



Swyneshed, Aristotle and the Rule of Contradictory Pairs

Stephen Read

Abstract. Roger Swyneshed, in his treatise on insolubles (logical paradoxes), dating from the early 1330s, drew three notorious corollaries from his solution. The third states that there is a contradictory pair of propositions both of which are false. This appears to contradict what Whitaker, in his iconoclastic reading of Aristotle’s *De Interpretatione*, dubbed “The Rule of Contradictory Pairs” (RCP), which requires that in every such pair, one must be true and the other false. Whitaker argued that, immediately after defining the notion of a contradictory pair, in which one statement affirms what the other denies of the same thing, Aristotle himself gave counterexamples to the rule. This gives some credence to Swyneshed’s claim that his solution to the logical paradoxes is not contrary to Aristotle’s teaching, as many of Swyneshed’s contemporaries claimed. Insolubles are false, he said, because they falsify themselves; and their contradictories are false because they falsely deny that the insoluble itself is false. Swyneshed’s solution depends crucially on the revision he makes to the account of truth and falsehood, brought out in his first thesis: that a false proposition can signify as it is, or as Paul of Venice, who took up and developed Swyneshed’s solution some sixty years later, puts it, a false proposition can have a true significate. Swyneshed gave a further counterexample to (RCP) when he claimed that some insolubles, like future contingents, are neither true nor false. Dialetheism, the contemporary claim that some propositions are both true and false, is wedded to the Rule, and in consequence divorces denial from the assertion of the contradictory negation. Consequently, Swyneshed’s logical heresy is very different from that found in dialetheism.

Mathematics Subject Classification. 03A05, 03B65 , 01A35.

Keywords. Contradiction, Signification, Liar paradox, Insolubles, Truth, Aristotle, Roger Swyneshed, William Heytesbury, Robert Eland, Ralph Strode, Paul of Venice.

1. The Rule of Contradictory Pairs

In his treatise on insolubles, written in the early 1330s, the Oxford Calculator Roger Swyneshed made three notorious iconoclastic claims:

1. There is a false proposition which principally signifies as things are
2. There is a formally valid inference with true premise and false conclusion
3. There is a pair of contradictory propositions both of which are false.¹

In this paper, I am concerned for the most part with the third thesis.² It is very natural to dismiss it out of hand, as I did myself in my ‘Introduction’ to my edition of Bradwardine’s treatise on insolubles [7, p. 24]. I wrote: “No true logician would accept (3.) . . . [C]ontradictories cannot both be false, by definition.”

But this judgment is too hasty. We owe the introduction of the notion of contradictory pairs of propositions to Aristotle, or as he called them, *antiphasas*. I quote from *De Interpretatione*, ch. 6:³

“We mean by affirmation a statement affirming one thing of another; we mean by negation a statement denying one thing of another. As men can affirm and deny the presence of that which is present and the presence of that which is absent and this they can do with reference to times that lie outside the present: whatever a man may affirm, it is possible as well to deny, and whatever a man may deny, it is possible as well to affirm. Thus, it follows, each affirmative statement will have its own opposite negative, just as each negative statement will have its affirmative opposite. Every such pair of propositions we, therefore, shall call contradictories, always assuming the predicates and subjects are really the same and the terms used without ambiguity. These and some other provisos are needed in view of the puzzles propounded by importunate sophists.” [1, pp. 123–5, 17a27–34]

Contradictories are often nowadays defined as two propositions, or statements, that cannot both be true and cannot both be false. But that is not how Aristotle defines them. Rather, for him, in a pair of contradictories, one affirms of something what the other denies of it. As we will see, these definitions are not necessarily equivalent. One might call Aristotle’s definition in

¹Note that throughout this paper, I will use ‘proposition’ to refer to what the medievals referred to as ‘propositiones’, that is, concrete token sentences, whether spoken, written or mental.

²I will also discuss the first. The second clearly demands attention too: it would seem to entail that Swyneshed’s account of consequence is not the impossibility of true premises and false conclusion, in which case, what is his account? It is preservation of principally signifying as it is: see Spade [29, §35, pp. 191–2] and Spade’s comment in Heytesbury [12, p. 76 n.31]. See also Read [26].

³This work of Aristotle’s is variously known under the Greek title, *Peri Hermeneias*, the Latin, *De Interpretatione*, and the English, *On Interpretation*. I resist the last in being particularly unhelpful and misleading. De Rijk [10, p. 191] takes from Gabriel Nuchelmans the neologism ‘apophantics’ to describe its content. A clearer term might be to call it ‘On Utterances’ or ‘On the Expression of Thoughts’.

terms of affirmation and denial a syntactic definition, and the modern one in terms of truth and falsehood, a semantic definition. Note that Aristotle's definition guarantees that every statement has a contradictory and says what it is, whereas the semantic definition does not.⁴

