
Verification & Validation of Computer Simulations: A Philosophical Analysis

Julie Jebeile*¹

¹Institut d'Histoire et de Philosophie des Sciences et des Techniques (IHPST) – Université Paris I -
Panthéon-Sorbonne, CNRS : UMR8590, Ecole Normale Supérieure de Paris - ENS Paris – 13 Rue du
four 75006 PARIS, France

Abstract

Engineers set out their own approaches to sanctioning simulation models. One of them, the Verification & Validation approach (V&V), has proven itself, notably by ruling the sanctioning of simulation models in the nuclear engineering sector. V&V proceeds in two distinct phases. The verification phase consists in checking if the mathematical equations of models are correctly solved, i.e. the solutions to the equations we find are exact or almost exact. The validation phase consists in confirming or invalidating models by checking that the solutions to the equations fit with the experimental data on the systems under study. In this paper, I first show that these two phases can not be performed distinctively, one after the other. Furthermore, I contend that the entanglement of the two phases favors the risk of taking for correct numerical solutions which actually deviate from the empirical world.

*Speaker