

LOGICS WITH TEAM SEMANTICS

Conventional semantics of formal logical systems – like classical propositional logic, modal logic or first-order logic – is based on truth functions that assign truth values to *single assignments*, which interpret the relevant variables in appropriate structures. Another semantic dimension is opened up if instead we consider *sets of assignments* and define – again, in a modular, and purely extensional manner – when a formula is true of a collection of assignments. It has become customary to speak of sets of assignments as *teams*, and to summarily describe logics built on this approach as logics with *team semantics*.

While team semantics extends conventional semantics, which is essentially captured in the specialisation to singleton teams, it also allows us to consider entirely new phenomena. Among these are

- well-defined notions of dependence and independence within teams;
- distinctions between states of affairs and information states;
- richer comparative views on different interpretations of logical connectives, like classical vs. intuitionistic disjunctions;
- the potential to deal with partial information.

Notions of dependence and independence are crucial in many areas of mathematics and the natural sciences as well as in information theory and computer science. Think of issues ranging from probabilistic reasoning, dependency observations on sets of observational data, choices that may or may not depend on certain pieces of information, or constraints for admissible data base instances.

Selected topics in the seminar may range from basic introductory presentations (with few technical pre-requisites beyond a basic understanding of mathematical logic) to more specific technical results that also involve more advanced material. It is hoped that participants with different interests and at various levels will profit from this exchange. Correspondingly, the seminar is available at Bachelor and Master levels. Besides the oral presentation, a handout and written summary are typically required.

For further planning of the seminar it is essential that, apart from registration in TUCaN, prospective participants contact me as soon as possible:

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