Beliefs: from inconsistent to consistent

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Plausibility models, Kripke models in which the accessibility relation is interpreted as a plausibility order, were introduced in (2; 3; 1). In such models we can understand an agent's beliefs as what is true in those epistemic that are maximal under the plausibility order, that is, those epistemic possibilities that, from the agent's perspective, are the most likely to be the case. These models have been used as the basis for analysing belief revision, an action that in this context is understood as an operation that modifies the plausibility order. This plausibility order has typically assumed to be a total preorder, so the plausibility model represents only consistent beliefs. Our work starts by exploring a plausibility order that only needs to be a preorder, and thus allows us to represent inconsistent beliefs: the agent can believe both 'and :' at the same time. We compare this approach to what we get when we represent beliefs with neighbourhood models. Then we move to the study of methods to solve inconsistencies, which in this framework are the different operations on the plausibility relation that connects branches in the plausibility order and therefore make the agent's beliefs consistent.

References

[1] Alexandru Baltag and Sonja Smets. Aqualitative theory of dynamic interactive belief revision.
In Giacomo Bonanno, Wiebe van der Hoek, and Michael Wooldridge, editors, Logic and the
Foundations of Game and Decision Theory (LOFT7), volume 3 of Texts in Logic and Games, pages 13–60. Amsterdam University Press, Amsterdam, The Netherlands, 2008.
[2] Oliver Board. Dynamic interactive epistemology. Games and Economic Behavior, 49(1):49–80, October 2004.
[3] Johan van Benthem. Dynamic logic for belief revision. Journal of Applied Non-Classical Logics, 17(2):129–155, 2007.