Bear F. Braumoeller, *Causal Complexity, Theory Problems, and the Study of Politics*
International Organization, 2002?

The main message of this article is the following: "the full potential of quantitative methodology in the study of world politics can only be realized if theoretical logic rather than statistical convention drives the selection, and if necessary the creation, of appropriate methods" (p. 25).

Empirical studies suffer from two common problems: data problems (mismatches between the kinds of data at hand and the technique available to test them) and theory problems (mismatches between the relationships posited by theories and the functional forms of the econometric tests used to evaluate them). While data problems get the most attention, theory problems also deserve a lot of attention. Data suitability is important, but model suitability is even more important: while methods often influence the functional forms of theories, it should be the other way around.

For instance, most scholars now assume the validity of the additive model (according to which the effects of variables cumulate in an additive manner): but they often do so less because of sound theoretical reasons than because this is a necessary assumption to use the statistical tools at hand, like linear regressions. "The primary danger in such a situation is that theoretical complexity in statistical studies will dwindle until theories are no more nuanced than the techniques that are brought to bear in testing them" (p. 3).

Next, Braumoeller deals with theories that posit causal complexity (or "multiple causal paths" to a given outcome). He first shows that they are poorly theorized and second offers a statistical model to solve this problem.

Causal complexity describes a situation in which the effect of one variable or characteristic can depend on which others are present, or in which an outcome results from several different combinations of conditions.[1] The big issue with causal complexity is that it is not consistent with additivity because in case of causal complexity the presence or absence of one independent variable mitigates the impact of other(s). For instance if, as X1 increases, variation in Xn has a decreasing impact on Y, the assumption of additivity cannot reflect the manner in which the process of causation is or should be envisioned.[2]

Braumoeller denies the applicability of Lakatos' criteria to political science.[3] Basically his argument seems to be that it is not necessarily a good idea to assume that political phenomena can best be explained by <u>one</u> overarching cause and that multiple and independent causes can coexist. The problem is, in such cases, how can we gauge the relative contributions of each set of factors?

Nabit procedure, says Braumoeller, offers a solution to the problem of statistical estimation in the presence of causal complexity. Basically, the idea behind this method is to model the

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[1] Illustrations: multiple ***conjunctural causation*** (X1 and X2 and X3 produce Y); ***substitutability*** (X1 or X2 or X3 produce Y); *contexts* (X2 produces Y, but only in the presence of X1); *necessary and sufficient conditions* (X1 and X2 produce Y, X1 or X2 produces Y); *INUS* [?] *conditions* ([X1 and X2] or [X3 and X4] produce Y).
[2] Conversely, the fact that independent variables do not have an *additive* impact on the dependent variable does not mean that they don't have a *cumulative* impact on it.
[3] Poor Philistines like me would appreciate being "recalled" what this theory is about.

probabilities of processes of conjunctural causation and substitutability (potentially combined). The result is an n-variate aggregated probit model, or *nabit*. “If a theorist attempts to explain the occurrence of an event in the language of complex causation, the resulting hypotheses should be capable of expression in terms of a basic probability calculus. A likelihood function can then be derived and maximized to produce nabit estimates.” (p. 14).

The last part of the article shows how this model offers -*at last!*- an empirical ground to “one of the most durable intuitions in the field of IR”, namely the idea that conflict occurs when a least one party possesses both the capabilities and the resolve to initiate it: the probability of victory or defeat is directly related to capabilities, and positive or negative utility determines whether or not a state is willing to fight.

Braumoeller argues that the reason why the findings of the statistical literature on deterrence has proved inconsistent with both qualitative findings and theoretical logic lies in a *theory problem*, namely the mistaken assumption of additivity. On the one hand, both capability and willingness must be present (*conjunctural causation*), on the other hand, multiple sources can foster the willingness to fight (*substituability*): the functional forms of the econometric tests used to evaluate the theory do not reflect any of those points.

Using the model previously described, Braumoeller gets results significantly different from results of studies based on the additivity assumption and findings much more consistent with what the theory would predict.

Braumoeller’ recommendation and the method he proposes open the way to empirical studies which could test how ***combinations* of factors** can lead to outcomes, and for instance how a combination of *preferences* **and** *constraints* shapes state behavior.
What Moravcsik dreamt of, Braumoeller made it come true.