The λ Insight Formally and the Science of Syntax

1 Lambda-Calculus Models of Programming Languages

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@phdthesis{m:lc-models,
  title={Lambda-Calculus Models of Programming Languages},
  author={Morris, J. H.},
  school={Massachusetts Institute of Technology},
  year=1968
}
```

Summary: Morris performs a semantic analysis of recursion and types. He demonstrates that the λ-calculus constitutes a language "sufficiently expressive" to model and analyze both of these aspects of programming languages. Thus, he provides evidence that the λ-calculus is a model one can use to "understand by elimination" programming languages.

Evaluation: The most important and lasting contribution of Morris' thesis is the definition of contextual equivalence and the proof that it is the largest equivalence relation between programs of a language. Thus Morris shows that one can talk about programs and program fragments in a truly semantic manner even when given just an evaluator of their language. This enabled all further results on syntactic techniques for defining and studying the semantics and properties of programming languages.