encounters

across sciences and humanities

30th November 2022
1st March 2023

Istituto Italiano di Cultura Londra

Embassy of Italy
London

ISTITUTO italiano DI CULTURA LONDRA

encounters

across sciences and humanities

Is a new series of conversations co-organized by the 'Ambasciata d'Italia' and the 'Istituto Italiano di Cultura' in London, to explore how experts in the natural, social and human sciences approach extremely relevant and urgent themes. Each conversation will focus on one overarching theme. Approaching each theme from the perspective of their respective knowledge and expertise, each expert speaker will provide a comprehensive view of the challenges and opportunities linked to their respective themes and topics. Everyone is welcome to attend: no prior knowledge is expected.

The six 'encounters' conversations will focus on the following themes:

1 **Complexity 30/11/22**
Carla Molteni (KCL) and Luca Vigano' (KCL)

2 **Modelling 7/12/22**
Filippo Giorgi (ICTP) and Paolo Vineis (Imperial)

3 **Uncertainty 18/1/23**
Roberto Maiolino (Univ. Cambridge) and Maurizio Ferraris (Univ. Turin)

4 **Predictability 1/2/23**
Simona Bordoni (Univ. Trento) and Howard Bowman (Univ. Birmingham)

5 **Transformation 15/2/23**
Nicola Armaroli (CNR/ISOF) and Anna Savaresi (Univ. Stirling)

6 **Justice 1/3/23**
Alessandra Sannella (Univ. Cassino) and Federica Pedriali (Univ. Edinburgh)

Organizational matters

Each event will take place at the 'Istituto di Cultura Italiano' in London, with the following program:

17.45 Doors open

18.00 Start of the event

18.10 Introduction by Katia Pizzi (Director, ICI) and Roberto Buizza (Italian Embassy)

18.20 Speaker A

18.50 Speaker B

19.20 Discussion, and question and answer session

19.45 Drinks and canapé

21.15 End of the event

People who wish to attend an event are asked to register. Registrations will be opened 2 weeks before each event.

The meetings will be held at the 'Istituto di Cultura Italiano', 39 Belgrave Square, from 18.00 to 19.30. Due to room capacity, only the first 90 people who register will be able to attend.

FOR MORE INFORMATION AND REGISTRATION CLICK HERE

Complexity

30th November 2022
18.00 - 19.30

ICI London Belgrave Square

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encounter

Scientific and technological progress, the availability of a growing number of more accurate observations and the continuous increase in computer power, have allowed us to understand that most of the systems we have to deal with are far from being simple. This evening, we will hear how complexity is dealt in two key areas: in material science and biology, and in cyber-security.

Unravelling the complexity of matter through the computational microscope

Carla Molteni

Guided by the laws of physics, atoms can assemble and disassemble in a huge variety of ways to create complex materials and biomolecules. Increasing powerful computers and innovative theoretical methods allow us to monitor the dynamics of atoms in complex systems, which ultimately determines the behaviour of living and non-living matter.

Carla Molteni is Professor of Physics at King's College London and co-director of the Thomas Young Centre the Theory and Simulation of Materials. Her expertise is in computational modelling of materials and biological systems. She holds a PhD from the University of Milan, and, before joining King's, worked at the Max-Planck Institut fuer Festkoerperforschung in Stuttgart and at the Cavendish Laboratory in Cambridge.

Affiliation: King's College London (UK)

Explainable Complexity: A Case Study in Cybersecurity

Luca Viganò

Science is not easy but it does not need to be complex. "Show and tell" is often the best approach when one wants to present, teach or explain complicated ideas such as those underlying notions and results in mathematics and science, and in particular in cybersecurity. I will discuss how different kinds of artworks can be used to explain cybersecurity notions and I will illustrate how telling (i.e., explaining notions in a formal, technical way) can be paired with showing through visual storytelling or other forms of storytelling.

Luca Viganò is Professor at the Department of Informatics of King's College London, UK, where he heads the Cybersecurity Group. His research focuses on formal methods and tools for the specification, verification and testing of security and privacy. He is particularly interested in explainable security and in formal analysis of socio-technical systems, whose security depends intrinsically on human users. Luca is also a playwright and screenwriter. His works have been published and produced in Italy, the UK and Russia.

Affiliation: King's College London (UK)

Modelling

7th December 2022
18.00 - 19.30

ICI London Belgrave Square

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encounter

Being able to model a real system, to construct a replica, a 'digital twin' of the real system, advances knowledge and allows to explore how the real system could evolve. This is what has been happening, for example, in weather and climate science, and health. This evening, we will hear how models are constructed, and their ability to simulate the real systems.

