

- JULIANA BUENO-SOLER, *Towards a Flexible Epistemology: Resilient Reasoning in Rational Agents*.

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Paraconsistent logics offer a to reasoning under inconsistency and contradiction, a central challenge in the design of intelligent systems and rational agents. In particular, the three-valued logic **LF11**, belonging to the family of Logics of Formal Inconsistency, internalizes consistency within the object language and is equivalent to  $J3$ .

In this talk, we present modal extensions of  $J3$  (in its **LF11** formulation) aimed at modeling epistemic and doxastic states of rational agents. The resulting systems support coherent inference in the presence of localized inconsistencies, enabling agents to reason non-trivially about knowledge and belief without assuming global consistency. We emphasize that paraconsistency regulates, rather than legitimizes, contradictions.

This framework is particularly suitable for AI applications involving imperfect information, such as belief revision, multi-agent systems, and knowledge integration. By combining paraconsistent and modal reasoning, a flexible and resilient epistemological model aligned with both formal logic and contemporary AI is obtained.

Joint work with W. Carnielli, J. C. Agudelo-Agudelo, and R. Ongaratto.

[1] W. CARNIELLI, J. MARCOS AND S. DE AMO, *Formal inconsistency and evolutionary databases*, *Logic and Logical Philosophy*, vol. 8, n. 8, pp. 115–152, 2000.

[2] J. BUENO-SOLER, W. CARNIELLI E A. RODRIGUES, *Many-Valued Modalities and Paraconsistency*, *Many-valued Semantics and Modal Logics: Essays in Honour of Yuriy Vasilievich Iulev*, (M. E. Coniglio and E. Kubyskhina and D. Zaitsev, editors), Synthese Library, vol. 485, Springer, 2024.

[3] W. A. CARNIELLI, M. E. CONIGLIO E J. MARCOS, *Logics of Formal Inconsistency*, *Handbook of Philosophical Logic*, (D. Gabbay and F. Guenther, editors), Springer-Verlag, 2nd ed., vol. 14 2007, pp. 1–93.

[4] J. HINTIKKA, *Knowledge and Belief: An Introduction to the Logic of the Two Notions*, 2nd ed., *College Publications*, 2005. Originally published in 1962.