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In Response to: Wayne Grennan's *An argument evaluation procedure incorporating arguer credibility*

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Grennan's discussion opens with an analysis of how the credibility of the arguer can be reliably factored in to the evaluation process. He demonstrates quite clearly how important judgements of credibility are in real world arguments, and describes an approach which manages at once to handle credibility cleanly, to respect logical autonomy, and to be sufficiently straightforward to give to one's students without compunction.

Grennan suggests that in an argument with two or more premises, the approach could founder. In an argument demonstrating linked structure, we would expect the argument to fall down completely if one premise were unreliable. But he identifies a problem with convergent argument structure too. Specifically, if one of the premises adduced in support of a conclusion is judged to be absolutely unreliable, then, by laws of probabilistic combination, support provided by *all* premises is absolutely unreliable. This result, he suggests, is "too paradoxical to be acceptable". It is worth noting that perhaps in some situations this is exactly the result, though for rhetorical rather than argumentation theoretic reasons. If I demonstrate my faults by the fatuousness, inanity or, perhaps, insanity, of one of my premises, then my audience may well as a result utterly discount all the other premises that I may bring to bear.

But this is an extreme case. In more usual situations, I readily concede that we would want somehow to retain the probabilistic support of good sibling premises. There is an analogy here with the functioning of a venerable computer system from artificial intelligence. MYCIN (Shortliffe, 1976) was an expert system designed on a probabilistic basis to aid in medical diagnosis. Though at heart nothing more complex than a large set of IF-THEN rules, its processing can be seen as the construction of arguments of a sort. Each support link in MYCIN arguments has a probabilistic weight attached to it. The methods of combining separate arguments—both linked and convergent—are then very simple. If there are two premises supporting a conclusion independently, then the weight of conviction attached to that conclusion is simply the maximum of the two premise weights. Similarly, in a linked argument, it is the minimum of the premise weights that is carried to the conclusion.

MYCIN also suffered from many failings. One such is typified by the following apocryphal dialogue:

MYCIN: What is the patient's name?
User: A Ford Mustang
MYCIN: How old is the patient?
User: 14 years
MYCIN: What symptoms does the patient display?
User: Pale brown spots
MYCIN: Are the spots localised or are they found all over the body?
User: All over the body
MYCIN: The patient has measles with probability 0.98

Though the problem manifest here is of central concern in artificial intelligence (Lenat, 1991), it might be hoped that argument evaluation might not be faced with quite such atrocious reasoning. But nonetheless, the techniques that MYCIN—and its descendants—employ might be of use in the approach proposed here by Grennan—and all the more so for their clarity and simplicity.

The other criticism that was levelled at MYCIN—but, incidentally, that MYCIN weathered well as a result of its practical utility—was one of knowledge elicitation. The process by which the probabilities were determined in the first place and entered in to MYCIN's knowledge base was fraught with difficulties. In some cases, medical statistics could be employed, but often it was up to a team involving a computer scientist and a domain expert, to fix exact probabilities upon relationships that experts had typically never viewed in a probabilistic way at all. I wonder if probabilistic approaches to real world argumentation will suffer similar difficulties: can we often have the luxury of knowing an arguer's track record is one of 83% reliability?

The only other real criticism of the work is its premature conclusion. With the effective method of approximating a rather cumbersome calculation, the technique seems eminently applicable to larger arguments. There is much work to be done on determining how the results of 'setting premises aside' and combining their relative weights can propagate through larger argumentation structures and I follow with keen interest the developments to come from this work.

References

- Lenat, Douglas B. "The Brittleness Bottleneck," *Communications of the ACM*, (1991)
Shortliffe, Edward H., *MYCIN: Computer-based Medical Consultations*. Elsevier Press, New York (1976).