

Rejectivism and the Challenge of Pragmatic Contradictions

Ben Martin

University College London

DOI: 10.2478/disp-2016-0015

BIBLID [0873-626X (2016) 43; pp. 253-267]

Abstract

Rejectivism is one of the most influential embodiments of pragmatism within contemporary philosophy of logic, advancing an explanation of the meaning of a logical notion, negation, in terms of the speech act of denial. This paper offers a challenge to rejectivism by proposing that in virtue of explaining negation in terms of denial, the rejectivist ought to be able to explain the concept of contradiction partially in terms of denial. It is argued that any failure to achieve this constitutes an explanatory failure on the part of rejectivism, and reasons are then provided to doubt that the challenge can be successfully met.

Keywords

Rejectivism, denial, negation, contradictions, law of non-contradiction.

1 Negation and denial

The predominant view in the philosophy of logic that one denies a proposition just when one asserts its negation has its genesis in the work of Frege, where logic is understood to be the study of *inference*, what one is permitted to infer given their commitments, rather than that of *implication*:

To make a judgment because we are conscious of other truths as providing a justification is known as *inferring*. There are laws governing this kind of justification, and to set up these laws of correct inference is the goal of logic. (Frege 1979: 3)

Conceiving of logic as an account of inference requires a philosophical concern for whether the premises at hand have been asserted, and thus are suitable to be used for inferences (Frege 1980: 16-17).

Disputatio, Vol. VIII, No. 43, November 2016

Received: 19/07/2016

A concern evident in Frege's own calculus in the *Begriffsschrift*, where the judgement stroke is used to communicate whether the premises in question have been asserted or not.

With this inferential conception of logic, and premises conceived of as asserted propositions, it is little surprise that Frege (1960) proposed an intimate relationship between the speech act of denial and negation. After all, if propositional variables in a logic are understood in terms of an individual's commitments, it is reasonable that the truth-reversing truth-functor negation should communicate an individual's denial of the negated proposition. For Frege (1960), however, assertion was the primary speech act, and thus the denial of a proposition p was always explained in terms of the assertion of p 's negation.

While Frege's general inferential conception of logic is no longer popular, his theory on the relationship between negation and denial is still the mainstream view. Denying a proposition just is asserting its negation. Two modern theories of negation, however, challenge this mainstream view. Firstly, dialetheists, and notably Priest (2006: Chapter 6), reject any intimate relationship between negation and denial whatsoever, a consequence of their wishing to admit the truth of both some propositions and their negations without committing themselves to the simultaneous assertion and denial of some propositions. Denial is interpreted as a *sui generis* speech act non-equivalent to any assertion, and consequently even the assertion of a negation is non-equivalent to any denial. In contrast, rejectivism agrees with Frege that there is an intimate relationship between negation and denial, but proposes that he was wrong to suppose that the denial of a proposition should be understood in terms of the assertion of its negation. Instead, the pragmatic concept of denial should have explanatory primacy over the logical concept of negation, and thus the meaning of negation should fundamentally be understood in terms of the act of denial (Price 1990, Smiley 1996, Rumfitt 2000).

2 A challenge to rejectivism

Without taking a stand on which theory of negation is the most tenable overall, this paper offers a challenge to rejectivism, to demonstrate that it is possible to construct a philosophically plausible

definition of ‘contradiction’ in terms of denial, with the consequence that any failure to do so will count against the theory’s explanatory power.

The motivation for our challenge arises from two suppositions: (i) That the concept of contradiction is partially explained in terms of negation, and (ii) The *transitivity of explanations*:

With any attempt to explain some phenomenon Y in terms of some phenomenon X , if it is generally accepted that a third phenomenon Z should be (partially) explained in terms of Y , then it should be possible to (partially) explain Z in terms of X .

