

HOW IGNORANCE DRIVES OUR KNOWLEDGE

Ethology

Andrea Gazzola (Department of Earth and Environmental Sciences, University of Pavia)

Prey perception of predation risk

How can prey animals assess predation risk? How can we measure predation risk assessment when no defensive behaviour is evident? Can we measure predation risk perception per se?

Conservation Biology

Thomas Abeli (Department of Science, Roma Tre University)

Knowledge gaps and information inertia hampers the conservation of Extinct in the Wild plants

How do we know if a plant species is extinct? How do we know if a plant species is extinct-in-the-wild? What are the consequences of out-of-date datasets on plant species conservation? How do we update old data and how updates can help species extinction? Is extinction forever? Are there any chances to recover extinct species?

Physics

Andrea Fontana (National Institute for Nuclear Physics - Section of Pavia)

Analogy and symmetry in Physics: the case of antimatter

What is antimatter made of? The elementary constituents of antimatter, the positron and the antiproton, were predicted by the theory many years before their experimental observation. Physicists were guided by the analogy with ordinary matter and by the search for a symmetry in the equations and in Nature. Today we can produce and study antihydrogen, the simplest antimatter atom, in the laboratory. What are its properties? Does it fall up or down? And... why is antimatter so elusive? Where has all the antimatter gone after the Big Bang?

Linguistics

Chiara Zanchi, Ilaria Fiorentini (Department of Humanities, University of Pavia)

New methods, newer questions: The perspective of linguistics

The class will address ignorance through the lens of two subfields of linguistics: historical linguistics and sociolinguistics. In the section dedicated to historical linguistics, we will trace over two centuries of the discipline's history. We will observe how linguistics, in general, deals with ephemeral data (human conversations) and how historical linguistics, in particular, suffers from irremediable gaps in coverage. We will also explore how we can reconstruct and discuss unattested languages. Finally, we will examine how, in recent decades, quantitative and computational methods have helped facilitate the challenging work of historical linguists.

Physics

Giacomo Livan (Department of Physics, University of Pavia)

The science of success

Who gets to be successful and why? Are our societies as meritocratic as we would like them to be? If not, can we understand what factors drive success other than merit? And – last but not least – why the heck is a physicist talking about such things?

Chemistry

Chiara Milanese (Department of Chemistry, University of Pavia)

The Carbon treasure in agrifood waste: A possible solution for the energetic issues?

How is it possible to give a second “energetic” life to agrifood waste? How is it possible to extract the C treasure in the waste? How can we characterise the obtained materials and optimise their properties towards the second life? How is energy stored in these materials? How is hydrogen captured by C in these materials?

Chemistry

Stefano Protti (Department of Chemistry, University of Pavia)

Faster-than-light: the multifaceted application of photoinduced processes.

Light driven processes have gained considerable attention in recent years, as a promising and versatile strategy for application in synthesis, theragnosis and energy storage

Cell Biology

Ilaria Canobbio (Department of Biology and Biotechnology, University of Pavia)

Alzheimer's Disease: To brain or not to brain?

The aetiology of Alzheimer's Disease (AD) is still an issue. We don't know whether deposition of amyloid peptides in brain parenchyma and cerebral vessels is the cause or the consequence of AD (or a combination of both), and we don't know the physiological functions of amyloid peptides. Despite being considered a pathology of the brain, new evidence suggests that AD may result from systemic rather than cerebral dysfunctions. Different hypotheses have been postulated to describe AD origin and find new therapies to slow it down, but we are still far from discovering the truth

Animal Ecology

Alessandro Balestrieri (Department of Environmental Science and Policy, University of Milan)

Perspectives in nutritional ecology

Why do animals eat? And how physiological requirements drive their feeding behaviour? Can we learn anything about the nutritional ecology of free-ranging elusive species?

What can nutritional ecology tell us about fitness? And about competition and, finally, evolution?

Physics

Giorgio Baiocco (Department of Physics, University of Pavia)

Low-dose radiation biology: Where are we now?

The follow-up of atomic bomb survivors seems to support the hypothesis that the risk of developing a solid cancer due to ionizing-radiation exposure increases linearly with the dose (i.e., a measurement of the amount of radiation the subject is exposed to) above 100 mSv (the lowest exposure level that could be reconstructed). Little is known on what are radiation-induced health effects below this exposure level: does a threshold dose exist, below which no effect can be observed? Might low doses of radiation have a beneficial health effect, instead? What are the possible non-cancer effects in this low-dose region, and how can we try to get solid information, free of the many possible confounding factors?

Geology

Matteo Alvaro (Department of Earth and Environmental Sciences, University of Pavia)

What's below our feet? Centuries of exploration of the Earth interior

What do we know about the Earth interior and its dynamics? Was Jules Verne a visionary or Otto Lidenbrock of the Journey to the Center of the Earth actually inspired generations. Are there really oceans into the Earth's interior? What stories can we learn from the journey of rocks? Are there any other planets like Earth?

Philosophy

Selene Arfini (Department of Humanities, University of Pavia)

The Philosophy of Ignorance: Exploring Not-Knowing in Epistemology

The concept of ignorance is complex and raises various philosophical problems. Is it ever rational not to know something? When we say someone is ignorant of something, are we describing their intrinsic limits and recognizing them as humble cognitive agents? Or are we negatively marking their lack of effort in overcoming their limitations? Are we implying they can ask questions about their ignorance, or should we assume they cannot understand or articulate it? This talk will address some of the philosophical issues that are most debated in current Ignorance Studies literature

All disciplines

Davide D'Angelo (Department of Physics, University of Milano Statale, INFN)

The most Unknown

Screenplay and discussion of "The most Unknown". This is a 2018 documentary film, directed by Ian Cheney, that introduces nine researchers from diverse scientific backgrounds to areas of scientific field work new to them.