

Title	Awareness Logic of Abstraction
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We aim to formalize abstraction as a model transformation tailored to the reasoning abilities of agents. The characteristic of our work is to capture the epistemological aspect of the abstraction of a model. It is motivated not to develop the formal theory of knowledge but to develop the formal theory of modeling because the motivation is an issue of how to share models representing the same situation among people with different reasoning abilities. For this motivation, Awareness Logic as the Logic of Abstraction is given. Since traditional research for awareness logic does not aim at developing a formal theory of modeling, we aim to get a good foundation of the basics of a formal theory of modeling in awareness logic.

This thesis consists of two parts. The first part introduces **Awareness Logic with Global Propositional Awareness(ALGP)**. **ALGP** is the logic with global awareness(an agent's awareness is the same in all possible worlds) and propositional awareness(an agent is only aware of formulas containing occurrences of a subset of all atomic propositions). In addition, a sound and complete axiomatization of **ALGP** is shown.

The second part investigates Awareness Logic as the Logic of Abstraction. We compare among three abstractions: “*atoms-based abstraction*”, “*filtration-based abstraction*”, and “*bisimulation-based abstraction*”.

The second part also introduces **Awareness Logic of Filtration(ALF)**. **ALF** is given by adding an implicit abstraction operator to **ALGP**. Non-compactness in the semantics of **ALF** is shown.

Common awareness and distributed awareness are given to **ALGP** as a macro. A quotient model with common awareness and a nested quotient model are considered different approaches for obtaining a comprehensible model among agents with different reasoning abilities. This thesis obtains semantics of nested abstraction introducing common awareness and nested quotient model.