While our first supposition will be discussed in the following section, two points should sufficiently motivate our presupposing the *transitivity of explanations* here, although they far from establish its truth. Firstly, the principle is generally assumed in discussions of causal explanations (Armstrong 1983: 40, Bird 2007: 86-87), and thus in supposing its truth here we are merely conforming to an assumption generally made within the literature. Secondly, we commonly use the principle when considering the plausibility of philosophical explanations. For example, when proposing a truth-conditional theory of meaning we would expect the theory to be capable of explaining in terms of truth-conditions other phenomena which are partially explained in terms of meaning, such as synonymy and the identity of propositions. Any failure to do so would be seen to constitute an explanatory failure on the part of the theory. Consequently, we seem to be *prima facie* justified, at least, in presuming the *transitivity of explanations* for our purposes here.

In what follows we will suggest that, by appealing to the *transitivity of explanations*, rejectivism ought to be able to explain contradictions in terms of denial (and assertion), given that the concept of negation partially constitutes the concept of contradiction. Any failure to achieve this will count against rejectivism’s explanatory power.

3 A pragmatic contradiction

Contradictions are traditionally understood as propositions of the form $A \wedge \sim A$ (Haack 1978: 244), which is to say that they are understood to be the conjunction of a proposition and its negation (Kalish et al. 1980: 18):

- (S) C is a contradiction iff C is the conjunction of a proposition and its negation.

While the fact that negation plays an integral role within the concept of contradiction is not troublesome for either the Fregean or dialectic theories of negation and denial, given that neither require that negation should be fundamentally understood in other terms, the situation is less simple for rejectivism. According to rejectivists, negation itself should fundamentally be understood in terms of denial. Thus, in conjunction with the *transitivity of explanations* and (S), the rejectivist's theory entails that she ought to be able to understand the concept of contradiction partially in terms of denial.

In her quest to understand contradiction in terms of denial, however, it will not do for the rejectivist to simply substitute 'denial' for 'negation' in the standard definition of contradiction, as she would intuitively wish to here:

- (S') C is a contradiction iff C is the conjunction of a proposition and its *denial*.

Firstly, denial is a speech act. Yet, to speak of *conjoining* speech acts is totally inappropriate; as inappropriate as it is to speak of the negation or disjunction of speech acts. One conjoins propositional content, not the acts communicating propositional content. Secondly, to speak of a proposition and its denial commits a category mistake. Propositions themselves do not have denials. Denial is a speech act and propositions are meanings. While one can both deny or assert the truth of a proposition, this is different from the proposition itself having an assertion or denial as it does a contradictory. No proposition is the assertion or denial of another proposition (a point we will revisit below). Consequently, if the rejectivist is to successfully explain the concept of contradiction in terms of denial, she will require more than simply substituting 'denial' for 'negation' in the standard definition of contradiction.

The most plausible option here for the rejectivist given that, (i) denial is a speech act, (ii) the rejectivist explains negation in terms of denial, and (iii) the concept of negation partially constitutes the concept of contradiction, is to understand contradictions purely in terms of speech acts. After all, similarly to Frege, if the rejectivist

understands negation in terms of commitments, and particularly the speech act of denial, shouldn't she similarly understand a proposition as a commitment, an assertion? This new interpretation of 'contradiction' in terms of denial and assertion seems to both conform to the rejectivist's pragmatic principle of interpreting negation in terms of speech acts, and fits the practice of others who have attempted to explicate 'contradiction' in terms of denial, such as Howard Kahane and Peter Strawson:

A contradiction both makes a claim and denies that very claim. (Kahane 1995: 308)

We would not say that a man could, in the same breath, assert and deny the same thing without contradiction. (Strawson 1993: 21)

Thus, instead of expressing the *content* constituting a contradiction, the communicative acts themselves constitute the contradiction. The assertion is not an assertion *of a* contradiction, but the act of assertion and denial is *itself a* contradiction.

Removing the unnecessary ambiguities from Kahane's and Strawson's definitions, we arrive at a precise pragmatic definition of 'contradiction':

(P) *C* is a contradiction iff *C* is the simultaneous assertion and denial of some proposition *p*.

The condition in (P) that the assertion and denial of *p* must be simultaneous is included to ensure that assertions of *p* that are renounced and replaced by denials of *p*, and vice versa, are not categorized as instances of contradiction. One certainly does not contradict oneself if they simply change their mind. Thus, (P) does not require that the acts of assertion and denial *occur* simultaneously, only that the assertion/denial of *p* fails to annul the previous denial/assertion of *p* in the case of contradictions.