The new frontiers of climate modelling

Filippo Giorgi

The talk will first briefly review the status of climate modeling, from the global to the regional scale, highlighting advantages and limitations of different approaches. The discussion will then be on upcoming frontiers of climate modeling, in particular associated with the development of digital twins of the earth System and the inclusion of the human component in models.

Filippo Giorgi is an expert in climate modeling and climate change issues, with over 400 papers published in the international scientific literature. He contributed to the first 5 assessment reports of the IPCC and was awarded the Alexander von Humboldt medal of the EGU in 1998 for his contribution to the advancement of science in developing countries.

Affiliation: International Centre for Theoretical Physics (ICTP), Trieste (IT)

Modelling co-benefits of climate change mitigation

Paolo Vineis

Planetary health refers to "the health of human civilization and the state of the natural systems on which it depends". There is a close relationship between planetary health and human health. Intervening on risk factors for noncommunicable diseases could achieve a reduction of between 30% and 40% of premature deaths in HIC, and many of the preventive actions for NCD have also a positive impact on the environmental crisis, including climate change.

Paolo Vineis is Chair of Environmental Epidemiology at Imperial College London. He is a leading researcher in the field of molecular epidemiology. His latest research focuses on environmental exposures and intermediate markers from -omic platforms in large epidemiological studies. He also investigates the effects of climate change on non-communicable diseases.

Affiliation: Imperial College, London (UK)

Uncertainty

18th January 2023
18.00 - 19.30

ICI London Belgrave Square

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encounter

Uncertainty has always been affecting our understanding of reality. Observations are uncertain, the models that we are building to simulate reality are uncertain, our knowledge is imperfect. Uncertainty cannot be eliminated, but it can be investigated, estimated and managed. This evening, we will hear how uncertainty is dealt with in two different areas: space exploration, and philosophy.

Uncertainty in space: from origin of the universe to life on other planets

Roberto Maiolino

Unlike many other sciences, in most areas of astronomy and astrophysics we cannot perform experiments, we have to rely on what the firmament delivers to us. Therefore, major efforts are undertaken to understand and minimize uncertainties by developing new telescopes that can observe the universe with improved capabilities. I will illustrate examples of how uncertainties affect our understanding of the cosmos, from the Big Bang to the characterisation of planets in other solar systems.

Roberto Maiolino is Professor of Experimental Astrophysics at the University of Cambridge, Honorary Professor at UCL and Royal Society Research Professor. From 2016 to 2021 he was Director of the Kavli Institute for Cosmology. He studies the formation of galaxies and black holes, and plays a leading role in international projects, including the James Webb Space Telescope.

Affiliation: Cambridge University (UK)

Uncertainty in philosophy

Maurizio Ferraris

Uncertainty seems to characterize our present age, even taking centre stage in the public debate. However, there is a way to overcome it: proposing a new Webfare, namely a digitally based welfare which presupposes the recognition of the value produced on the Web and its redistribution for the well-being of every human being.

Maurizio Ferraris is Full Professor of Theoretical Philosophy at the University of Turin, and the president of Labont (Center for Ontology). Visiting professor at Harvard, Oxford, Munich, and Paris, author of successful television programmes and over sixty books translated worldwide, in his long career he has determined a new course of thought and studies in at least four areas: hermeneutics, aesthetics, ontology, and the philosophy of technology.

Affiliation: University of Torino (IT)

Predictability

1st February 2023
18.00 - 19.30

ICI London Belgrave Square

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Consider a system that affects our life: if we can predict how it evolves, we can take better informed decisions on how to manage its impacts. This applies to natural sciences and to social sciences. The challenge is that systems' evolutions can be predicted only for a limited future time. This evening, we will discuss our understanding of predictability of weather and climate, and predictability in cognitive science.

How can we make reliable predictions of future climate when we cannot predict weather ten days in advance?

Simona Bordoni

While weather forecasts have become increasingly more accurate in the past decades, prediction skills 10-to-15 days in advance remain limited. Climate is the average weather over a longer period of time, and its evolution is primarily a response to boundary conditions. Because of this, we can still say something meaningful about it will be evolving. I will discuss the key differences between weather and climate, potential and limits of their predictability, and prospects for future progress.

Simona Bordoni is Full Professor of Atmospheric Physics at the University of Trento. She has a PhD in Atmospheric and Oceanic Sciences from UCLA, and worked at NCAR and at Caltech. Her research lies in the area of atmosphere and climate dynamics, with a focus on the interaction of large-scale circulations and the hydrological cycle.

Affiliation: Università di Trento (IT)

Prediction in the Brain

Howard Bowman

The idea that the brain is a prediction engine can be traced back, at least, to Helmholtz in the 19th Century. However, this view has become more prominent this century, as a result of attempts to explain non-classical receptive fields and the introduction of predictive coding. However, a criticism of predictive coding is that it becomes unfalsifiable. I will explain these ideas in the context of human perception and the question of how "interpreted" is our conscious experience.

