THE DOWNWARDS JUSTIFICATION PROCEDURE AND THE COMPLETENESS AND STABILITY OF INTUITIONISTIC LOGIC

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Abstract: I show how we can rigorously develop Dummett's downwards justification procedure, the idea of which is to take the elimination rules as being meaning-conferring and trying to justify introduction rules on the basis of them. This gives rise to a notion of proof-theoretic consequence and allows us to give a precise definition of stability. I show that if we start with the intuitionistic elimination rules we can justify exactly the intuitionistic introduction rules, thus showing that intuitionistic logic is sound and complete with respect to this notion of proof-theoretic consequence. Taken together with results by Goldfarb showing that intuitionistic logic is sound and complete with respect to the upwards justification procedure, this shows that intuitionistic logic is stable in Dummett's sense. I discuss the philosophical significance of these results and discuss some open questions.