Now, according to the *transitivity of explanations*, given that the rejectivist wishes to explain negation in terms of denial, she ought to be able to explain contradictions in terms of a definition such as (P). Consequently, when assessing the success of rejectivism as an explanation of negation, we ought to evaluate the plausibility of defining contradictions in terms of speech acts, such as attempted in

(*P*). However, before we move on to assessing (*P*)'s plausibility as a definition of 'contradiction', two clarifications over its content are required.

Firstly, both assertion and denial are communicative acts that only *agents* perform. Non-agents do not themselves assert or deny. Truthbearers, for example, are the contents to be asserted or denied, and are not the acts themselves. Consequently, the occurrence of a sentence *s* expressing a proposition *p* does not constitute an assertion of *p*, or a denial of another proposition *q*. Three points should clarify why. Firstly, treating *s* as an assertion of *p* would ensure that one could never just mention or hypothesize *p* with the use of *s*, as by using *s* one would be automatically asserting *p*. Thus, the fact that one can mention or hypothesize the truth of a proposition *p* with the use of a sentence *s* expressing *p* demonstrates that a sentence *s*'s expressing a proposition *p* does not constitute assertion of *p*. Secondly, one can assert a proposition *p* by asserting a sentence *s* that expresses *p*, yet if *s* just is the assertion of *p* then one would be asserting *an assertion of p* in such a scenario. However, this both misrepresents what one achieves when one uses a sentence to assert a proposition, and requires us to admit that force operators can be embedded, a commitment we have good reasons to reject. The same point holds if we hypothesize that a sentence *s* denies a proposition *q*. Lastly, acts of assertion and denial bring with them some form of social commitment (Brandom 1994: 157-180, Williamson 2000: 266-269), a commitment which sentences are not the right kind of objects to possess. To have social commitment, an object must be a social entity. Therefore, a contradiction, according to (*P*), must be a communicative *act* by an *agent*.

Secondly, a full evaluation of (*P*) would require being sure of the correct theories of assertion and denial to embed within (*P*). However, firstly, given that we are primarily concerned here with the commitments of the rejectivist, and there is neither any obvious consensus among rejectivists on how denial (and assertion) should be conceived, nor an obvious interpretation of denial to which rejectivists are committed, it would be unfair to ascribe a particular theory of denial or assertion to the rejectivist for the sake of our evaluating (*P*). Secondly, given the plethora of substantive theories of assertion available in the literature, it clearly is not viable for us here

to evaluate the accounts as a precursor to evaluating (*P*)'s adequacy. Our only reasonable option then is to acknowledge the plethora of available theories in the literature (see MacFarlane 2011), and suspend judgement on which is correct.

While our lack of a commitment on the correct theory of assertion and denial to embed within (*P*) ensures that our evaluation of the definition is bound to be incomplete, there are enough properties that any plausible account of assertion must apply to assertion (and denial) to enable us to suitably evaluate (*P*)'s adequacy as a definition of 'contradiction' — notably, the fundamental property of being speech acts.

4 Evaluating (*P*)

In what follows we will evaluate attempts to define 'contradiction' in pragmatic terms, such as (*P*), using the standard criteria for a successful scientific definition (Belnap 1993). Namely, that the definitions are neither too lax nor strict in their categorization of contradictions, that the *definiens* and the *definiendum* can be substituted for one another *salva veritate* in non-opaque contexts, and that the definitions reflect the actual use of the term by the philosophical community. We concentrate here on three reasons to believe that (*P*), or any other definition of 'contradiction' in terms of speech-acts, is implausible, whichever viable theory of assertion and denial we embed within it.

