



2016 Altius Conference at Oxford

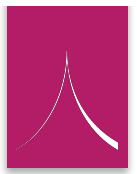
The Brain of the Future

Artificial Intelligence, Robotics, Governance and Politics
in the Age of Thinking Machines

SEPTEMBER 30TH – OCTOBER 2ND

Oxford Union, Debating Chamber
University of Oxford





The Brain of the Future. Artificial Intelligence, Robotics, Governance and Politics in the Age of Thinking Machines.

Introduction

The Altius Society was founded in 2012 with the aim of becoming the global forum where senior practitioners, academics, and political leaders, as well as young promising thought leaders gather to discuss the most relevant strategic trends of the 21st century and their impact on the future of our societies and our economies.

The necessity to foster interdisciplinary dialogue between young professionals who have proven excellence in their respective domains (academia, economics and private enterprise, politics and public service, philanthropy, and cultural creativity) lies at the heart of Altius.

The velocity and complexity of social change, the need to encourage a deep reflection and understanding of future global trends, and the awareness that tackling challenges requires not only an interdisciplinary approach that draws from numerous fields of intellectual and social life, but also a broad international perspective, convinced a group of graduate students at Harvard University and the University of Oxford of the benefits of an organization like Altius.

As a catalyzer of this multidisciplinary debate, every year Altius selects a major *Theme* which is discussed from five diverse perspectives –Scientific, Social, Cultural, Economic and Political,– brought by Altius Members as well as prominent leaders in the field.

The *Theme* for this 2016 Annual Conference is the result of an emerging debate that arose repeatedly during our two last Annual Conferences at Oxford. '***The Brain of the Future***' will expand well beyond the neurobiological organization of the human brain, instead focusing on the need to analyze the consequences of the development of ***Advanced (and Intelligent) Machines***, rapid increases of productivity of goods and services, shifts in the structure of our societies and cultures, major disruptions for global commerce and the balance of international



power (economic and military), growing income gaps driven by innovation, security risks posed by AI, the requirement of a new paradigm of National and Global Governance, and many others.

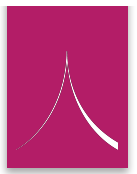
This *Theme* will allow us to explore one of the most significant vectors of change of our time: **The Rise of Intelligent Machines**, understanding 'Machines' as a concept beyond its physical connotations.

The Conference will take place at the Oxford Union Debating Chamber, the world's most prestigious debating venue, and it will be structured in 5 major lines of discussion:

1. **The Current State of Research** on Artificial Intelligence
2. **The Medium-Term Implications:** Economic Challenges and Opportunities Posed by the Rise of AI
3. **The Long-Term View:** Philosophical and Ethical Debates on AI and the Role of the Human Species
4. **The Global Perspective:** Impact of AI on the Global Geopolitical Architecture
5. **The 'Local' Perspective & The Disruption of our Immediate Vicinity:** the Future of Cities in a World of Increasing AI Potential



Josh Cochran



Friday, September 30th

15:00-15:30 Registration, Oxford Union, Debating Chamber

15:30-15:40 Opening Remarks, by Alexandre Perez, President of Altius

15:40-16:30 Keynote Address by Eric Maskin
Harvard, 2007 Nobel Laureate in Economics

"Mechanism Design and Parallel Processing in the Brain"

16:30-19:30 Section 1: The True Potential of AI, Robotics and Automation. What to Expect in the Coming Two Decades

Format: Expert presentations and discussion of the state-of-the-art AI technologies.

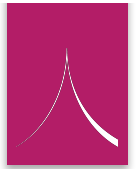
A New Paradigm in the Development of Artificial Intelligence. Applied AI and the Disruption across Sectors and Services until 2030

Sub topics:

1. Computing, Cognition and the Future of Knowing.
2. Learning to Learn and the Future of Consciousness.
3. The Scientific Limits of AI: From Narrow AI to Broad AI.

