An Abelization of connexive principles

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This paper is an investigation of connexive principles through the ideas of Abelian logic. On one hand, connexive logics (cf. [3]) have a very interesting take on conditionals and negation, as they validate principles that involve them, such as

Aristotle's Thesis (AT) $\neg(A \supset \neg A)$

Boethius' Thesis (BT) $(A \supset B) \supset \neg(A \supset \neg B)$

Abelard's Principle (AP) $\neg((A \supset B) \wedge (A \supset \neg B))$

Accordingly, a connexive principle is *Aristotelian* if in all its conditional proper subformulas the antecedent is equivalent to some proper subformula of the consequent. Otherwise, the principle is *Boethian.* (AT) is Aristotelian, whereas (BT) and (AP) are Boethian.

On the other hand, one of the main ideas stressed in Abelian logic is that any conditional *If A then B* induces a negation of A, namely the negation of A relative to B (see [1]). Thus, connexive logic seems to be a good arena to further explore the Abelian idea connecting conditionals and negations. We do this using the notion of *Abelization*, which we define as a function A on a suitable formal language L that, roughly, transforms conditionals into negations, and vice versa. The results will take us to some laws abhorred by paraconsistent logicians.

References

[1] Robert K. Meyer and John K. Slaney (1989): "Abelian logic (From A to Z)", in Graham Priest, Richard Routley and Jean Norman, eds., *Paraconsistent Logic. Essays on the Inconsistent*, Munich: Philosophia Verlag, pp. 245–289.

[2] Graham Priest (1999): "Negation as cancellation, and connexive logic", *Topoi* 18:141–148.

[3] Heinrich Wansing (2014): "Connexive logic", in Edward N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy* (Fall 2014 Edition).
http://plato.stanford.edu/archives/fall2014/entries/logic-connexive/.