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Introduction to "Cuts in Bayesian graphical models" by M. Plummer

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The immensely popular BUGS language has for some time provided users with a "cut" function that permits users to "cut feedback" from one part of a Bayesian hierarchical model to another. While popular and apparently useful in fields such as epidemiology and PK/PD modeling, use of "cut" has long been controversial due to its weak theoretical justification. The paper by Plummer investigates the underlying probability calculus of "cut", and clarifies that "cut" as currently specified in OpenBUGS does not converge to a well-defined, unique posterior distribution. This means that different updating tools (as available in OpenBUGS) will produce different estimated posteriors—sometimes dramatically different. The author also investigates a modified "cut" approach using tempered transitions, but concludes this offers only a partial solution to the problem.

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