

# Accepted Manuscript

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PII: S1570-8683(16)30092-1

DOI: <http://dx.doi.org/10.1016/j.jal.2016.11.033>

Reference: JAL 464

To appear in: *Journal of Applied Logic*



Please cite this article in press as: G. Kern-Isberner, D. Huvermann, What kind of independence do we need for multiple iterated belief change?, *J. Appl. Log.* (2016), <http://dx.doi.org/10.1016/j.jal.2016.11.033>

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# What kind of independence do we need for multiple iterated belief change?

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## Abstract

Multiple iterated revision requires advanced belief revision techniques that are able to integrate several pieces of new information into epistemic states. A crucial feature of this kind of revision is that the multiple pieces of information should be dealt with separately. Previous works have proposed several independence postulates which should ensure this. In this paper, we argue, first, that these postulates are too strong as they may enforce beliefs without justification, and second, that they are not necessary to ensure the principal aim of multiple revision. Instead, principles of conditional preservation guarantee a suitable handling of sets of sentences under revision. We formalize such a principle for multiple propositional revision for ranking functions, and we propose some novel postulates for multiple iterated revision that are in line with AGM and the Darwiche & Pearl postulates. We show that just a few fundamental postulates are enough to cover major approaches to (multiple) iterated belief revision, and that independence in the sense of Thielscher, Jin, and Delgrande is optional. As a proof of concept, we present propositional c-revisions of ranking functions.

### *Keywords:*

multiple belief revision, iterated belief revision, independence postulates, conditional preservation, c-revisions

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## 1. Introduction

AGM revision (Alchourrón et al., 1985), the standard theory for performing belief revision in propositional frameworks has long been concerned with revising a set of beliefs by just one propositional sentence. More precisely,

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