Firstly, (*P*) precludes the possibility of an individual asserting/denying or (dis)believing a contradiction. One (dis)believes, asserts or denies truthbearers, which have propositional content, and not communicative acts, which assertion and denial are. Communicative acts can express truthbearers, but not other communicative acts. It makes no sense to say that one has asserted an assertion, denied a denial, asserted a denial, or the inverse. Similarly, to say that someone believes an assertion only makes sense if we interpret the claim loosely as 'Someone believes a proposition *p*, which was previously asserted'. Yet, we believe that individuals can both assert (or deny) and (dis)believe a contradiction. Additionally, we believe that these acts can be meaningfully expressed when we use the term 'contradiction' instead of the intended pragmatic *definiens* of (*P*). While the

propositions ‘Someone has asserted a contradiction’ and ‘Someone believes a contradiction’ are perfectly meaningful, substituting the *definiens* of (*P*) for ‘contradiction’ in either proposition ensures it becomes meaningless. (*P*), therefore, fails the criterion of eliminability in non-opaque contexts that is so crucial to any good definition of a term.

Secondly, assertions and denials cannot themselves be true or false, yet it is perfectly meaningful to say of a contradiction that it is false. Assertion and denial are not truthbearers, as we have already noted. Therefore, they cannot be assigned a truth-value. Instead, they are communicative acts that have truthbearers as their content. The *definiens* of (*P*) fails again to preserve the meaningfulness of certain propositions when it replaces the *definiendum* ‘contradiction’. This failure brings us suitably onto our third criticism of (*P*) — its inability to produce a plausible version of the Law of Non-Contradiction (LNC).

A main criterion for the plausibility of any definition of contradiction should be whether the definition can be meaningfully embedded into the LNC whilst ensuring the law’s philosophical importance. The pertinence of this feature of contradictions, as a criterion for a definition’s plausibility, is ensured by: (a) the perceived philosophical importance of the LNC, and (b) the fact that the LNC contains the concept of contradiction within it.

On the former point, historically the LNC has held an elevated position as one of the three most philosophically important logical laws, with Aristotle (1984: Γ 1005^b22) considering it to be the most certain of all principles. The continued vaulted status of the law in contemporary philosophy is demonstrated by both the vast majority of the philosophical community rejecting the possibility of true contradictions, and the law still being given mention in introductory logic textbooks as a fundamental logical law. The *prima facie* plausible position, therefore, is that the LNC has philosophical importance.

Our latter point, that the LNC contains the concept of contradiction within it, if not obvious from the occurrence of the term ‘contradiction’ in its name, can be shown by formulations of the law in the literature:

Aristotle (1984: Γ 1011^b13-14): Contradictory statements are not at the same time true.

Brown (2004: 126): No contradictory sentence is ever correctly assertable.

Dummett (1978: xix): Not both A and not A .

Englebretsen (1981: 5): A sentence and its negation cannot both be true.

Smith (2003: 101): A proposition and its negation cannot both be true.

Although only two of the formulations explicitly use the terms ‘contradiction’ or ‘contradictory’, those which don’t include the concept under the guise of a particular definition of ‘contradiction’, notably here the definition of contradictions as conjunctions of propositions and their respective negations.

The LNC, therefore, is both a logical law of great philosophical import and contains the concept of contradiction. Consequently, for a definition of ‘contradiction’ to be philosophically plausible, it must respect both of these facts by ensuring that it is meaningfully embeddable into a plausible interpretation of the LNC.

There are two broad interpretations of the LNC. The first is as a semantic law, as in Englebretsen 1981: 5, stating a semantic fact about contradictions, and the second as a pragmatic law, stating what one shouldn’t assert or believe, as in Brown 2004: 126.¹ For reasons already given, the latter interpretation of the LNC is not appropriate to embed the *definiens* of (P). The pragmatic versions of the LNC ‘Do not assert contradictions’ or ‘One ought not to assert contradictions’ make little sense when contradictions are defined in terms of speech acts themselves. Consequently, if (P) is to be meaningfully embeddable into a version of the LNC, it will have to be a semantic

¹ While there is the third option of interpreting the LNC as a metaphysical law, as in Tahko 2009, this possibility will not be considered here as there are good independent reasons to believe the metaphysical interpretation of the law too narrow to offer an adequate general account of a fundamental logical law (Martin 2014: section 3.4).

interpretation of the law.

