28-29 June 2007

From Type Theory to Morphologic Complexity:
A Colloquium in Honor of Giuseppe Longo

In conjunction with **RDP 2007**.

Paris, **Conservatoire National des Arts et Métiers**, Amphitheaters 3 and A.

This colloquium is organised to celebrate the 60th birthday of Giuseppe Longo.

The main research area Giuseppe Longo has been interested in concerns syntactic and semantic properties of the "logical base" of functional languages: Combinatory Logic, Lambda-calculus and their extensions. However, he always investigated these topics in its broadest setting which relates them to Recursion Theory, Proof Theory and Category Theory.

In this perspective, Longo worked at some aspects of Recursion Theory, Higher Type Recursion Theory, Domain Theory and Category Theory as part of a unified mathematical framework for the theory and the design of functional languages. In a sense, Longo has always been mostly interested in the "interconnecting results" or "bridges" and applications among different areas and to language design. He also worked at the applications of functional approaches to Object-Oriented programming. He is currently extending his interdisciplinary interests to Philosophy of Mathematics and Cognitive Sciences.

A recent interdisciplinary project on Geometry and Cognition (started with the

▶ Speakers and talks
▶ Timetable
▶ Venue, Registration, and Organisation

Speakers and talks (alphabetical order)

- **Henk Barendregt** and **Jan Willem Klop:** *Non-left linear reductions via infinitary lambda calculus*
  [Abstract]

- **Kim Bruce:** *Modularity and Scope in Object-Oriented Languages*
  [Abstract]

- **Luca Cardelli:** *Artificial Biochemistry*
  [Abstract]

- **Pierre-Louis Curien:** *Computational self-assembly*
  [Abstract]

- **Mariangiola Dezani** : *Session Types for Object-Oriented Languages*
  [Abstract]

- **Abbas Edalat:** *Recursively measurable sets and computable measurable sets*
  [Abstract]

- **Jean-Yves Girard:** *Truth, modality, intersubjectivity*
  [Abstract]

- **Furio Honsell** and **Gordon Plotkin:** *On the βη-completeness and expressiveness of some classes of combinatory algebras*
  [Abstract]

- **Martin Hyland:** *Modelling the Impossible*
  [Abstract]

- **Giuseppe Longo:** *From exact sciences to life phenomena: a few concluding remarks on Bohr and Schrödinger*
  [Abstract]

- **Eugenio Moggi:** *Category Theory and Lambda Calculus*
  [Abstract]

corresponding grant: "Géométrie et Cognition", 1999 - 2002 with J. Petitot et B. Teissier), focused on the geometry of physical and biological spaces. The developements of this project lead to a new initiative at DI-ENS, in 2002, the setting up of the research team "Complexité et information morphologiques" (CIM), centered on foundational problems in the interface between Mathematics, Physics and Biology.

This colloquium tries to partially cover the various fields spanned by Giuseppe Longo research via several talks given by some of the collegues he met during his quest.

- **Mioara Mugur-Schächter:** *On the patient quest of Giuseppe Longo for a general unity and coherence*
  [Abstract]

- **Thierry Paul:** *Semiclassical analysis and sensitivity to initial data*
  [Abstract]

- **Jean Petitot:** *Neurogeometry and the origin of space.*
  [Abstract]

- **John Stewart:** *Is "life" computable?*
  [Abstract]

Timetable

Thursday, June the 28th, 2007 - Amphitheater 3 (number 31 on this map)

14:00 – 14:10	Welcome
14:10 – 15:30	**Session 1: Lessons from Logic and Physics** Mioara Mugur-Schächter: *On the patient quest of Giuseppe Longo for a general unity and coherence* Jean-Yves Girard: *Truth, modality, intersubjectivity*
15:30 – 16:00	Coffee break
16:00 – 16:40	**Session 2: Geometry and Cognition** Jean Petitot: *Neurogeometry and the origin of space*
16:40 – 18:00	**Session 3: Models and Categories** Eugenio Moggi: *Category Theory and Lambda Calculus* Martin Hyland: *Modelling the Impossible*

Friday, June the 29th, 2007 - Amphitheater A (number 4 on this map)

09:00 – 10:20	**Session 4: Lambda Calculus** Henk Barendregt and Jan Willem Klop: *Non-left linear reductions via infinitary lambda calculus* Furio Honsell and Gordon Plotkin: *On the βη-completeness and expressiveness of some classes of combinatory algebras*
10:20 – 10:40	Coffee break
10:40 – 12:40	**Session 5: Theoretical Biology and Biological Theories** Pierre-Louis Curien: *Computational self-assembly* Luca Cardelli: *Artificial Biochemistry*