

Mathematical models, mental models, and thinking

Models are everywhere around us – and Daniel’s talk, taking off from this basic assumption, indeed made it compellingly clear just how pervasive they are. Take El Greco’s painting *Toledo*: it is a representation of reality where some details have been omitted, so it can be conceived of as a model. At a higher level of abstraction, the same holds true for charts and graphs representing economic trends, and even mathematical functions are models after all – mappings between some aspects of reality and a (highly formalized) visual representation: a symbol. Interestingly, a model is both process and product of the mapping, so it has a twofold nature – static and dynamic. A collection of models can form a theory, but between models and theories there is a two-way relation: theories can beget models, models can beget theories, each feeding into each other. In the second part of the talk, Daniel addressed some of the applied implications of various kinds of models: mathematical models can help decision-making and guard us against the unconscious biases of our mental models, which while effective in most daily situations, cannot cope with the full complexity of the world around us. All in all, the talk gave the public a lot of food for thought, as well as an increased awareness that we cannot know reality – except, that is, through models, be they artistic, mental or mathematical.

Talk by Daniel Solomon, 17th October 2018

Report by Davide Castiglione, 31st October 2018