In his study of Aristotle's *De Interpretatione*, C.W.A. Whitaker challenged the orthodox reading of this treatise and argued that immediately after introducing the notion of contradictories in ch. 6, Aristotle set out, in effect, to show the inequivalence of the two definitions. He did this by providing counterexamples to what Whitaker dubs "the Rule of Contradictory Pairs" (RCP); that in each contradictory pair, one member is true and the other false. In ch. 7, Whitaker says, Aristotle gives examples of contradictory pairs each member of which is true; in ch. 8, pairs each of which is false; and in the famous ch. 9, concerning the future sea-battle, pairs each of which is true or false, but not determinately either.⁵

Russell Jones [15] echoes Whitaker's analysis, agreeing that Aristotle's target is (RCP), but disagreeing on the detail. In particular, he rejects Whitaker's claim that in ch. 7, Aristotle shows that both members of a pair can be true, and the claim that in ch. 9, Aristotle accepts that each member of the pair is true or false. To be clear, let us spell out five theses which are in play:

- RCP (Rule of Contradictory Pairs) In a contradictory pair, one member is true and the other false
- BV (Bivalence) Every proposition is either true or false
- EM (Excluded Middle) Everything either holds or does not hold of any one thing at any one time
- CV (Contravaleance) No proposition is both true and false
- NC (Non-Contradiction) Nothing both holds and does not hold of any one thing at any one time

Given that every proposition is one of a pair of contradictories, (RCP) entails (BV). Note that both (RCP) and (BV) have the cancellable (Gricean) implicature 'and not both'. (BV) and (EM) on the one hand, and (CV) and (NC) on the other are equivalent by Aristotle's account of truth and falsehood in the *Metaphysics*:

"To say that that which is is not or that which is not is, is a falsehood; and to say that that which is is and that which is not is not, is true." [2, p. 23, 1011b26–28]

⁴Horn [13, §1] claims that Aristotle "shift[ed] from a formal to a semantically based criterion of opposition" when setting out contradictories in the square of opposition. Not so: just as 'pale is not said of Socrates' denies of Socrates what 'pale is said of Socrates' affirms of him, so too 'pale is not said of every man', or equivalently 'pale is not said of some man' (in the latter, 'some' "scopes out" over 'not'), denies of man (the universal) what 'pale is said of every man' affirms of man, and 'pale is said of no man' denies of man what 'pale is said of some man' affirms of man.

⁵See also Kneale and Kneale [16, p. 47].

Whereas (RCP) is about pairs of propositions, (BV) and (CV) are about individual propositions, and (EM) and (NC) are about things.

Jones' objection to Whitaker's analysis of ch. 7 turns on whether Aristotle really does deny (CV). He certainly asserts (NC) in the *Metaphysics*:

“For the same thing to hold good and not to hold good simultaneously of the same thing and in the same respect is impossible,” [2, p. 7, 1005b19–20]

which is equivalent to (CV) by the account of truth and falsehood just quoted. The focus of *De Interpretatione* ch. 7 is on indeterminate propositions such as ‘Man is pale’. Whitaker takes them to be non-universal statements about universals. As such, ‘Man is pale’ is true because some men are pale. But ‘Man is not pale’ is also true, because some men are not pale. So the contradictory pair, ‘Man is pale’ and ‘Man is not pale’, one affirming of the universal man what the other denies, are both true. So there are true contradictions, pairs of contradictories both of which are true.

Whitaker [32, ch. 12] claims that this is not in fact a violation of the principle of Non-Contradiction, (NC). All that ‘Man is pale’ says is that some man is pale, so to affirm and deny paleness of man is not to claim that the same thing both holds and does not hold of the same thing in the same respect at the same time, only that “part of the universal might be pale and part not pale.” [32, p. 157] Jones [15, p. 41] rightly dismisses this as a fudge. On that reading, ‘Man is pale’ and ‘Man is not pale’ are no longer contradictories, pairs of propositions in which the same thing is affirmed and denied of the same thing. Since Aristotle seems to endorse (NC) without limitation not only in *Metaphysics* Γ 3 but also in *De Interpretatione* 12 (21b18–19), Jones proposes what he claims is a better understanding of Aristotle's counterexample to (RCP) in ch. 7. There is no such single thing as an indeterminate proposition, he says. Rather, so-called “indeterminate propositions” are indeterminately universal and particular. ‘Man is pale’ can be understood either as the universal claim that all men are pale, or as the particular (better, partial) claim that some men are pale. This is true even if we express indeterminate propositions more explicitly in English as indefinite propositions: ‘A man is a rational animal’ is naturally taken as universal; ‘A man is coming to fix the boiler’ more naturally as particular.

Whitaker's (and Jones') interpretation of Aristotle's project in chs. 7–9 is not uncontested. We find this already in Boethius. Summarising Aristotle's account of negation, opposition and contradiction in *De Interpretatione* ch. 6, Boethius gives the essentially semantic definition of contradiction:

“Contradiction is then the opposition of an affirmation and a negation in which neither can both be false nor both true, but one is always true the other false.”⁶

⁶Boethius [6, p. 88]. See Boethius [5, 134, 12–15]: *Contradictio uero est oppositio affirmationis et negationis, in qua neque ambas falsas neque ambas ueras esse contingit sed unam semper ueram, alteram uero falsam.*

Subsequently, when presented with Aristotle's claim in ch. 7 (18a11–12) that “not every contradiction is true or false”, he is forced to deny that Aristotle means what he says:

“He did not now mean contradiction in the proper sense but generally those which are opposites, either in a contrary or subcontrary mode.”⁷

More recently, De Rijk [10, pp. 252–3] claims that Whitaker's mistake is to conflate contradictory pairs of assertibles, such as man's being pale, man's not being pale, with assertions, such as ‘man is pale’, ‘man is not pale’. The former pair can appear both to be true, but are in fact neither, since, not being assertions, they are not apt to be true or false. De Rijk [10, p. 265] thus categorically rejects the idea that Aristotle's aim in chs.7–9 is to argue against (RCP).