Speakers:

- Shane Legg, founder of DeepMind, Research Director at Google DeepMind



- Stephen Roberts, Director of the Oxford-Man Institute for Quantitative Finance and Director of the Oxford Centre for Doctoral Training in Autonomous Intelligent Machines and Systems, University of Oxford
- Sergio Álvarez-Teleña, Global Head of Data Science at BBVA and Founder of SciTheWorld and Honorary Research Associate at University College London
- Ricardo Silva, Department of Statistical Science, Gatsby Computational Neuroscience Unit, University College London
- David Barber, Center for Computational Statistics and Machine Learning, University College London

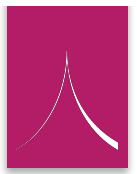
Section Chair: Jacobo Roa



19:45-21:30 Dinner & Dialogue at St Peter's College Dining Hall

"The Future of Global Higher Education in the Age of Thinking Machines"

By Garry Jacobs, Chairman, World Academy of Art and Science



Saturday, October 1st

**09:00-11:30 Section 2. The Long-Term Philosophical Perspective:
Human vs. Artificial Consciousness, and the Ethics of AI.
Towards the 'Meta-Brain': 'The Brain of Humanity'.**

Format: Keynote presentations followed by a debate.

◆ **Part I: Is Creativity a Feature of the Human Species?**

Keynote Presentation by Jean-Pierre Changeux, Collège de France, 2001 Balzan Prize and 1982 Wolf Prize in Medicine

◆ **Part II: Humans and Advanced Intelligent Machines. The Real Challenges of Artificial Intelligence**

Keynote Presentation by Luciano Floridi, Director of Oxford Internet Institute, Member of the European Data Protection Supervisor (EDPS) Advisory Board and the Google Advisory Council

◆ **Part III: Human Rationality and Varieties of Thinking**

Keynote Presentation by Garry Jacobs, Chairman, World Academy of Art and Science

◆ **Part IV: Debate & Open Discussion**

Sub topics:

1. Will Human Intuition, including Mathematical Intuition, ever be Achieved by a 'Machine'?
2. Can 'Machines' enjoy Freedom? And therefore, shall Future 'Machines' enjoy 'Human' Rights?
3. Is Human Rationality the Ultimate Level of Rationality?
4. What is left for Humans in a World dominated by AI?
5. The Good, the True, and the Beautiful: *Geisteswissenschaften* vs. *Naturwissenschaften*. The Naturalization of Consciousness and the Future role of the Humanities



6. Culture and Religion vs. AI. Will Values and Beliefs emerge in Artificial Machines?

Debate Participants:

- Jean-Pierre Changeux, Collège de France, 2001 Balzan Prize and 1982 Wolf Prize in Medicine
- Luciano Floridi, Director of Oxford Internet Institute, Member of the European Data Protection Supervisor (EDPS) Advisory Board and the Google Advisory Council
- Garry Jacobs, Chairman World Academy of Art and Science
- Anders Sandberg, Oxford Future of Humanity Institute, Oxford Martin Programme on the Impacts of Future Technology

Section Co-Chairs: Carlos Blanco and Alberto Merchante

11:45-12:15 'Addressing the Real World Challenges of Applying Data Science to Finance'

Keynote Presentation by Afsheen Afshar

Chief Data Science Officer, J.P.Morgan Chase & Co.

12:15-12:30 Group Photo

12:30-13:45 Lunch Break at the Oxford Union

14:00-16:15 Section 3. The Political Economy of the Future. Framing the Foundations of a New Social Contract

Format: Keynote presentations, followed by debate on specific issues

◆ **Part I. The Economic Implications of the Second Wave of the Second Machine Age.**

Keynote Presentation by Prof. Erik Brynjolfsson, Director of the MIT Initiative on the Digital Economy, Professor at MIT Sloan School, and Research Associate at NBER



Sub topics:

1. 'Economic Possibilities for our Grandchildren' 100 years later
2. Economic Growth vs. Human Wages: The Great Decoupling of the 21st Century
3. Technological Unemployment: Why it will be Different this Time

◆ **Part II. Global Inequality in the 21st Century. The Promise and Peril of Globalization and the Digitalization of Work**

Keynote Presentation by Prof. Branko Milanović, CUNY, former Lead Economist of the World Bank, author of 'Global Inequality'

◆ **Part III. Debates & Open Discussion. The New Economic Paradigm for the 21st Century. Economic Policy, Governance and Institutions in the Age of Cognitive Machines**

Sub topics:

1. Automation, AI, Inequality and the Rise of Populism in Democratic Advanced Economies. Will the *Anti-Globalization* narrative evolve towards *Anti-Technological Progress*?
2. The Age of Cognitive Machines: A Challenge for Traditional Anti-Globalization Populism. When 'Building a Wall' is no longer Effective (if it ever was)
3. Economic Growth and Management of Inequality in the New Automated World: The limits of Central Banks and Governments' Intervention
4. Work and Voltaire's Salvation from 'Boredom, Vice and Need'. Universal Basic Income: Will it be Enough?
5. Beyond Land, Capital and Labour. 'Who Shall Own the Robots?' 'The Innovation State'
6. The Future of Education and the Labour Market in a Time of Super-Intelligence

