

Abstract: There are many connections between logic and computer science. Perhaps the work of Boole and Shannon, which connects classical propositional logic to computation, is the most well known. Other examples include logical languages such as Prolog, and the work of Fagin which connects logical definability to computational complexity classes. This survey will cover the early literature which connects the static properties of programs with logic via type theory, and how these properties manifest in the categorical models of the type theories. We will end with a presentation of the Curry-Howard-Lambek correspondence, and in particular we will focus on the interpretation of the lax modality - used in the formal verification of hardware - in a Cartesian closed category.

Committee:

- Professor Sergei Artemov, mentor, The Graduate Center
- Professor Melvin Fitting, The Graduate Center
- Professor Noson Yanofsky, Brooklyn College