Why is Type Theory Popular?

- Functions are a natural primitive
  - tedious to derive laws like β-conversion
  - functional programming idiom popular
- Types improve specification
  - document overall structure
  - catch errors early
- Laws are simpler with types
  - $x + 0 = x$ is an equation if x has type *num*
  - without types: $x \in \mathbb{N} \Rightarrow x + 0 = x$
    - such a conditional is harder to use
- Advanced type theories are more general
  - e.g. Calculus of Constructions and Martin Löf type theory
  - support better 'structuring in the large'