The book presents a thoroughly elaborated logical theory of generalized truth values understood as subsets of some established set of (basic) entities. After elucidating the importance of the very notion of a truth value in logic and philosophy, the authors examine some possible ways of generalizing this notion. The useful four-valued logic of first-degree entailment by Nuel Belnap and Michael Dunn and the notion of a bilattice (a lattice of truth values with two ordering relations) constitute the basis for further generalizations. By doing so, the authors elaborate the idea of a multilattice and, most notably, a trilattice of truth values—a specific algebraic structure with an information ordering and two distinct logical orderings, one for truth and another for falsity. Each logical order not only induces its own logical vocabulary, but also determines its own entailment relation. Both semantic and syntactic ways of formalizing these relations by constructing various logical calculi are considered.

This book is an exceptional contribution to philosophical logic; no one who thinks about truth values should miss it. Taking Truth and Falsehood as objects in Frege’s way, the authors serve up a compelling combination of (1) authoritative, encyclopedic, and philosophically sensitive history, (2) a careful and persuasive presentation of their beautiful and superuseful theory of sixteen (not just algebraic but really logical) truth values structured as a trilattice, and (3) a dazzling array of related conceptually motivated formal developments that bring the reader to the forefront of current research.

Prof. Nuel D. Belnap

Could something be both true and false, and neither true nor false? ‘That way’, claimed Bob Meyer, ‘lies madness’. But if this be madness, yet there is method in’t, as Shramko and Wansing show, unearthing a rich and beautiful family of logical structures.

Prof. Graham Priest