Unfortunately for the rejectivist, the most obvious and *prima facie* plausible semantic interpretations of the LNC, ‘All contradictions are false’ or ‘No contradictions are true’ cannot meaningfully embed (*P*) for the reason that speech acts are not the right kind of ontological entities to be true or false. Thus, we will need to extend our reaches to more obscure interpretations of the law if we are to accommodate (*P*). Yet, the difficulty with these interpretations, such as,

(LNC_w) All contradictions are wrong

(LNC_i) All contradictions are incorrect

(LNC_m) All contradictions are mistaken,

is that their suitability to capture the LNC’s content is dubious. While we can meaningfully embed the *definiens* of (*P*) into them all,

(LNC_w^{*P*}) All simultaneous assertions and denials of a proposition are wrong

(LNC_i^{*P*}) All simultaneous assertions and denials of a proposition are incorrect

(LNC_m^{*P*}) All simultaneous assertions and denials of a proposition are mistaken,

they fail as plausible interpretations of the LNC for other reasons.

Any adequate version of the LNC must fulfil at least two criteria. Firstly, it must be meaningful for the *definiendum* ‘contradiction’ to replace the proposed *definiens* embedded within the version of the LNC. Secondly, the version of the LNC must either respect the standard formalization of the law, or present a new formalization while explaining away the success of its predecessor.

All of (LNC_w^{*P*}), (LNC_i^{*P*}), and (LNC_m^{*P*}) fail to fulfil the first criterion. As we can see from (LNC_w), (LNC_i), and (LNC_m), ‘contradiction’ cannot meaningfully replace the *definiens* of (*P*) in any of these versions of the LNC. It makes no sense to say that contradictions themselves are wrong, incorrect, or mistaken. If it is meaningful to say that contradictions are false, which undoubtedly it is, then

contradictions must be truthbearers of some kind. Truthbearers themselves, however, are the wrong kind of entity to be wrong, incorrect, or mistaken.

The obstacle to providing an interpretation of the LNC that is both suited to (*P*) and can meaningfully embed the *definiendum* ‘contradiction’ is that fundamentally speech acts and truthbearers are such different entities. Generally, semantic properties which we can meaningfully apply to members of one category cannot be meaningfully applied to members of the other. While we have not precluded here the possibility of (*P*)’s advocates constructing an interpretation of the LNC which is meaningful when embedding both the *definiendum* and *definiens* of (*P*), we have at least provided prima facie evidence that the possibility of constructing such a version of the law is unlikely. The onus then is on the rejectivist to provide such an interpretation of the LNC if she wishes to show that we can account for the concept of contradiction in terms of assertion and denial. Let us provisionally conclude, therefore, that the available interpretations of the LNC which can meaningfully embed the *definiens* of (*P*) seem to fail the first criterion of any plausible version of the LNC by failing to be able to meaningfully embed (*P*)’s *definiendum*.

All of (LNC_W^{*P*}), (LNC_I^{*P*}), and (LNC_M^{*P*}) equally fail to fulfil the second criterion for any plausible version of the LNC. The standard formalization of the law, $\sim(A \wedge \sim A)$, places two restrictions on any informal interpretation of the LNC, both of which are problematic for all of (LNC_W), (LNC_I), and (LNC_M). Firstly, the law must contain propositions that can be embedded into more complex propositions, due to the presence of embedded sub-formulae and truth-functors in the schema. Secondly, the law must contain two instances of the same truth-function, given that the schema contains two tildes.

All three interpretations of the LNC above fail to meet the first restriction. They define contradictions as a combination of acts, formalized as force operators, which cannot be meaningfully embedded, rather than as a combination of propositions, which can be meaningfully embedded. Similarly, the interpretations fail to meet the second restriction, as there are no two instances of the same truth-function in any of (LNC_W), (LNC_I), or (LNC_M) to account for the two tildes in the schema. Even if we assume that $A \wedge \sim A$ is a plausible formalization of the assertion and denial of a proposition,

which we have good reasons to deny for the reasons already given, we would be required by formal constraints to interpret the outer tilde as a denial operator, given that the internal tilde (we can suppose) would symbolize denial. Thus, the only available interpretation of the LNC embedding the *definiens* of (*P*) which meets this second formal constraint would be,

(LNC_D^{*P*}) One should deny all simultaneous assertions and denials of a proposition,

which is meaningless for the reasons already given. It makes no sense to deny an assertion or denial. Thus, none of the interpretations of the LNC discussed above are reasonable informal representations of the standard formalization of the LNC.

