

2.3. Failed proofs and counterexamples

2.3.0. Overview

Derivations can also be used to tell when a claim of entailment does not follow from the principles for conjunction.

2.3.1. When enough is enough

Our system has enough rules that, when no more rules can be applied to an open gap, we know its active resources do not entail its goal.

2.3.2. Sound and safe rules

These rules are designed so that all gaps will close only if the initial argument is valid and so that we can reach a dead end developing a gap only if the initial argument is invalid.

2.3.3. Presenting counterexamples

Because we have enough rules and the ones we have are well-behaved, any gap that reaches a dead end provides the basis for a table showing the argument for which we constructed the derivation can have true premises and a false conclusion.

2.3.4. Reaching decisions

A derivation will always reach a point where we must stop either because all gaps are closed or because there is an open gap to which no more rules can be applied.