



Review: [Untitled]

Reviewed Work(s):

The Law of Non-Contradiction: New Philosophical Essays by Graham Priest; J. C. Beall;
Bradley Armour-Garb

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self-contained. Another issue with these definitions is that the domains of variables are sometimes shrunk without changing the constraints (for example, in Example 4.6, or at the beginning of chapter 5.5). In general, doing this may result in an object that is technically not a CSP, according to the above definition—because a constraint C satisfies a containment of the form $C \subseteq D_1 \times \cdots \times D_k$, which may fail to hold if one of the domains D_i is shrunk. To be sure, after the definition of CSP, a note is made about how constraints and domains are specified in a syntactic language, and how “it is implicit that each constraint is a subset of the Cartesian product of the associated variable domains”. The point seems to be that a “constraint” C on variables $y_1, \dots, y_k$ with domains $D_1, \dots, D_k$ ought to be interpreted as $C \cap D_1 \times \cdots \times D_k$. In this case, the containment $C \subseteq D_1 \times \cdots \times D_k$ in the definition of a constraint is really just a consequence of an implicit assumption, and not appropriate as part of the actual definition. Should not more thought have been given to these central definitions?

I also identified two specific problems of a more subtle character. First, in chapter 7.1.3, three generic algorithms are presented, and for each sufficient conditions are identified under which they work. On page 272 and also on page 279, it is suggested that, for a notion of local consistency, two of the generic algorithms cannot be employed, because the sufficient conditions are not met. There is a logical flaw here, namely that not satisfying the sufficient conditions does *not* logically imply that the algorithms do not work. Second, on pages 254–255, examples are given of cases where a CSP can be “solved solely by means of a constraint propagation algorithm”. One example is a CSP representing a crossword puzzle, to which an arc consistency algorithm is applied; in the resulting CSP, “each variable domain is reduced to a singleton set and consequently this CSP is solved” (the author’s words, page 143). The author does not define what he means by “solved” in these contexts, but it appears that he is getting at the fact that it is straightforward to generate a solution to the resulting CSP (see the discussion at the end of chapter 5.2). Another example is the class of CSPs having bounded “width” (from Theorem 5.48, page 173), but this example seems different in nature. While establishing k -consistency certainly gives a procedure for deciding whether or not such a CSP has a solution, there is not any discussion of how one might actually construct a solution to a CSP from this class (at least, up to the point where the examples are given). The potentially relevant question of how one might determine if a CSP has bounded width is also undiscussed.

As this sampling of my problems with the book should suggest, I found the book extremely difficult to follow on many different levels. At a broad level, one cannot discern the relative importance of the topics covered, nor an overall conception and justification of the subject matter. Those already acquainted with the subject who are both willing to tolerate and able to compensate for the book’s defects may be able to use it as a reference; for others, I fear that the book’s habitual lack of clarity, precision, and organization render it unusable.

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The law of non-contradiction: New philosophical essays, edited by Graham Priest, J. C. Beall, and Bradley Armour-Garb, Oxford University Press, Oxford, 2004, xii + 443 pp.—therein:

J. C. BEALL. *Introduction: At the intersection of truth and falsity*. Pp. 1–19.

GRAHAM PRIEST. *What’s so bad about contradictions?* Pp. 23–38.

ROSS BRADY. *On the formalization of the law of non-contradiction*. Pp. 41–48.

PATRICK GRIM. *What is a contradiction?* Pp. 49–72.

GREG RESTALL. *Laws of non-contradiction, laws of the excluded middle, and logics*. Pp. 73–84.

R. MARK SAINSBURY. *Option negation and dialetheias*. Pp. 85–92.

- ACHILLE VARZI. *Conjunction and contradiction*. Pp. 93–110.
 BRADLEY ARMOUR-GARB. *Diagnosing dialetheism*. Pp. 113–125.
 BRYSON BROWN. *Knowledge and non-contradiction*. Pp. 126–155.
 OTÁVIO BUENO AND MARK COLYVAN. *Logical non-apriorism and the 'law' of non-contradiction*. Pp. 156–175.
 DAVID LEWIS. *Letters to Beall and Priest*. Pp. 176–177.
 MICHAEL RESNIK. *Revising logic*. Pp. 178–194.
 J. C. BEALL. *True and false—as if*. Pp. 197–216.
 JON COGBURN. *The philosophical basis of what? The anti-realist route to dialetheism*. Pp. 217–234.
 JAY GARFIELD. *'To pee or not to pee?' Could that be the question? (Further reflections of the dog)*. Pp. 235–244.
 FREDERICK KROON. *Realism and dialetheism*. Pp. 245–263.
 EDWIN MARES. *Semantic dialetheism*. Pp. 264–275.
 VANN MCGEE. *Ramsey's dialetheism*. Pp. 276–291.
 LAURENCE GOLDSTEIN. *The barber, Russell's Paradox, Catch-22, God and more: A defence of a Wittgensteinian conception of contradiction*. Pp. 295–313.
 GREG LITTMANN AND KEITH SIMMONS. *A critique of dialetheism*. Pp. 314–335.
 STEWART SHAPIRO. *Simple truth, contradiction, and consistency*. Pp. 336–354.
 NEIL TENNANT. *An anti-realist critique of dialetheism*. Pp. 355–384.
 ALAN WEIR. *There are no true contradictions*. Pp. 385–417.
 EDWARD ZALTA. *In defense of the law of non-contradiction*. Pp. 418–436.

