Paris) 2nd Conference on "Globalization; contents and discontents" (World Bank, Kuala Lumpur)
- 2018 Seminar CIRED (CNRS), Green Finance Summit (University of Liechtenstein).
- 2017 First Conference on Financial Networks and Sustainability (University of Zurich), Seminar University of Metz, Seminar Georges Mason University, Seminar University of Bielefeld, Environmental Risk Analysis Workshop Beijing, Summer Workshop in Economic Theory Paris.
- 2016 Seminar University of Nanterre, Conference on System Science and Policy at King's college London, Seminar at Scuola Sant'Anna Pisa, Seminar at Paris Institute for Advanced Studies, Workshop on Complexity Economics at University of Nice.
- 2015 Workshop on information transmission in networks at Harvard University, EuRuCAS Climate Policy Modelling workshop at NIERSC-Saint Petersburg, Summer School of the 2015 Wehia conference at University of Nice, ISIGROWTH workshop at university Cattolica of Milano,
- 2014 OECD-ECLAC workshop "New tools for policy-making" at OECD-Paris, Mageco workshop at Paris 6 University, Global Climate Forum Workshop on Climate economic modeling, CIGI-INET conference on False Dichotomies,

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<sup>1</sup> Contributions to regular conferences are not listed here.

- 2013 Agent-Based Modeling workshop at OFCE Paris, CRISIS workshop at Institut Henri Poincaré,
- 2012 Workshop on Carbon price modeling (Potsdam Institute for Climate Impact Research), Seminar at University of Nice, Latsys Symposium on agent-based modeling at ETH Zürich, Seminar at University of Nanterre.
- 2011 Workshop on Domain Specific Languages for Economical and Environmental Models at Chalmers University, Workshop on the 2030 climate framework at the French ministry of the environment.
- 2010: Workshop Advances in Agent-based Computational Economics at Bielefeld university, Sorbonne workshop in Economic Theory at University Paris 1, Workshop Decision Making and Risks in Complex Environments at EHESS.
- 2009: Workshop "Type Theory and Sustainability Modeling" at PIK Potsdam, Workshop "Agent-based Modelling and Sustainable Development" at University Ca' Foscari Venice, Spring School "Mathematics and Sustainable Development" at CNRS-Cargèse, Seminar at University of Maryland.

## **PUBLICATIONS**

### **Books**

J-M. Bonnisseau, A. Mandel, Y. Toma, F-G Trébulle (2015). "Penser le changement climatique", Presses universitaires de la Sorbonne.

A. Mandel, Y.Toma (2020). Art + Mathématiques: modélisations mathématiques et transformations artistiques des données du réel, Editions Janninck.

### **Journal Articles**

Mandel, A. Tiggeloven, T. Lincke, D. Koks, E. Ward, P. Hinkel, J. "Risks on Global Financial Stability Induced by Climate Change". forthcoming, climatic change.

G. Bouveret and A. Mandel, (2021). "Prophylaxis of Epidemic Spreading on networks", Journal of Mathematical Economics, Volume 93, March 2021

A. Mandel and V. Veetil (2021) "Monetary dynamics in a network economy", Journal of Economic Dynamics and Control, Volume 125, April 2021

A. Mandel and V. Veetil (2020) "The Economic Cost of COVID Lockdowns: an out-of-equilibrium analysis", Economics of Disasters and Climate Change, Vol. 4, pp 431–451

A.Mandel, S. Halleck-Vega, D. Wong (2020) " The contribution of technological diffusion to climate change mitigation: a network-based approach", Climatic Change, Vol. 160, pp 609-620

A. Mandel and X. Venel (2020) "Dynamic competition on social networks", European Journal of Operational Research, Vol. 280(2), pp597-608

L. Paroussos, A. Mandel, K. Fragkiadakis, P. Fragkos, J. Hinkel and Z. Vrontisi (2019) "Climate clubs and the macro-economic benefits of international cooperation on climate policy", Nature Climate Change, <https://doi.org/10.1038/s41558-019-0501-1>

