

# No Future Adams Pairs: applying the global/local conditional probability distinction

Kevin Demiddele  
University of Leuven  
kevin.demiddele@hiw.kuleuven.be

Adam Morton [4] claims to show that there are Adams pairs set in the future. Regular Adams pairs mark the semantic difference between indicative and subjunctive conditionals. Let me use Morton's example to illustrate this: most people would readily accept (1), while almost no one would be willing to accept (2).

(1) If Shakespeare did not write *Hamlet*, someone else did.

(2) If Shakespeare had not written *Hamlet*, someone else would have.

Morton wants to show that there are also Adams pairs set in the future, with the following example. In the distance, we see Lara standing next to a bomb. We know that most of the bombs are dangerous, so we accept (3).

(3) If Lara touches the bomb, it will explode.

On the other hand, we also know that Lara can see whether the bomb is dangerous or not (but we cannot see it from here) and that she will only touch it if it is not dangerous, so we do not accept (3) after all. According to Morton, (3) has an 'indicative' and a 'subjunctive' meaning, which happen to be expressed in the same sentence. We accept the conditional in (3) as a subjunctive, but not as an indicative. So we have in fact a future tense Adams pair.

I disagree with Morton that the different interpretations of (3) constitute an Adams pair. Morton's example is not an Adams pair, but an example of the distinction between global and local probability, introduced by Kaufmann [3]. These are two different ways of calculating the probability of a conditional ' $A \rightarrow C$ ', in case there is a third variable  $X$  on which the probability of the consequent depends, and that is itself causally independent of,

but stochastically dependent upon the antecedent. This is how local and, respectively, global probability are defined:<sup>1</sup>

$$(4) \quad \begin{aligned} p_l(A \rightarrow C) &= p(C|A \wedge X)p(X) + p(C|A \wedge \neg X)p(\neg X) \\ p_g(A \rightarrow C) &= p(C|A \wedge X)p(X|A) + p(C|A \wedge \neg X)p(\neg X|A) \end{aligned}$$

The distinction between global and local conditional probability can be applied to develop a better understanding of Morton's example. From this analysis, which we work out in the article, it can be concluded that the distinction does not mark the difference between an indicative and a subjunctive meaning, as Morton claims.

The reasoning pattern that is described in the example shows great similarity to what has been called a back-tracking argument in the literature on subjunctive conditionals. We briefly touch upon this in the article. Another related topic that we cover briefly are so-called Gibbard cases, in which both  $A \rightarrow C$  and  $A \rightarrow \neg C$  are acceptable.

Finally, we argue that the use of the distinction between local and global conditional probability to explain Morton's example is not *ad hoc*. We illustrate this by applying it to an alleged counterexample to modus ponens by Gillies[2, p.592]. The expectation is that the distinction will be useful for resolving some other puzzles involving context-dependent conditionals.<sup>2</sup>

## References

- [1] Kevin Demiddele. No future adams pairs: applying the global/local conditional probability distinction. In Ville Nurmi and Dmitry Sustretov, editors, *Proceedings of the twelfth ESSLLI Student Session*, pages 55–64, 2007. <http://www.loria.fr/~sustreto/stus07/stus07-proceedings.pdf>.
- [2] Anthony Gillies. Epistemic conditionals and conditional epistemics. *Noûs*, 38(4):585–616, 2004.
- [3] Stefan Kaufmann. Conditioning against the grain. *Journal of Philosophical Logic*, 33:583–606, 2004.

---

<sup>1</sup>I give the simplified definitions where the variable  $X$  takes only two different values that jointly exhaust the probability space. This will do for the application to Morton's example.

<sup>2</sup>The full article was presented at the student session of ESSLLI 2007 and appeared in the proceedings as [1]. I am greatly indebted to Igor Douven, Jan Heylen and Leon Horsten for useful comments on an early version of this paper. I would also like to thank the anonymous ESSLLI Student Session referees for their very helpful and interesting remarks.

- [4] Adam Morton. Indicative versus subjunctive future conditionals. *Analysis*, 64(4):289–293, October 2004.