Bowman is Professor of Cognitive Neuroscience at the University of Birmingham and Professor of Cognition & Logic at the University of Kent. He is also Honorary Professor at the Wellcome Centre for Human Neuroimaging, UCL. He works in cognitive and clinical neuroscience, with particular focus on theories of temporal attention and conscious perception. He is also the inventor of the Fringe-P3 method, which has been proposed as a countermeasures resistant concealed knowledge test.

Affiliation: School of Psychology, University of Birmingham (UK)

Transformation

15th February 2023
18.00 - 19.30

ICI London Belgrave Square

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Pollution, climate change, pandemics, wars. Society needs to be completely transformed to guarantee a future to the next generations, but strong interests, poor knowledge, complexity, apathy make this difficult to happen. This evening, we will discuss a few key aspects linked to the need to transform the way we generate and store energy, and how people and countries interact.

Transforming the energy system: an epochal challenge

Nicola Armaroli

The transition from fossil fuels to renewable energy is the key tool to fight climate change and reach climate neutrality by 2050. An epochal energy transition to be completed in less than thirty years is a huge challenge and the next decade will be crucial. A short analysis of some technical, economic and social bottlenecks along the way will be made. The energy transition is not only a big challenge, but also an unprecedented opportunity of progress for human civilization.

Nicola Armaroli is research director at CNR and a member of the Italian National Academy of Sciences. He studies materials and systems for solar energy conversion and analyses the energy transition in its complexity, also in relation to climate change and resource scarcity. He also serves as consultant for several national and international institutions on energy issues.

Affiliation: Institute for Organic Synthesis, CNR Bologna (IT)

The role of citizens in the energy transition: turning energy consumers into energy producers

Annalisa Savaresi

Measures to stimulate citizens' involvement in the generation of renewable energy are increasingly frequent, as a means to engender greater legitimacy in energy governance, tackle fuel poverty, and enable the transition towards net zero societies. This talk assesses the complexities of turning energy consumers into energy producers and sellers.

Annalisa Savaresi is Associate Professor of International Environmental Law at the Center for Climate Change, Energy and Environmental Law, University of Eastern Finland. She furthermore holds a senior research post at the University of Stirling, UK. Her work has been cited widely, including by the Intergovernmental Panel on Climate Change. She has given evidence to the UK, the EU and Scottish Parliaments and sits on the Board of Environmental Standards Scotland, the new body scrutinising Scottish public authorities' compliance with environmental law established by the UK Withdrawal from the European Union (Continuity) (Scotland) Act 2021.

Affiliation: Stirling University (UK)

Without addressing social justice we will not be able to transform the world and address the key challenges that we are facing: climate change, access to food, health, conflicts. The fact that resources are finite, makes it challenging to address these problems while guaranteeing and increasing social justice. This evening, we will discuss climate justice, and how literature can contribute to address the key challenges we are facing.

Justice and social transition

Alessandra Sannella

To identify the correct driver that guarantees social justice in Western countries, the institutions have accurate indicators that can interpret the emergency of climate change on a planetary scale. Society needs a 'logic of overall forecasting' to reduce inequalities and guarantee social and health equity to all citizens. The cohesion of society can be guaranteed by reliable knowledge of the scientific method. Through scientific indicators and citizen science participation, it will be possible to involve institutional actors to achieve a participatory social transition.

Alessandra Sannella is Associate Professor and Delegate of the Rector for Sustainable Development at the University of Cassino. Her scientific interests concern the reduction of inequalities in health related to climate change, social justice, health, and global health policies related to sustainable development.

Affiliation: University of Cassino (IT)

Literature in the digital world (how can it guide us in the Anthropocene?)

Federica Pedriali

Humans are not just fabulous storytellers. They act on their stories. What we call World rests on such things and when they give way it is time for a hard world reset. Can literature guide us as we face one such moment? Of course, it can and will – we expect a lot of our tools. But will it compromise, yes, make mistakes in the process? Of course, it will – this is the beauty and the horror of our predicament. As the late Bruno Latour once put it, the future is too simply stated if we tell it as the time when our story could / would / might become clear, straightforward, entirely just.

Federica Pedriali is Professor of Literary Metatheory and Modern Italian Studies at the University of Edinburgh and Research Affiliate at the Edinburgh Futures Institute. Her work intersects Biopolitics, Cognitive Narratology, Continental Philosophy, Decolonial Studies, Migration and Diaspora Studies, the Environmental Humanities, Performance Studies, and Political Theory.

Affiliation: Edinburgh University (UK)

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