

variety of interesting theorems are proved about IL and alternative formulations of the logic of interpretation.

Oliver Lemon and Ian Pratt's *On the incompleteness of modal logics of space: advancing complete modal logics of place*, is an interesting survey of the literature on modal logics that formalise spatial notions like "near," "inside," "elsewhere," and "touching." They also present a semantics for spatial logics that takes as its indices regions in either \mathbb{R}^2 or \mathbb{R}^3 . Thus, for example, if we want to formalise "touching," we have an accessibility relation R that connects regions if and only if they are touching (this relation will be symmetrical and serial). We then read $\diamond p$ as saying " p in a region that touches the present one." The paper surveys incompleteness results for logics of "elsewhere," distance (where $\diamond p$ is read as " p a distance d from here in a straight line"), and inclusion (where $\diamond p$ is taken to mean " p somewhere inside this region"). They then develop a logic of "planar contact," in which regions are accessible if they have exactly one point in common. Lemon and Pratt describe an axiom system and a completeness theorem for their set of planar contact structures. They then go on to show how these structures can be used to formalise other spatial notions such as inclusion.

In addition to the survey articles, there are also a few articles that combine a presentation of a class of modal logics with technical results about the members of that class. Here, for example, we have Bernhard Heinemann's *Topological nexttime logic*, which looks at a system that includes both the operator \bigcirc (where $\bigcirc\alpha$ means " α at the next point in time") and a knowledge operator. The semantics for this system—a development of the subset space semantics of Moss and Parikh—and completeness is proved. Similarly, Philippe Balbiani's paper introduces terminological modal logic and uses Max Cresswell's subordination frame to prove completeness.

The more technical papers span areas such as logics for parallel computation, intuitionist logic, and arrow logics, as well as more standard modal logic.

This collection is a useful resource for anyone working in modal logic. It contains both interesting surveys and cutting-edge technical results.

EDWIN D. MARES

Department of Philosophy and the Centre for Logic, Language, and Computation, Victoria University of Wellington, P.O. Box 600, Wellington, New Zealand.
edwin.mares@vuw.ac.nz.

FRED SOMMERS and GEORGE ENGBRETSSEN. *An invitation to formal reasoning. The logic of terms*. Ashgate, Aldershot, Burlington, Singapore, and Sydney, 2000, xvi + 260 pp.

This book is intended to be an introduction to the logic of terms. But it is much more. Authored by the two foremost authorities on this subject, it is an up-to-date definitive statement of terminist philosophy.

The logic of terms (also known as term logic or term-functor logic, TFL) has its roots in Aristotelian syllogistic and its medieval development, here referred to as "traditional logic."

Traditional logic bears an obvious correspondence to natural language and has an intuitive appeal that facilitates understanding. Unfortunately, it lacks the expressiveness necessary to reason about much of mathematics and science. Many attempts were made to remedy this, particularly when the need for sound foundations for mathematics became apparent. The most successful began with Frege and grew into today's modern predicate logic (MPL). Rather than extending traditional logic, MPL swept it aside, relegating it to a historical curiosity.

TFL is designed to extend traditional logic, giving it additional expressiveness, yet retaining the direct correspondence to natural language and the intuitive appeal of traditional logic. It is the authors' contention that neither TFL nor MPL should replace the other, but rather that each offers unique advantages that justify its use.