

# Chapter 1

## Introduction

program correctness by construction (from specifications to programs); type theory (unification of logic and computation and/vs types as classification/specification); new direction of program derivation, while inheriting problems; a study not really emphasising practicality

Martin-Löf’s intuitionistic type theory [Martin-Löf, 1975, 1984; Nordström et al., 1990] and dependently typed programming [Altenkirch et al., 2005; McBride, 2004] using the AGDA language [Norell, 2007, 2009; Bove and Dybjer, 2009]. Intuitionistic type theory was developed by Martin-Löf to serve as a foundation of intuitionistic mathematics, like Bishop’s renowned work on constructive analysis [Bishop and Bridges, 1985]. While originated from intuitionistic type theory, dependently typed programming is more concerned with mechanisation and practicalities, and is influenced by the program-correctness-by-construction movement. It has thus departed from the mathematical traditions considerably, and deviations can be found from syntactic presentations to the underlying philosophy.

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# Todo list

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