

Intersecting paths across mathematics, biology, and epistemology

A colloquium in honor of Giuseppe Longo and Ana Soto

ENS Paris, 21-22 October 2022

Organizers: Maël Montévil, Barbara Bravi and José Antonio Pérez Escobar

In this colloquium, we celebrate the 75th birthdays of Giuseppe Longo and Ana Soto. We have chosen to show their distinct trajectories and then how they intersect while working on the foundations of theoretical knowledge with a biology focus. In this respect, both Giuseppe Longo and Ana Soto maintain a close relationship with philosophy and philosophers. At the same time, both are also involved in “the life of the polis”, this is, addressing the repercussions of science in society and the environment, both as scientists and intellectuals.

On the first day, we will discuss a sample of their contributions. Giuseppe Longo is first a mathematician. His work focus on the mathematics and logic of computing while also examining the foundations of mathematics. Together with Francis Bailly he expanded this initial inquiry by examining the foundations of physics, cognitive sciences and biology. His subsequent research has gradually turned towards the epistemology of new interfaces.

Ana Soto is first a biologist, who investigated the control of cell proliferation by hormones. This work, done in partnership with Carlos Sonnenschein, led them to empirical discoveries, notably their pioneering research on endocrine disruptors, and theoretical ones, on the principles necessary to understand the control of cell proliferation, and a new theory of carcinogenesis where cancer is viewed as development gone awry. Thus, Ana Soto’s work encompasses experimental and theoretical biology at the frontier between biology and philosophy.

The second day is devoted to Ana's and Giuseppe's joint endeavors. The first morning is devoted to the theory of organisms, a work that took place mainly within the framework of Ana Soto's Blaise Pascal Chair at the Ecole Normale Supérieure, hosted by Giuseppe Longo. The afternoon highlights how they address issues of our time, at the interface of the natural sciences and the humanities. In this light, their work contributes by responding to the urgent need to address the critical state of the biosphere in the Anthropocene.

Language: en, fr

Webpage: <https://republique-des-savoirs.fr/events/event/from-foundations-of-mathematics-to-the-epistemology-of-new-interfaces-a-colloquium-in-honor-of-ana-soto-and-giuseppe-longo/>

Preliminary Program

Day 1, 9h30 - 18h00

Morning - Session 1: **The Society of Cells.**

Carlos Sonnenschein, Paul-Antoine Miquel

Morning - Session 2: **Foundations of Mathematics and Computing.**

Simone Martini, Pierre Louis Curien

Afternoon - Session 3: **Endocrine disruptors.**

Mathias Girel, Nicolas Cabaton, Barbara Demeneix

Afternoon - Session 4: **Interface of Mathematics with Physics and Biology.**

Thierry Paul, José Antonio Pérez Escobar, Alessandro Sarti

Day 2: 9h30 - 18h00

Morning - Session 5: **Theory of Organisms.**

Alberto Vianelli, Angelika Hilbeck, Denis Noble, Matteo Mossio, Maël Montévil, Carlos Sonnenschein, Paul-Antoine Miquel

Afternoon - Session 6: **Interface with humanities.**

Jean Lassègue, Alain Supiot

Afternoon - Session 7: **Taking care of the biosphere**

Marie Chollat, Andrea Angelini, Marie-Claude Bossière

Venue: ÉNS de Paris, 45 rue d'Ulm and online

Online:

<https://cnrs.zoom.us/j/97288722965?pwd=NkJhYS9yV2hjNlI1bG9WNSStFamFhUT09>

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