

Models

A model is a (provisional, of course) outcome in knowledge building. Facts of sensible world may well be registered, bases of assertions may well be translated in axiomatics, as long as knowledge will not be represented by a model that will support, let even say materialise, the view the researcher has built about its study object, this knowledge will remain incomplete, and clumsy.

Attention must be paid to the multiple meanings the term "model" may take in common language; attention must also be paid to the multiple meanings it may take among scientists. A model does not mean the exact same thing for a mathematician, a physician, a sociologist. A distinction must also be made between static models, which are representations of some existing reality, and dynamic models, whose working allows simulating processes.

The most general definition one may give is the following one : a model is a simplified representation of a reality, which gives sense to this reality and hence allows to understand it. It should be noted however that, in order to build a relevant model, it is necessary to already understand the essentials of reality of the study object. We find here again the unassailable circularity of knowledge building.

The above definition is not sufficient if it is to be applied to a dynamic model, and it must be complemented: a model is then the simplified reconstitution of a process, which aims at representing a real world process. A dynamic model thus includes a progress, from input data to results of model working.

A model is necessarily simplified, otherwise it would be reality itself and would not contribute in any way to knowledge building. It is thus an abstract representation. This means that approximation - and even error - are inherent to models.

There are always modelling phases in scientific research, and, unlike what is often pretended, models occupy as fundamental a place in Human and Social Sciences than in Sciences of Matter and Life. They are however less formalised, and the author of discourse is not always aware that he has built a model. Theory allows progressing in building of models, which themselves in turn enrich - or possibly contradict - theory. We find here again the in loops progress of knowledge building.

Besides being unavoidable, modelling is particularly enriching in knowledge building in Human and Social Sciences, as it allows to clearly distinguish particular from general. For example, in geography, long observation and generalisation phases have allowed to build a model of daily work migrations between large cities and their peripheries. Observed deviations with regard to this model attract attention of the researcher on such or such particularity of a given city.

See also terms:

- Epistemological bases
- Theories of spatial analysis

Bibliographie