Debate Speakers:

- Erik Brynjolfsson, Director of the MIT Initiative on the Digital Economy, Professor at MIT Sloan School, and Research Associate at NBER
- Branko Milanović, CUNY, former Lead Economist of the World Bank, author of 'Global Inequality'
- Sean Cleary, Founder of the FutureWorld Foundation, and Faculty Member, Parmenides Foundation

Section Chair: Alexandre Perez



16:20-16:50 Looking Beyond 2050, Challenges and Opportunities for Humanity

A Keynote by Lord Rees of Ludlow (Prof. Martin J.), HM Astronomer Royal
Fellow and former Master of Trinity College, Emeritus Professor of Cosmology and Astrophysics at the University of Cambridge, Past President of the Royal Society, Co-Founder of the Centre for Existential Risk



16:50-17:00 Coffee Break at the Oxford Union



17:00-19:00 Section 4. The Global Perspective.
Global Politics and Governance in the Age of Thinking Machines.

Format: Brief presentations followed by debate

Sub topics:

1. Global Existential Risks in a World of Increased Complexity
2. The Internet of Things: Prosperity and Security in a Networked World
3. Robotics, Data, AI and the Future of Global Security
4. Global Governance and Diplomacy under Complex Interdependence
5. Radical Interdependence and Global Governance
6. The Raise of 'Technological Dependent Nations'

Speakers:

- Baroness Neville-Jones, former BBC Governor and Chairman of the British Joint Intelligence Committee, former UK Minister of State for Security and Counter Terrorism overseeing MI5 and MI6
- Jason Matheny, Director of IARPA, Office of the Director of National Intelligence, United States of America
- Jean-Marc Rickli, Department of Defence Studies of King's College

Section Co-Chairs: *Manuel Muñiz and Marcin Kilanowski*

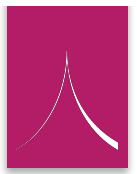


19:00-19:30 Drinks Reception at Corpus Christi College Dining Hall

19:30-21:30 Dinner & Keynote

"Calling for a Renaissance in Literature and Arts."

Keynote by Gao Xingjian, 2000 Literature Nobel Laureate



Sunday, October 2nd

9:00-10:45 **Section 5. The Local Perspective & The Disruption of our Immediate Vicinity. The City of the Future.**

Sub topics:

1. The City of Tomorrow: Sensors, Networks, Hackers, and the Future of Urban Life
2. When technology shapes our lives: from IoT to self-driving cars
3. Urban Resilience and Artificial Intelligence

Speakers:

- Carlo Ratti, Head of MIT Sensable Lab and Chief Advisor to the EU Commission on Smart Cities
- Julie Alexander, Director of Urban Development and Smart Cities at Siemens
- Matthijs Bouw, Founding Director of One Architecture, Amsterdam

Section Co-Chairs: Laura Birkman and Maxime Parmentier

10:45-11:00 **Coffee Break**

11:00-11:45 **Keynote**

“Nanotechnology and the Brain. The Interface between Neuroscience, Technology and Biology.”

*Keynote by Sonia Contera, Professor of Physics, University of Oxford,
Co-Director of the Institute of Nanoscience for Medicine, Oxford Martin School*



11:45-12:30 *Fireside Chat at the Oxford Union*

“Enabling the Next Production Revolution. The Role of Government Policy and Supranational Institutions”

Speaker: Alistair Nolan, Directorate for Science, Technology and Innovation, OECD

12:30-13:45 **Closing Remarks and Final Debating Session**

Format: Based on the success of the final debate of the 2015 Altius Conference, in which all members contributed to a summary of key action themes, this year's final session will expand on this format. The session will start with a **Summary of Key Arguments** emerging from each of the 5 Sections, after which the full group will engage in a timed **Open Debate** that will conclude with the prioritization of the '**3 Major Themes of Action**'. These Themes will be further developed after the Conference.

With the sponsorship of Acciona & Telefónica Open Future_



With the support of The Oxford Union & Liberalnej Edukacji Foundation

