Priest’s book is another item in a long series of articles and books written by him in order to explain, develop, and argue for the philosophical doctrine of dialetheism. Dialetheism holds that there are true contradictions, i.e., statements \( \alpha \) such that both \( \alpha \) itself and \( \neg \alpha \) is true. Whereas, from the point of view of both classical and intuitionistic logic (as well as from that of many other logics), the emergence of contradictions within a theory is conceived of as a catastrophe which, because of the principle \( \text{ex contradictione quodlibet} \), renders the entire theory worthless, dialetheism views contradictions as unavoidable and rejects logics adopting that principle (called “explosion” by dialetheists) in favour of a “paraconsistent” logic which allows for non-trivial inconsistent theories. Unlike Priest’s other books and articles, the present work is not concerned with providing arguments in favor of dialetheism (for this cf. his book MR1014684) or with the technical development of paraconsistent logic; rather it investigates into the relationships between dialetheism and the philosophical key notions of truth, negation, rationality, and logic. Each of these notions is treated in one of the book’s four parts.

The aim of the book’s first part, devoted to the notion of truth, is to show that there is nothing inherent in that notion which renders dialetheism an untenable position. This part starts with an extensive and penetrating discussion of Aristotle’s arguments (put forward in his \text{Metaphysics}) that the principle of non-contradiction excludes the possibility of contradictions whose terms are both true. The investigation of the Aristotelian argument is supplemented by the discussion of two further attitudes: “trivialism” and “Herakliteanism”. According to Aristotle, there are both true and false propositions and no proposition is both true and false. Hence there actually are contradictions since the negation of a proposition is true (false) if the proposition itself is false (true); but the two terms of a contradiction cannot both be true. In contrast to this, trivialism (as this attitude is called by Priest) considers everything to be true; hence there are no real contradictions according to this doctrine. “Herakliteans” (according to Aristotle as interpreted by Priest) take the other extreme by declaring every correct proposition (at least about the physical world) to be both true and false hence as inherently contradictory (since it has to describe a state in flux by assigning contradictory properties to that state). Dialetheism joins the proponents of the classical position in rejecting the extreme theses of trivialists and “Herakliteans”; unlike the classicist, however, the dialetheist accepts contradictions (as, e.g., the semantic paradoxes and the antinomies of naïve set theory) in which both terms are true. After having discussed Aristotle’s arguments for the principle of non-contradiction, Priest draws the conclusion that Aristotle succeeded neither in rejecting dialetheism nor trivialism. The case of trivialism is reconsidered by Priest himself in the final chapter of the first part of his book where he tries to refute that attitude.

The second part of the book deals with negation; its main concern is to show that “Boolean negation”, i.e., negation as conceived in classical logic, is incoherent. For Priest, a logical connective is a real negation only if it is a “contradictory-forming” operator: of a proposition and its negation (1) not
both can be true and (2) not both can be false. “Intuitionistic negation” (as conceived by Priest) is not a true negation since it only satisfies (1) but not (2); it is thus only “contrary-forming”. Given that the intuistic meaning of \( \neg \alpha \) is “that there is no proof that \( \alpha \)” (p. 79), it can be the case that both \( \alpha \) and \( \neg \alpha \) are false. As regards a true negation connective, Priest identifies five “standard laws” which such a connective has to obey: (i) the law of excluded middle, (ii) the law of non-contradiction, (iii) the law of double negation, (iv) and (v) the two De Morgan laws. The law of contraposition is held to be valid only in certain contexts. The appearance of the law of non-contradiction, which Priest formalizes as \( \neg \Box (\alpha \land \neg \alpha) \), in that list may come as a surprise. However, a dialetheist may well accept both \( \neg \Box (\alpha \land \neg \alpha) \) and \( \Box (\alpha \land \neg \alpha) \).

