

Justifications That Might Be Wrong

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In a forthcoming paper, Walter Carnielli and Abilio Rodrigues propose a Basic Logic of Evidence (BLE), where evidence might be inconclusive or contradictory. The natural deduction rules for their logic are thought of as preserving evidence instead of truth. BLE turns out to be equivalent to Nelson's paraconsistent logic N4, which results from the addition strong negation to Intuitionistic logic without Intuitionistic negation. The Carnielli/Rodrigues understanding of evidence is informal. I provide a formal version of evidence suitable for their work, using justification logic. First we introduce a modal logic, KX4, in which X can be read as asserting there is implicit evidence for X, where we understand evidence to permit contradictions. We show BLE embeds into KX4 in the same way that Intuitionistic logic embeds into S4. Then we formulate a new justification logic, JX4, in which the implicit evidence motivating KX4 is made explicit. KX4 embeds into JX4 via what is called a realization theorem. Thus BLE has both implicit and explicit possibly contradictory evidence interpretations in a formal sense. This work will be appearing in a paper in *Studia Logica*.