

LECTURE 1
A LOGICIAN'S LOOK AT NATURAL LANGUAGE

We draw on standard Predicate Logic for insights into the semantic analysis of natural language (NL). We show how to assign a boolean structure to content categories of NL expressions. This allows us to interpret sentences like *No teacher criticized every student* directly, with no appeal to “hidden” structure. Only audible expressions are semantically interpreted. **What you see is what you get.** We also show that boolean compounds (in *and*, *or*, and *not*) make sense in any category, regardless of whether the language syntactically forms such expressions or not. We see that quantifiers, including non-first order ones, are representable directly as boolean functions of individuals, with no appeal to variable binding operators. Should you be reluctant to venture into boolean structure I remind you that

If you sup with the devil you need a long handled spoon.

LECTURE 2
NATURAL LANGUAGE CONTRIBUTIONS TO LOGIC

In this lecture we begin with motivation from traditional linguistics for the treatment in Lecture 1 of generalized quantifiers (GQs). We adhere to what I call

THE FIRST HEURISTIC
Assume things are as they appear until evidence to the contrary.

GQs satisfy argument requirements of predicates, mapping n-place predicates P_n 's to $n-1$ place ones. A **Passive** operation, prominent in traditional linguistic study, derives (in the simplest case) a P_1 like *was opened* from a P_2 , *open* (*Ed opened the door* \Rightarrow *The door was opened*). **Causative** operations (Turkish, Malagasy, Swahili...) increase the number of arguments: *The children laugh* \Rightarrow *Ed makes-laugh the children*. **Reflexive** operators force binding relations between two arguments of a predicate: x *admires* y vs x *admires himself*. We recall that the existences of two (or greater) place predicates forces a provable increase in logical expressive power. And we also exhibit cases where natural language (NL) presents logically significant properties not studied in Predicate Logic. And we note one major way that NL negation differs from that in standard PL.

Introducing Edward L. Keenan

Professor Keenan finished his PhD in Linguistics at the University of Pennsylvania in 1969. That was followed by a year's fieldwork in Madagascar, then four years as a Fellow of King's College, Cambridge (England). He has been professor in the Dept of Linguistics, UCLA (University of California at Los Angeles) since 1974, and a Distinguished Research Professor there since his retirement in 2013. Professor Keenan has published extensively in syntactic typology and formal semantics of natural language.

His recent work in typology includes several articles on Malagasy and a large scale two volume work *Handbook of Quantifiers in Natural Language* (Springer Verlag) co-edited with Denis Paperno. In formal semantics we note two of many articles: "Individuals Explained Away" in *On Reference*, A. Bianchi (ed), 2015, Oxford University Press, and "A Note on Conservativity", with Richard Zuber in *J. of Semantics*, 2019. Two recent books are *Mathematical Structures in Language*, CSLI, with Lawrence Moss, and *Eliminating the Universe*, World Scientific Pub. Ltd.