The 'law of non-contradiction' (LNC) is perhaps $\neg(A \wedge \neg A)$, or maybe ' $(A \wedge \neg A)$ cannot be true', or maybe 'no statement and its negation can simultaneously be true', or maybe 'A cannot be simultaneously true and not true', or maybe 'A cannot be simultaneously true and false', or maybe 'one cannot both affirm and deny A'. (And there are other possibilities surveyed by Grim in his article. He says there are approximately 240 different versions on offer.) This collection contains 23 essays plus introduction, all but one newly published, by most of the major players in the debate over whether LNC is correct. (A debate that many readers will be surprised to hear exists at all!) If LNC is not correct, then there are some instances of it that are incorrect—in whatever version of the law one chooses to work with. Priest, in his entry in this collection (a reprint of his 1998 *Journal of Philosophy* article), emphasizes the 'some' in this formulation: disbelievers in LNC are *not* required to think that *all* instances of LNC are false, and indeed, various of the articles (including Priest's) *are at pains to explain* that they think that "almost all" of these instances are in fact true (and not also false). The 'in fact' here is an important ingredient of the general position advocated by Priest and others in this collection (and explicitly argued in Bueno and Colyvan, in Garfield, and in Brown): there is no *a priori* warrant or justification for this or any other logical principle, but rather they are to be held up to empirical justification. In the case of LNC, according to Priest and other detractors of LNC, the empirical evidence shows that there are false instances. Throughout this collection, the most clear counterexamples are thought to be the paradoxes: the liar sentence (which they claim to be both true and false), the paradox of the preface (where you believe of each factual statement you wrote that it is true but also believe on the basis of past experience that at least one is false), and so on. (Armour-Garb's contribution concerns how they can be still called paradoxes by dialetheists, since they believe that the argumentation is valid which leads to the conclusion that they are both true and false). Priest also believes that certain other statements should be seen as both true and false, such as the case of walking through a doorway. In such an event, there will be a time when one's center of mass is precisely at the center of the doorway. At that moment, says Priest, the sentence 'I am in the room and not in the room' will be true. (One might note that I have shifted among various versions of LNC, sometimes using 'true'/'false', sometimes using

negations with a conjunction, and sometimes using a large set of separate sentences whose consequences include a contradiction in one of the other senses.) It is, of course, a bit strange to talk of LNC being false in the logics proposed by Priest and others, since $\neg(A \wedge \neg A)$ is a theorem of these logics. But this shows that some theorems can be false—so long as they are also true!

Those who believe that the LNC has counterexamples—that is, those who believe that there are some true contradictions—are called *dialetheists*. These are to be distinguished from *paraconsistentists*, who hold only that logic should not be “explosive” (there should be no formula φ such that φ implies every sentence). Of course, classical logic (a term I will continue to use despite Priest’s allegations that it is a very recent invention) is explosive because a contradiction implies every sentence, and so naturally dialetheists are paraconsistentists in their logic. But the converse is not true, and in fact there are many “relevantists” (those who believe that some form of relevant logic—all of which are non-explosive—is The One True Logic) who are not dialetheists. Some relations between paraconsistentists and dialetheists are discussed in Mares’ contribution, and various ins and outs of the relationships among some relevant logics and dialetheism are discussed in Restall’s contribution. Restall’s article also develops an idea brought up in Priest’s article concerning the distinction between the assertion of $\neg A$ and the denial of A . This is a theme that runs through many of the articles in the collection. The question concerns whether, even if one way of putting LNC might have exceptions, does another way of putting it nonetheless obey LNC? Perhaps dialetheists are committed to having one form (the assertion/denial form maybe) of LNC true (and not also false), such as “One cannot assert A and deny A simultaneously”? If there is such a form that is true (and not also false), then might these forms themselves be susceptible to a paradox that the dialetheist cannot admit, even though they can allow some contradictions? For example, “I hereby deny this very assertion.” This general topic is explored in the article by Littmann and Simmons, who offer many classes of possible “inconsistencies” in dialetheistic logic—inconsistencies that they claim dialetheism cannot accept despite their general acceptance of (some) inconsistencies.

