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Probability of conditionals - a stochastic graph model

Imagine we roll a die and consider the following conditional sentence:

If it is even than it is a six

Undoubtedly if the die comes up 6 we will consider this sentence to be true, if the result is either 2 or 4 come up – as false. But what if the result is an odd number ? Does this sentence lack logical value than?

It is commonly assumed that conditionals should be interpreted differently than material implications and instead of their **truth value** it is reasonable to speak about their probability (i.e **their chance to be true**). It seems easy: intuitively we ascribe probability $1/3$ to the considered sentence, as it equals simply the conditional probability: it is a 6 conditionalized upon the event that it is even. But such intuitions can be applied only in a very limited way.

Firstly, they are not sufficient to estimate the probabilities of more complex sentences containing the conditional. They do not say anything about the probability of, for instance, a conditional conditional sentence *If it is even than it is a 6 so if it is odd than it is a 5*.

Secondly it is not clear how counterfactuals (like *If Oswald hadn't shot Kennedy, someone else would*) should be evaluated.

Thirdly accepting a general rule (referred to as PCCP) according to which the probability of a conditional sentence equals to the conditional probability leads – as was show by D. Lewis in 1976 – to paradox consequences. It would imply in the case of our example that the respective probability is not $1/3$, but $1/6$.

The problem of estimating probabilities of conditional sentence is not simple, and in principle none of the existing semantics can cope with it in a satisfying way.

The aim of the project is to **develop a new model for computing probabilities of conditional sentences exploiting the results of Markov graphs theory (i.e. a kind of stochastic graphs)**. This model , as is indicated by preliminary results will in particular make it possible to:

- Define the notion of probability of conditional sentences in a precise way (a large part of the considerations in the respective literature have an intuitive character);
- Provide a simple method of computing probabilities for a wide class of complex conditionals;
- Cope with the consequences of Lewis's result.
- Provide a better understanding of Dutch-Book arguments.
- Shed light on the problem of the relationship between indicative and subjunctive conditionals.