▸ PETER SCHROEDER-HEISTER, *An alternative implication-left schema for the sequent calculus.*
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As an alternative to Gentzen's schema $(\rightarrow \mathrm{L})$ for the introduction of implication on the left side of the sequent sign in the intuitionistic sequent calculus **LJ** we propose the schema $(\rightarrow \mathrm{L})^\circ$:

$$(\rightarrow \mathrm{L})\ \frac{\Gamma \vdash A \quad \Delta, B \vdash C}{\Gamma, \Delta, A \rightarrow B \vdash C} \qquad\qquad (\rightarrow \mathrm{L})^\circ\ \frac{\Gamma \vdash A}{\Gamma, A \rightarrow B \vdash B}$$

In the absence of cut, $(\rightarrow \mathrm{L})^\circ$ is weaker than $(\rightarrow \mathrm{L})$. In the system based on $(\rightarrow \mathrm{L})^\circ$, cut is admissible except for cuts whose left premiss is the conclusion of $(\rightarrow \mathrm{L})^\circ$, i.e., cuts of the following restricted form:

$$\text{(cut)}\ \frac{(\rightarrow \mathrm{L})^\circ\ \dfrac{\vdots}{\Gamma \vdash A} \qquad \begin{array}{c}\vdots\\ A, \Delta \vdash C\end{array}}{\Gamma, \Delta \vdash C}$$

Using cut in this restricted form, $(\rightarrow \mathrm{L})$ and $(\rightarrow \mathrm{L})^\circ$ can be shown to be equivalent. Unlike full cut, applications of restricted cut do not compromise the subformula property and are harmless in this sense. Philosophically, $(\rightarrow \mathrm{L})^\circ$ is motivated by the interpretation of implications as rules [1, 2] and can be viewed as a direct translation of *modus ponens* into the sequent calculus.

[1] P. Schroeder-Heister, *Generalized elimination inferences, higher-level rules, and the implications-as-rules interpretation of the sequent calculus*, ***Advances in Natural Deduction*** (E. H. Haeusler, L. C. Pereira and V. de Paiva, editors), 2010.

[2] ——— *Implications-as-rules vs. implications-as-links: An alternative implication -left schema for the sequent calculus*, submitted for publication.