David Lewis, like Aristotle, thought LNC to be the most fundamental logical principle. In letters to Priest, parts of which are included in this volume, he says that a dispute “needs common ground” but that “in this case, the principles *not* in dispute are so very much less certain than non-contradiction” that no real dialogue is possible. Lewis’s view is attacked by Bueno and Colyvan, who argue for “logical pluralism” and for the view that even though Principle A might be less certain than Principle B, nevertheless Principle A may play a role in overthrowing Principle B, especially if there are many such less certain Principles. (One wonders what to make of the fact that there is a book with 101 “proofs” that $1 = 2$, and yet probably none of us has seen more than one proof that $1 \neq 2$. It does not seem that *any* number of invalid proofs could overturn one valid proof: yet this seems to be what Bueno and Colyvan are in essence suggesting.)

Aristotle thought that LNC was “the most secure principle” and could therefore not be proved. But he thought that a variety of ad hominem arguments could be mounted against one who claimed that it was false. “Let him just pick out some one definite substance. Let him for example say ‘that is a man’. To be a man is to be some one object that has a certain set of properties that define what it is to be a man. But if there is some one object here with those properties, a person who says the opposite would of necessity be speaking falsely. He would be no better than a vegetable.” (I paraphrase an argument at *Meta.* Γ 4 1006^a 12ff. *Meta.* Γ 4 contains a series of such arguments which have been thought over the millennia to carry the day. Maybe Aristotle here could be accused of saddling the dialetheists with the view that *all* contradictions are true. Perhaps dialetheists will instead find those cases where a person “picks out some one definite thing” as always obeying LNC, thereby thwarting this ad hominem argument.)

Many of the articles in the book mention the perceived difficulty of arguing with a dialetheist. Under classicalist standards, one shows that an opponent in a dispute is wrong about X by showing that X conflicts with some other things that the opponent agrees with. But, so the difficulty alleges, the strongest way to demonstrate a conflict is to show X is inconsistent or contradicts what is independently believed. Yet the dialetheist will not be bothered by this, according to this difficulty, because a dialetheist might *embrace* the contradiction. Actually, there are many middle roads here, since after all a dialetheist need not accept *every* contradiction. (Priest thinks that contradictions have *prima facie* implausibility). But nonetheless, it is true that a dialetheist *could* embrace the contradiction, so just pointing to a contradiction in his belief set does not guarantee that he will feel required to change some of his beliefs. The argument form that is relevant to arguing with a dialetheist might instead be one of simplicity: since X conflicts with your beliefs, the simplest solution for you is to dispense with X rather than try to accommodate it.

Most modern analytic philosophers react to proposals that LNC might be false either as cases where some feature of evaluation has not been kept constant or as cases where the meaning of some logical word is being arbitrarily changed. Consider the first, cases like 'John is a diplomat but not a diplomat' (said of the very diplomatic John, who nonetheless has no government job), 'This blob is red and not red' (said of the halfway-to-pink blob), and 'Mary knows that it is her turn to drive in the carpool, but of course she doesn't (really) know that' (where "the standards of knowing" change from one conjunct to the next). Of this sort of case Aristotle said (*Meta.* Γ 3) "... the same attribute at the same time to the same subject in the same respect, and we must also suppose whatever further qualifications are needed to guard against these trivial and eristic objections". The classicalist really need not feel any angst about this type of alleged contradiction, even though he could admit that if a dialetheist were to convince us on other grounds that some contradictions are true then that category of true contradiction might be extended so as to include these too.