Both Boolean negation and De Morgan negation, i.e., that variety of negation which is typical for systems of relevance logic, obey the laws listed. Hence Priest attempts to exclude Boolean negation as a reasonable negation operation by arguing that it is incoherent. All his intricate arguments involve, in one way or other, the interaction of negation and the conditional connective. Priest rejects the truth-conditional analysis of that connective (thus “material implication”) and adopts a relevantist approach to it (cf. the two volumes MR0406756 and MR1223997 as a standard reference to relevance logic; the issue of Boolean negation vs. De Morgan negation is discussed in § 80.2 of the second volume). For Priest, Boolean negation is to be rejected since it cannot be combined with a relevantist conditional in one coherent system of logic. (From the dialetheist’s point of view, formalizations of relevance logic as extensions of classical logic with its Boolean negation, as put forward by Meyer and Routley, cf. Zbl 0316.02029 and Zbl 036.02030, are to be considered to be “not only wrong, but highly misguided”, p. 99.) In order to make sense out of that form of negation, one should have available modes of inference—such as, e.g., Antecedent Falsity (\( \neg \alpha \vdash \alpha \rightarrow \beta \)) and Disjunctive Syllogism (\( \alpha, \neg \alpha \lor \beta \vdash \beta \))—which are lacking a rational justification in the relevantist framework. This leads up to the question of what at all can be rationally justified and how, more particularly, inference patterns and systems of logic are to be justified.

The third part of Priest’s book is concerned with just the problem of rational justification. The main thesis of that part is that rationality does not exclude the acceptance of contradictions. There may well occur situations in which (1) rational grounds support the acceptance of both terms of a pair of contradictory propositions but in which (2) one does by no means infer arbitrary propositions from that contradiction. Hence not classical logic but rather some paraconsistent logic (without “explosion”) is applied in such a situation. More substantial support for this thesis is given in the two chapters of the book’s third part which deal, respectively, with belief revision and the role of (in)consistency in science. In his discussion of the well-known AGM conditions for rational belief change (cf. MR0793131 as well as MR0956051) Priest argues that the rational revision of a theory which has to be modified in view of new evidence takes into account a whole spectrum of different criteria in which consistency is only one among others as, for instance, non-\textit{ad-hoc}-ness, simplicity, fruitfulness, explanatory power and still others. According to Priest, situations may occur in which one or more of these criteria outweigh consistency so that eventually an inconsistent theory will be accepted. Furthermore, the AGM-model assumes that both the set of beliefs to be revised and the revised set are theories (in the technical sense of sets of sentences closed under logical consequence) with respect to some classi-
cal consequence relation. A more adequate account, however, should allow for a revision of the underlying logic, too. The final chapter of the third part uses several cases from the history of science in order to argue for the thesis that it is sometimes rational to switch to a paraconsistent logic in view of different types of contradictions which arise in the development of a discipline.

Since dialetheism requires a revision of logic, the question arises which role precisely logic plays within science and whether there could be alternative logics. These are the topics of the fourth and final part of the book. Priest does not assign to logic any privileged status within the entire building of science: logic is confronted with the same demands for justification as other parts of science and like these it may become an object of revision. Such revisions, furthermore, are subject to the same criteria which also apply in other cases (e.g., in physics or chemistry) and which have been dealt with in the book’s second part. Priest draws a parallel to the case of geometry. There are many systems of geometry. As purely mathematical systems they are on equal footing; this, however, changes when the question arises which of these systems applies to physical space. Similarly there are different forms of logic such as classical logic, intuitionistic logic, many-valued logic (in many variants), relevance logic, quantum logic, paraconsistent logic, etc. As abstract systems they all deserve the interest of the theoretical logician. As soon as a logic is applied within some subject domain, however, it is no more just an abstract system but becomes a theory making a definite claim about that domain. Disputes may arise then what the “right logic” among a number of suitable alternatives is. The kind of multiplicity of logics arising in such a situation is called “theoretical pluralism” by Priest. He argues, however, that one has to distinguish between different kinds of applications. There are applications of logic which lie, in a sense, outside of logic itself such as, for instance, the use of classical logic in the analysis of electric circuits and hardware design or the use of certain substructural logics for syntactic analysis in linguistics. From such accidental applications we have to distinguish what Priest calls the “canonical application” of logic, namely the analysis of deductive and inductive reasoning. Having discussed several arguments for logical pluralism with respect to this canonical application and having found all of them non-conclusive, Priest concludes that a “monist perspective” (p. 208) is tenable here.

Reviewed by Klaus Robering