A. Mandel, D. Taghawi-Nejad and V.P. Veetil (2019) "Some Price Effects of Monetary Shocks in a Network Economy", Journal of Economic Behavior and Organization, Vol. 164, pp 300-316

- A. Karpf, A. Mandel and S. Battiston (2018) "Price and Network Dynamics in the European Carbon Market", *Journal of Economic Behavior and Organization*, Vol. 153, pp 103-122.
- S. Halleck-Vega, A. Mandel & K. Millock, (2018). "Accelerating diffusion of climate-friendly technologies: A network perspective." *Ecological Economics*, Vol.152, pp 235-245.
- A. Karpf, A. Mandel (2018) "The changing value of the "green" label on the US municipal bond market", *Nature Climate Change*, Vol 8, February 2018.
- S. Halleck and A. Mandel (2018) "Technology Diffusion and Climate Policy: A Network Approach and its Application to Wind Energy", *Ecological Economics*, Vol. 145, pp 461-471
- S. Gualdi and A.Mandel (2018) "Endogenous Growth in Production Networks", *Journal of Evolutionary Economics*, Vol. 29(1), pp 91-117
- M. Grabisch, A. Mandel, A. Rusinowska, E. Tanimura (2017) "Strategic Influence in Social Networks", *Mathematics of Operations Research*
- S. Battiston, A. Mandel, I. Monasterolo, F. Schuetze, & G. Visentin (2017). "A Climate Stress-Test of the EU Financial System", *Nature Climate Change*, April 2017.
- T. Balint, T., F. Lamperti, A. Mandel, M. Napoletano, A. Roventini, A. Sapio, A. (2016). "Complexity and the economics of climate change: a survey and a look forward.", *Ecological Economics*, Vol.138, pp. 252-265
- S. Gualdi and A.Mandel (2016). "On the Emergence of scale-free production networks", *Journal of Economic Dynamics and Control*, Vol. 73, pp 61-77
- A. Mandel and H.Gintis (2016). "Decentralized Pricing and the Equivalence between Nash and Walrasian Equilibrium", *Journal of Mathematical Economics*, Vol. 63, pp 84-92
- D. Tuckett, D., A. Mandel, D. Mangalagiu, and al. (2015). "Uncertainty, Decision Science, and Policy Making: A Manifesto for a Research Agenda". *Critical Review*, Vol 27
- A. Mandel, S. Landini, M. Gallegati, H. Gintis (2015) "Price dynamics, financial fragility and aggregate volatility", *Journal of Economic Dynamics and Control*, Vol. 51, pp 257-277
- G. Ballot, A. Mandel, A. Vignes, (2014). "Agent-based modeling and economic theory: where do we stand ?" *Journal of Economic Interaction and Coordination*, Vol. 10(2), pp 199-220
- A.Mandel and H.Gintis (2014) "Stochastic Stability in the Scarf Economy", *Mathematical Social Sciences*, Vol. 67, pp 44-49
- S. Wolf, S. Fuerst, A. Mandel, W. Lass, D. Lincke, F. Pablo-Marti, C. Jaeger (2013) "Lagom regiO – a multi-agent model of several economic regions", *Environmental Modeling and Software*, vol 44, pp 25-43
- D. Tabara, D. Mangalagiu, R. Kupers, C. Jaeger, A. Mandel, L. Paroussos (2013) "Transformative targets in sustainability policy-making: The case of the 30 percent EU mitigation goal." *Journal of Environmental Planning and Management*, Vol. 56(8), pp 1180-1191.
- S.Wolf, J.-P. Bouchaud, F. Cecconi, S. Cincotti, H. Dawid, H. Gintis, S. van der Hoog, C.C. Jaeger, D.V. Kovalevsky, A. Mandel, L. Paroussos (2013) "Describing economic agent-based models – Dahlem ABM documentation guidelines" *Complexity Economics*, Vol. 2, pp 63-74.
- A. Mandel (2012) "Agent-based dynamics and the general equilibrium model" *Complexity Economics*, Vol 1(1), pp 105-121.
- N. Botta, A. Mandel, C.Ionescu, M. Hoffmann, D. Lincke, S. Schupp, C.Jaeger (2011) "A functional framework for agent-based models of exchange." *Applied mathematics and computation*, Vol. 218(8), pp 4025-4040.
- A. Mandel (2010) "Welfare improvement properties of an allowance market in a production economy," *Annales d'économie et statistiques*, Vol. 93/94, pp 67-77.

