This reminds me of the very interesting language AUTOMATH, invented by Dijkstra’s colleague (and next-door neighbor) N. G. de Bruijn. AUTOMATH is not a programming language, it is a language for expressing proofs of mathematical theorems. The interesting thing is that AUTOMATH works entirely by type declarations, without any need for traditional logic! I urge you to spend a couple of days looking at AUTOMATH, since it is the epitome of the concept of type.

D. Knuth (1973, letter to Hoare)