Non Contradiction as a "No Overlap" Condition and Incompatibility Relations in Lattices

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In this paper we try to explore some connections between certain lattices and sort of "no overlap" condition that pervades the context where some form of the principle of non-contradiction holds. Lattices have shown to be useful as a logical instrument to clarify and make evident different properties associated with this kind of context. It has been noted that sentences of the form (Rx & -Rx) tend to function as "no overlap" conditions and that indicates that that a given context must not count it as false. In particular that is the case with languages with vague predicates, where the notion of "penumbral sentence" is crutial. As it is well know in such a context instances of -(p & -p) typically appear true and instances of (p & -p) appear false even if the constituents are indeterminate. On other hand, understanding non contradiction as a "no overlap" condition means that a set of objects of which P is true and the set of objects of which P fails to be true are disjoints. That shows the structural aspects of models that are responsible for the truth of such sentences, when they are true. In consequence, intended interpretations should pay attention to this disjointness feature. Nevertheless when we understand two predicates as contraries, expecting that any proper interpretation of them will have disjoints sets as their extensions, that could mean instead that a form of incompatibility rather that the non-contradiction law holds in the corresponding structure. Thus, it seems to suffice for predicates P and Q to be incompatible in order to fulfill the "no overlap" condition. Considering P and Q as fuzzy subsets of U, we further explore the application of an extended form of the principle of non-contradiction in this context.

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