A. Mandel, N. Botta (2009) "A note on Herbert Gintis' "Emergence of a Price System from Decentralized Bilateral Exchange.", The B.E. Journal of Theoretical Economics: Vol. 9 : Iss. 1 (Topics), Article 44.

A. Mandel (2009) "Changes in the firms behaviour after the opening of markets of allowances." Economic Theory, Vol.40(1), pp 1-25.

A. Mandel (2008) "An index formula for production economies with externalities." Journal of Mathematical Economics, Vol. 44(12), pp 1385-1397.

### **Proceedings**

A.Karpf, A. Mandel, S. Battiston (2015) " A network-based analysis of the European Emission Market", Proceedings of ECCS 2014, Springer series on complexity.

N.Botta, S. Schupp, A. Mandel, C. Ionescu and M. Hofmann (2013) "Mathematical specification of an agent-based model of exchange", Proceedings "Do-Form: Enabling Domain Experts to Use Formalised Reasoning" - AISB Convention 2013, Pages 38-48.

S. Wolf, S. Fuerst, W. Lass, D. Lincke, A. Mandel, C. Jaeger (2012) "Two modes of scheduling in a simple economic agent-based model", Simultech 2012, pp. 303-308.

### **Chapters in books**

C. Jaeger, L. Paroussos, D. Mangalagiu, R. Kupers, A. Mandel, D. Tabara, (2011) "Towards a new growth path for Europe" in Jaeger, C. and al. editors "Action for climate: Beyond the zero-sum game", Earthscan

### **Policy Papers**

A.Mandel and S. Halleck-Vega (2018) "Enhancing Technology transfer and diffusion", Greenwin Policy Brief.

F. Lamperti, G. Dosi, A. Mandel, M. Napoletano, A. Roventini, A. Sapio (2017) " A new family of Agent-Based Models and its application to high-end climate scenarios", report of the IMPRESSIONS project to the European Commission.

A. Mandel et al. (2017) "Modelling networks of influence in climate finance", report of the SIMPOL project to the European Commission.

A. Mandel et al. (2016) "Macro models of climate finance", report of the SIMPOL project to the European Commission.

A. Mandel et al. (2016) "Network-based assessment of technological diffusion", report of the GREENWIN project to the European Commission.

R. Tinch, A. Mandel et al. (2015) "Evaluation of economic approaches under high-end scenarios", report of the IMPRESSIONS project to the European Commission.

A. Mandel et al. (2015) "Modelling climate financial networks", report of the SIMPOL project to the European Commission.

C.Jaeger, A. Mandel et al. (2012) "Key research questions and challenges for Global Systems Science", report of the GSDP project to the European Commission

C.Jaeger, A. Mandel et al. (2011) "An emerging research program for Global Systems Science", report of the GSDP project to the European Commission.

C. Jaeger, L. Paroussos, D. Mangalagiu, R. Kupers, A. Mandel, J. Tabara (2011) "A new growth path for Europe: generating prosperity and jobs in the low-carbon economy", report to the German Ministry of the Environment.

C. Jaeger, G. Horn, T.Lux, D.Fricke, S. Fuerst, W.Lass, L. Lin, A. Mandel, F. Meissner, S. Schreiber, D. Vesper, R. Zwiener (2009) "From the financial crisis to sustainability" , report to the German ministry of the environnement.

## **REFERENCES**

Jean-Philippe Bouchaud, Professor Ecole Polytechnique, Chairman Capital Fund Management, [Jean-Philippe.Bouchaud@cfm.fr](mailto:Jean-Philippe.Bouchaud@cfm.fr)

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