

## 'emergence and non fundamentalistic metaphysics'

In the inner synchronic structure of our world and in its historical processes we acknowledge the occurrence of qualitatively new phenomena at different levels of organization. Nevertheless, although these new phenomena arise from previous elements they cannot be completely reduced to them – either taken by themselves or through a mere linear or combinatorial models. How can we make intelligible this emergent novelty and this non-reducibility without giving up of causal or law-like kinds of explanation?

On the other hand, must we assume the existence of a fundamental level of reality to which everything should, in principle, be reduced? A fundamentalist metaphysics implies that everything is fixed at a certain level – for example, that of the ultimate particles or fields – and that everything else is ontologically derivative and, in principle, epistemologically derivable from its fundamental properties and laws.

In such hypothesis what looks like an ontological emergence (a new kind of system, behavior, property or causal power) is only a case of epistemological emergence arising from the complexity of the phenomena and from limited abilities to calculate, to predict, or to explain. Nevertheless, even cases of epistemological complexity already challenge the traditional linear (atomistic) approaches, such as the methodological individualism, or the continuist perspectives on developmental and evolutionary processes – either in Physics, in Biology or in Social Sciences.

Is it necessary to start from a non-fundamentalist metaphysics in order to defend ontological emergence?

### Invited Speakers

**Erez Firt** | **Software Engineer**

Tel Aviv University

**Francisco Carrapiço** | **Biology**

University of Lisbon

**Francisco Louçã** | **Economy**

ISEG; Head of the 'Research Unit on Complexity and Economics'

**Gil C. Santos** | **Philosophy**

CFCUL

**Gildo Magalhães** | **History of Sciences**

University of São Paulo

**João L. Cordovil** | **Philosophy of Physics**

CFCUL

**John F. Symons** | **Philosophy**

University of Texas at El Paso

**Jonathan Tennenbaum** | **Physics**

Quantix 'Société de Recherche et Développement en Technique Vibratoire', Paris

**José Castro Caldas** | **Economy**

Researcher at Centro de Estudos Sociais, Universidade de Coimbra

**José R. Croca** | **Physics**

CFCUL, University of Lisbon

**Mark Bickhard** | **Philosophy**

Dir. of the Institute for Interactivist Studies, Pennsylvania

**Nathalie Gontier** | **Philosophy of Science**

Dutch Free University of Brussels

**Peter A. Corning** | **Biology**

Dir. of the 'Institute for the Study of Complex Systems', Washington

**Rui N. Moreira** | **Physics, History and Philosophy of Sciences**

CFCUL, University of Lisbon



Centro de Filosofia das Ciências  
da Universidade de Lisboa

<http://cfcul.fc.ul.pt>

Faculdade de Ciências da UL  
Campo Grande, Edifício C4,  
3º Piso, Sala 4.3.24  
1749-016 Lisboa, Portugal

tel: 21.750.03.65

email: [cdlisboa@fcul.pt](mailto:cdlisboa@fcul.pt)



Organized by the  
Research project  
What is a Physical  
Theory?  
Head: Rui Moreira

# International Colloquium emergence and non-fundamentalist metaphysics

2012, May 14th | 15th | 16th

Organising Committee:

Rui N. Moreira  
Gil C. Santos  
João L. Cordovil  
John F. Symons

Conference Secretariat:

Ricardo Santos  
Márcia Belchior  
Alexandra Padinha

## MONDAY

May 14<sup>th</sup>

14.30 **OPENING SESSION**  
Olga Pombo and Rui N. Moreira

15.00 **COMPLETELY PHYSICAL?  
EMERGENCE AND HUME'S  
DICTUM** | John F. Symons

15.45 **BEYOND NEO-DARWINISM.  
BUILDING SYMBIOGENIC THEORY  
OF EVOLUTION** | Francisco Carrapiço

16.30 COFFEE BREAK

17.00 **BOOK LAUNCH SPECIAL  
SCIENCES AND THE UNITY OF SCI-  
ENCE'** | Olga Pombo, Juan Manuel Tor-  
res, John Symons and Shahid Rahman  
(Eds.)

### WHERE:

Faculty of Sciences of the  
University of Lisbon  
Auditorium of the FFCUL  
Building C1 - 3<sup>rd</sup> floor  
Lisbon

+info: <http://cfcul.fc.ul.pt>

Centre for Philosophy of Sciences of the University of Lisbon

emergence and non fundamentalistic metaphysics

## TUESDAY

May 15<sup>th</sup>

10.00 **IN WHAT CONDITIONS CAN  
WE CONSIDER A NEW PHYSICAL  
THEORY AS A STRONG  
EMERGENCE?** | Rui N. Moreira

10.45 **PROBLEMS FOR EMERGEN-  
TISM: THE DOWNWARD CAUSATI-  
ON ARGUMENT – A PROBLEMATIC  
PROBLEMA** | Erez Firt

11.30 COFFEE BREAK

11.45 **AN ONTOLOGY OF  
TRANSFORMATIVE RELATIONS FOR  
EMERGENCE THEORY** | Gil C. Santos

12.30 LUNCH

15.00 **ECONOMICS, PHYSICS AND  
META-PHYSICS** | Francisco Louçã

15.45 **CONTINUITY VS. EMERGENCE,  
A BREAK UP? A LOOK BEYOND  
PHYSICS AND BEHIND ECONOMICS**  
| Gildo Magalhães

16.30 COFFEE BREAK

16.45 **THE SYNERGISM HYPOTHESIS:  
A THEORY OF EMERGENT  
COMPLEXITY IN EVOLUTION** |  
Peter A. Corning

## WEDNESDAY

May 16<sup>th</sup>

10.00 **EMERGENCE, DE-EMERGENCE.  
A CONCRETE PHYSICAL EXAMPLE** |  
José R. Croca

10.45 **WHY ARE THERE NO EXAM-  
PLES OF ONTOLOGICAL  
EMERGENCE FROM PHYSICS?** |  
João L. Cordovil

11.30 COFFEE BREAK

11.45 **BIOLOGICAL REALITIES: HOW  
EVOLUTIONARY EPISTEMOLOGY  
CAN INFORM US ON ONTOLOGY** |  
Nathalie Gontier

12.30 LUNCH

15.00 **EVOLUTION AT THE SERVICE  
OF MECHANICS: AN EPISODE IN  
THE HISTORY OF ECONOMICS** |  
José Castro Caldas

15.45 **CREATIVITY IN NATURE AND  
CREATIVITY IN MAN** | Jonathan  
Tennenbaum

16.30 COFFEE BREAK

16.45 **THE METAPHYSICS OF  
EMERGENCE** | Mark Bickhard

17.30 **CLOSING**

20.00 **DINNER** Fábrica Braço de  
Prata , Rua da Fábrica de Material de Guer-  
ra, nº1, 1950-128 Lisboa