

A Reading of  
S. Nichols, S. Stich, A. Leslie and D. Klein's  
Varieties of Off-line Simulation

The authors of this paper present a broader application spectrum of "Simulation Theory" (ST). While denouncing ST for behavior prediction, they defend off-line simulation as a viable alternative to an information based (representational) theory of mind in the fields of empathy, mental imagery and counterfactual reasoning.

Given that, it seems that the current ST models for each of these extensions do not satisfy the authors, as well as this reader. As conceptually - and even more so poetically - intriguing as these ST models may be, they match "Theory Theory" (TT) predictions at best and often fail to correctly explain empirical data collected on normal and autistic children.

Even the only positive example, our inference on "whether native speakers would deem sentence A grammatically correct", which seems to invite a ST explanation, is not convincing. In my opinion, most subjects actually reply to a "hidden" question, namely - "do you consider this sentence grammatically correct?". The projection onto others is a simple generalization rather than a case of perspective-taking.

ST seems to be an unnecessary formulation of our ability to describe other people's actions and even though the proposed realms (empathy, mental imagery etc) seem appropriate for such an analysis, TT is a simpler and more general theory capable of describing these phenomena.

Nonetheless, this paper draws our attention to types of behavior which might more easily be implemented using a simulation engine in an artificial agent. Simulation can be implemented in quite a straightforward manner for perspective taking of the human's visual perspective, and simulation techniques seem very intriguing when thinking about an empathy engine, given that a good working emotional model is in place.

So, even though ST does not seem convincing as a psychological theory, it might be a good-enough approximation for artificial minds, especially in two of the discussed realms of social behavior - empathy and mental imagery. The task of modeling counterfactual reasoning seems qualitatively more complex.