Now, given how established $\sim(A \wedge \sim A)$ is as the formalization of the LNC, any definition of ‘contradiction’ that cannot respect this formalization must possess substantial theoretical virtues in order to justify its replacement. At present, however, (*P*) doesn’t seem to possess any of the theoretical virtues required to justify such a divergence from the established path. In fact, it seems a relatively theoretically weak definition of ‘contradiction’. Thus, we can reasonably conclude that none of the interpretations of the LNC above that can meaningfully embed the *definiens* of (*P*) are adequate, for they all fail to fulfil at least two criteria for any adequate version of the law. Consequently, given the importance of the role that the concept of contradiction plays within the LNC, and the importance of the LNC within both philosophy and logic, (*P*)’s failure to produce an adequate version of the LNC must count heavily against the definition.²

² We can also show that it is unlikely *any* version of the LNC that meaningfully embeds the *definiens* of (*P*) can produce an acceptable formalization of the LNC, which, given the criteria for any adequate version of the LNC above, subsequently demonstrates that it is unlikely any adequate version of the LNC can meaningfully embed the *definiens* of (*P*). For a version of the LNC that meaningfully embeds the *definiens* of (*P*) to produce an acceptable formalization of the LNC, at least one of three very plausible principles must be rejected:

(*For*) Assertion and denial are formalized as force operators.

(*Emb*) Force operators cannot be meaningfully embedded.

(*Fun*) The LNC should be formalized as a function on contradictions.

We have considered three substantial problems with proposing a definition of ‘contradiction’ in terms of denial and assertion. What can the rejectivist say in reply to these concerns? Given the quantity and conclusiveness of the reasons for rejecting (*P*) as a definition of ‘contradiction’, it seems the rejectivist must concentrate on persuading us that, contrary to appearances, she is not committed to endorsing a definition of ‘contradiction’ in terms of speech acts. This she could achieve through, at least, two means.

Firstly, she could argue that contradictions should not be understood as the conjunction of a proposition and its negation, but rather in truth-conditional terms, for example, and thus neither negation nor denial play any role in the definition of ‘contradiction’. This is undoubtedly a live option for the rejectivist, however in this case the onus is on her to establish the viability of this competing definition of ‘contradiction’, and for independent reasons we should be sceptical that she can achieve this (Martin 2014: Chapter 3).

Secondly, she could propose that although she explains negation in terms of denial, and negation plays a fundamental role within the concept of contradiction, she is not committed to a definition of ‘contradiction’ in terms of speech acts such as (*P*), nor even showing that it is possible to construct such a plausible pragmatic definition of ‘contradiction’. Although we cannot preclude the possibility of such a response here, the principle underlying the response seems dubious. If we attempt to explain some phenomenon *P*, and we are very aware that *P* is used in explaining some further phenomenon *Q*, why would we wish our insight regarding *P* not to likewise provide an insight into the nature of *Q*? Doing so surely restricts the explanatory power of our proposed theory, by restricting our explanation of *P* to cases where *P* is not embedded within wider contexts. Perhaps there is a principled reason to be wary of expecting our explanations of some phenomenon *P* to always being suitable to embed within explanations of further phenomena that we have implicated *P* into, however no reason for such doubts is transparent at present. Thus, if the rejectivist wishes to take this second route in meeting the challenge

Given the plausibility of all three, the prospects of (*P*), or other definitions of ‘contradiction’ in terms of speech acts, producing an adequate version of the LNC seem grim.

set by the inadequacy of (*P*) as a definition of ‘contradiction’, then she will need to provide us with reason to believe that a theory of negation should not inform our definition of ‘contradiction’ even though the concept of negation is an important component of the concept of contradiction.

