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Modelology - A New Scientific and Engineering Discipline: The Science and Practice of Models and Modelling

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Every object and every idea can be used as a model in an application scenario if it becomes useful in the scenario as an instrument in a function. Through this use and function, an object or idea becomes a model, at least for a certain or long time, for the respective model user in its context and environment. Models, therefore, tell something about the use, the function, the scenario and the users without this being explicitly seen in the model. The model-being of an object or idea also explains a lot about the object or idea.

Models are used in many ways in science and technology as well as in all phases of daily life up to ceremonies, presentations, stencils or a guide. That's why models are universal tools of every human activity since every object and idea can become a model, and models are usually much simpler and focused on concrete use.

The functions of models also allow a classification, i.e., an abstract characterisation of the model-being for the respective scenario. Model-being represents a model as a model "of something". Instrument-being is the starting point for classifying models as representational, activity, explanatory, orientational, instructional, perceptual, declarative, socialization, or interactional models, or conceptual or investigative models, and their respective subcategories. An object or idea may be used in more than one capacity at the same time so that a model may be assigned to different categories at the same time.

This raises questions such as the following: when does something become a model, which characteristics distinguish a model, which quality is expected from a model, to what extent can a model be trusted, which properties exclude being a model, to what extent is a model suitable and when not, what potential and what performance can be expected from a model, etc.

Keywords: modelology, discipline, models, universal tools, modellkunde.