

THE WORLD OF MODALITY

a personal story of some major themes running through modern logic

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Logic: what follows from what

Logical forms: propositional operators, quantifiers

Further expressions that support inference: generalized quantifiers, and many others

Philosophical modality

Necessity, possibility, contingency, entailment: metaphysical structure of the world

Influential account: multiple reference to possible worlds/situations

Different from classical logic: variety in axioms, graph semantics

Mathematical theory: can be treated using standard methods

Many other modal notions in natural language

'Is versus ought', which principles can be endorsed?

Conditionals, causality, great variety of notions, new accounts keep appearing

Meeting places

Logic, philosophy, linguistics, AI, cognitive science, game theory, etc.

Case study: information and action

To know as range of semantic options, logics of knowledge and belief

To do as travel through a state space, dynamic logics of programs

Both aspects together: logics for epistemic action

Back to philosophy: theories of knowledge, epistemic modals

Continuing discussion: alternative semantics

Even for classical logic: intuitionistic logic as alternative

Modal logic: operators versus predicates in syntax?

What is modal logic?

At same time, extension of classical logic and specialized case of classical logic, especially suited for studying information, knowledge and action (but also more widely)

What is logic?

Study of structure of the world but also: how agents operate in this world.

Any other questions...

References

"Modal Logic for Open Minds", CSLI Publications, Stanford 2010,
'Fanning the Flames of Reason', 2014, Dutch Math Journal & Studies in Logic (China).