

- ▶ PANU RAATIKAINEN, *On the complexity vs. the length of a proof*.  
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After a brief survey of the various measures of the “complexity” of a proof in the logic literature, it is suggested that all the standard notions measure in reality the length, or size, rather than the complexity of a proof; or, at least, there is a kind of complexity that such more familiar notions fail to capture. A fresh notion of complexity, which bears some analogy to Kolmogorov complexity, but relative to the formulas of formalized theories rather than to the programs of idealized computers, is then introduced. For simplicity, the concept and its basic logical properties are first discussed in the context of numbers and arithmetical theories; most importantly, complexity is not a decidable property. The approach is then generalized and applied to formalized metamathematical theories (such as Feferman’s  $FM_0$ , or  $FS_0$ ) and derivations they talk about, and it is proposed that this provides a rather natural notion of the complexity of a proof. Some connections to Dummett’s concepts of canonical and non-canonical proofs are also pointed out.