5 Conclusion

In this paper we have set rejectivism a challenge — to provide an adequate definition of ‘contradiction’ in terms of denial — and then advanced reasons to believe it cannot be successfully met. Given this, to meet our objection that she ought to be able to construct such a definition, the rejectivist must account for the apparent inadequacy of definitions of ‘contradiction’ in terms of speech acts by either demonstrating that the concept of negation fails to play a role in the definition of ‘contradiction’ or providing us with reasons to doubt the validity of the *transitivity of explanations*. While rejectivism’s apparent failure to explain contradictions in terms of speech acts fails to provide us with a reason to outright reject the theory, as this requires demonstrating the adequacy of some competing theory, it does provide the rejectivist with a challenge to overcome if she is to show that her theory is ultimately a successful explanatory account of negation.

Ben Martin
Dept. of Philosophy
University College London
London WC1E 6BT, UK
benjamin.martin@ucl.ac.uk

References

- Aristotle. Metaphysics. In *The Complete Works of Aristotle*, edited by J. Barnes. Princeton: Princeton University Press, 1984.
- Armstrong, David. 1983. *What is a Law of Nature?* Cambridge: Cambridge University Press.
- Belnap, Nuel. 1993. Rigorous definitions. *Philosophical Studies* 72: 115-146.
- Bird, Alexander. 2007. *Nature’s Metaphysics: Laws and Properties*. Oxford: Oxford University Press.

- Brandom, Robert. 1994. *Making It Explicit: Reasoning, Representing, and Discursive Commitment*. Cambridge: Harvard University Press.
- Brown, Bryson. 2004. Knowledge and non-contradiction. In *The Law of Non-Contradiction: New Philosophical Essays*, edited by G. Priest, Jr. Beall and B. Armour-Garb. Oxford: Clarendon Press.
- Dummett, Michael. 1978. *Truth and Other Enigmas*. London: Duckworth.
- Englebretsen, George. 1981. *Logical Negation*. Assen: Van Gorcum.
- Frege, Gottlob. 1879-1891. Logic. In *Posthumous Writings*, translated by P. Long and R. White, edited by H. Hermes, F. Kambartel and F. Kaulbach. Oxford: Blackwell, 1979.
- Frege, Gottlob. 1919. Negation. In *Translations from the Philosophical Writings of Gottlob Frege*, edited by P. Geach and M. Black. Oxford: University College London Press, 1960.
- Frege, Gottlob. 1980. *Philosophical and Mathematical Correspondence*. Translated by H. Kaal, edited by G. Gabriel, H. Hermes, F. Kambartel, C. Thiel and A. Veraart. Oxford: Blackwell.
- Haack, Susan. 1978. *Philosophy of Logics*. Cambridge: Cambridge University Press.
- Kahane, Howard. 1995. *Logic and Contemporary Rhetoric* (7th ed.) Belmont: Wadsworth.
- Kalish, Donald; Montague, Richard and Mar, Gary. 1980. *Logic: Techniques of Formal Reasoning* (2nd ed.) New York: Harcourt Brace Jovanovich.
- MacFarlane, John. 2011. What is assertion? In *Assertion: New Philosophical Essays*, edited by J. Brown and H. Cappelen. Oxford: Oxford University Press.
- Martin, Ben. 2014. *The Logical and Philosophical Foundations of True Contradictions* (PhD thesis). London: University College London.
- Price, Huw. 1990. Why 'not'? *Mind* 99: 221-238.
- Priest, Graham. 2006. *In Contradiction: A Study of the Transconsistent* (2nd ed.) Oxford: Clarendon Press.
- Rumfitt, Ian. 2000. 'Yes' and 'no'. *Mind* 109: 781-823.
- Smiley, Timothy. 1996. Rejection. *Analysis* 56: 1-9.
- Smith, Peter. 2003. *An Introduction to Formal Logic*. Cambridge: Cambridge University Press.
- Strawson, Peter F. 1993. Logical appraisal. In *A Philosophical Companion to First-Order Logic*, edited by R. I. G. Hughes. Indianapolis: Hackett.
- Tahko, Tuomas E. 2009. The law of non-contradiction as a metaphysical principle. *Australasian Journal of Logic* 7: 32-47.
- Williamson, Timothy. 2000. *Knowledge and its Limits*. Oxford: Blackwell.