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Response to Judith L. Anderson 1998. "Embracing Uncertainty: The Interface of Bayesian Statistics and Cognitive Psychology"

Complex Models and the Conjunction Fallacy: A Caution

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Dr. Anderson's article provides a concise description of classical and Bayesian analyses regarding resource issues. It is a reassuring account of the cognitive difficulties associated with Bayesian results (at least reassuring to those of us who have had such difficulties and wondered if we were cognitive cripples) and an exciting framework for circumventing those difficulties. However, I wish to express concern about the author's interpretation of the conjunction fallacy in the case of multiple models of nested complexity. Although more complex models may include a "long list of factors assumed to influence" the phenomenon of interest, it may be more true to state that very simple models exclude an even longer list of factors assumed NOT to have influence. In other words, simple models are often the most assumption laden, and those assumptions are often unstated. For even the most complex model, the list of factors assumed to have no influence is essentially infinite. As Dr. Anderson states, "The model is true only if all of its assumptions are simultaneously true." Because all models have an infinite list of assumptions, we are left with the oft-stated factoid that "All models are false, but some are useful." There are many problems unique to Big Ugly Models, but the conjunction fallacy does not appear to be one of them.

RESPONSES TO THIS ARTICLE

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LITERATURE CITED

Anderson, J. L. 1998. Embracing Uncertainty: The Interface of Bayesian Statistics and Cognitive Psychology. *Conservation Ecology* **2**(1): 2. [online] URL: http://www.consecol.org/Journal/vol2/iss1/art2

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