The other reaction is to think that some logical word is being used wrongly. "If $(A \wedge \neg A)$ is true," the objection might run, "then either it can't imply $\perp$, or you have changed the meaning of $\perp$, or you are not using $\wedge$ to mean 'and', or you are not using $\neg$ to mean 'not'. Various of the articles in the book touch on the issue of what sort of negation dialetheists employ (Brady, Grim, Sainsbury, and Shapiro), which is clearly of importance in understanding their view. (Shapiro in particular claims that there is no negation that will do the job that the dialetheist wants, although Beall in his Introduction claims that this result only applies to the specific logic, LP, proposed by Priest, and not against other dialetheistic logics. Shapiro's article may be the one in the collection that is of most interest for its results of logic.) But not many discuss whether the dialetheist's $\wedge$ means *and* (although see McGee's discussion of Ramsey-style views on $\wedge$, where you cannot infer $A \wedge B$ given A and B as premises, and Varzi's discussion of collective vs. distributive *and*); and it is mainly Tennant here who questions the dialetheist about $\perp$. (Tennant claims that the dialetheist is committed either to saying that $\perp$ is sometimes true or that the dialetheist's logic will fail to transmit truth precisely in those cases where there is an allegedly true contradiction as a premise. Either of these is bad news for the dialetheist, says Tennant.) Weir's article discusses the general view that dialetheists are somehow changing the meaning of some one or other of the logical words: he argues that while classicists should take dialetheism seriously, in the end it is not right. Related to these papers, and to the dialetheist's attempt to establish "a new logic" that gives sense to contradictions being sometimes true, is Resnick's contribution on what it would mean to "revise logic" in a Quinean 'web of belief' framework. Goldstein tries to interpret contradictions in a Wittgensteinian way; Garfield brings forth the sort of "practical reasoning" that would lead one to adopt some sort of dialetheism; Brown offers a "preservationist" account of consequence which he claims is more general than dialetheistic accounts and which provides a rationale for adopting "logical pluralism"; and Zalta defends

LNC against dialetheistic arguments by means of his distinctive demarcation of two types of predication: exemplification vs. encoding. In his view the various paradoxes can be given as nice a treatment within his logic as they can in dialetheist logics (one version of which is set out in detail in Beall's contribution).

We are told by Cogburn that Dummettian anti-realists (who take verifiability seriously) not only can but must be dialetheists. On the other hand, Tennant assures us that all intuitionistic anti-realists (like him) must deny dialetheism. Kroon says that a realist who is a dialetheist must be willing to at least countenance a world in which *all* contradictions are true; and that to the extent that a one accepts dialetheism, one must not be a realist about the part of reality that generates true contradictions. Evidently the metaphysics behind dialetheism is not yet settled!

This collection is mandatory for anyone interested in adopting, rejecting, or even just understanding dialetheism. But subparts of it are also very useful collections of articles that would help one understand relevant logics, or negation, or the role of logic in a formal theory of language. The book is edited from the point of view of dialetheism, as evidenced in Beall's very substantial introduction, and is not at all a dispassionate discussion of the pros and cons of dialetheism (despite the section entitled "For the LNC"). But it is still the clearest and most accessible work that describes dialetheism in such a way that proponents and opponents can see what it is, and where its strong ridges stand and its weak underbellies lie.

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Heinrich Scholz. *Logiker, Philosoph, Theologe*. edited by Hans-Christoph Schmidt am Busch and Kai F. Wehmeier, Mentis, Paderborn, 2005, 134 pp.

The biography of Heinrich Scholz is remarkable with respect to his scientific development as well as concerning his personal integrity, most notably during the NS-time. Scholz had an extraordinary academic career: he started as a professor of philosophy of religion then went on to obtain a professorship in philosophy and then afterwards and until his retirement he was professor for logic and foundational studies in mathematics. He founded the famous "Institut für mathematische Logik und Grundlagenforschung" (ILG) at the university of Münster. Without exaggeration it can be stated that we have at least to owe it to Scholz that foundational studies in logic and mathematics after World War II were institutionally possible. Of course, Scholz himself was surely not a brilliant logician, but (especially for younger colleagues) he promoted an adequate academic atmosphere and the institutional frameworks necessary for it. It should be mentioned that the ILG is one of few institutes for foundational studies in mathematics and logic in Germany up till now which has worked on the highest international level. The named volume is dedicated to the person as well as to the scientist Heinrich Scholz. Therefore, the book contains not only contributions dealing with (philosophy of) mathematics or logic, but also papers on Scholz's philosophy of religion and metaphysics. The contributed papers were communicated at an international scientific conference on the occasion of the 50th anniversary of the ILG in Münster (23rd to 25th March 2000).

Despite his scientific development from theology via philosophy to logic, Scholz was still interested in the philosophy of religion and the history of theology. Therefore, in his paper "Ein standfester Mensch" (pp. 13–45), Arie Molendijk investigates the influences of the Christian faith and protestant theology on Scholz as a person and as a scientist. For most who know Scholz (only) as a philosopher and a logician, Reiner Wimmer focuses, from the reviewer's point of view, on a neglected and "exotic" field of his research: the philosophy of religion. In "Die Religionsphilosophie von Heinrich Scholz" (pp. 47–68) Wimmer gives a vivid overview of Scholz's contributions to this scientific field and shows what can be done