



## **Talk by Dr. Anna Truzzi "Integrating information in time: The development of intrinsic timescales"**

~~Desde~~ el Jue, 16/03/2023 - 13:00

Talk: "Integrating information in time: The  
development of intrinsic timescales"  
Dr. Anna Truzzi, Trinity College Dublin  
Date, time, and venue: March 16th, 13:00h.  
Conference room 1, CIMCYC

### Abstract:

Adult humans and other mammals, integrate information on different timescales. A hierarchy of intrinsic timescales is present in different brain areas, with sensory motor areas integrating information on short timescales and higher order areas on longer ones. This characteristic allows the brain to flexibly encode meaningful patterns of information emerging from the environment at different distances in time. However, it remains unknown how the intrinsic timescales develop and relate to learning processes. Timescales could be adult-like already at birth, preceding a critical learning period, and shape learning by imposing an inductive bias. Alternatively, the hierarchy of timescales could develop in concert with the learning process and reflect the acquisition of temporal statistics in the environment. To investigate these alternatives, we compared intrinsic timescales in neonates and adults and measured their longitudinal development early in life, analysing data collected with fMRI and EEG. Intrinsic timescales already had a specific structure at birth, but different from adults. The results suggest that timescales at birth act as an inductive bias that favours learning on longer timescales and then develop with experience or maturation. This might help human infants to create more regularised representations of the input, which would in turn favour the development of abstract representations and more efficient problem solving.