Moreover, if indeterminate propositions are ambiguous in the way Jones claims, it is hard to see how Aristotle can claim that “the denial corresponding to a single affirmation itself must be single as well.” (*De Interpretatione* 7, 17b37–38) Aristotle continues: “The denial, that is, must deny just the thing the affirmation affirms of the selfsame, identical subject.” Both interpretations, Whitaker's and Jones', strain credulity. After all, Jones' interpretation only yields a pair of contradictories both of which are true if one member is taken universally and the other partially. Yet Whitaker's seems to avoid clashing with (NC) only by denying that the two propositions affirm and deny the same thing of the same thing, namely, of the universal as a whole. In Whitaker's interpretation, the subjects are different, in Jones's, the predicates.

Nonetheless, Aristotle concludes the chapter by saying:

“To sum up the foregoing statements, we showed that a single negation is opposed to a single affirmation in the manner we called contradictory . . . We, moreover, have proved of two [contradictory] opposites [antiphases] that it is not the case always that one must be true and one false.” [1, 7, 18a8–12]

So it is at least clear that Aristotle's aim in ch. 7 is to question the universal correctness of (RCP), even if the examples he gives are unconvincing. In ch. 8, Aristotle presents a further counterexample to (RCP), this time one where the two contradictories are both false. It is a case of the fallacy of many questions, which he also discusses in *De Sophisticis Elenchis* ch. 30. Suppose, he says, that ‘cloak’ applies to both man and horse, in the sense that ‘Cloak is pale’ means ‘Man and horse are pale’. Then its denial, ‘Cloak is not pale’, is equivalent to ‘Man and horse are not pale’. If one is pale and other is not pale, then both statements are false. A less unnatural example might be to ask if humans give birth. Some do (women) and some don't (men). So one cannot agree that humans give birth, nor deny it. Both statements are false. There is, as Aristotle says, “not a single affirmation” since “one name is given to

⁷Boethius [6, p. 110]. See Boethius [5, 176, 22–24]: *Nunc contradictionem non illam proprie sed communiter de his dixit quae sibi sunt oppositae siue contrario modo siue subcontrario.*

two things which do not make up one thing” (18a18). All he means by this, it seems, is that they do not make up one thing as regards the particular question at hand. As he remarks in *De Sophisticis Elenchis*, “a question must be single to which there is a single answer” (181a31). But if one is asked ‘Are Coriscus and Callias at home or not at home?’ (176a7), no single answer is possible, if one is and the other is not; and even if they both are (or are not), giving a single answer can be unclear. Nonetheless, in *De Interpretatione* 8, Aristotle’s contradictory pair refers to a single syntactic denial, which he thinks shows that (RCP) is not universally true.

Jones also questions Whitaker’s interpretation of Aristotle’s reasoning in ch. 9, though he again agrees with Whitaker that Aristotle’s aim is to give further examples where (RCP) fails. This is obscured, they both say, by treating ch. 9 in isolation, as so often happens. But seen in the context of chs. 6–8 (and the chapters that follow) it becomes clear that (RCP) is the focus, even though (BV) is involved. Ch. 8, offering, as we have seen, further counterexamples to (RCP), closes with the words:

“And accordingly not even here is one necessarily true and one false of two statements opposed contradictorily,” [1, 18a27]

and ch. 9 continues:

“In regard to things present or past ... of those contradictorily opposed one, again, must be true and one false, when they have a universal for subject and are in themselves universal ... This need not, however, be so in the case of two such propositions as have universals for subjects but are not themselves universals.” [1, 18a28–32]

(That was the upshot of ch. 7.) Now comes the topic of ch. 9:

“When, however, we come to propositions whose subjects are singular terms, while their predicates refer to the future and not to the present or past, then we find that the case is quite changed.” [1, 18a33–5]

Recall that (RCP) is about contradictory pairs of propositions, whereas (BV) is about single propositions. The argument of ch. 9 is a *reductio ad absurdum*. Whitaker and Jones claim that the premise of the *reductio*, the claim to be rejected, is (RCP), not (BV), that is, a claim about a contradictory pair, that one is true, the other false, not the claim that a single proposition is true or false. Aristotle argues that (RCP) leads to unacceptable conclusions. He writes:

“These and other strange consequences follow provided we assume in the case of a pair of contradictory opposites ... that one must be true, the other false,” [1, 18b26]

and he concludes:

“There is evidently, then, no necessity that one should be true, the other false, in the case of affirmations and denials. For the case

of those things which as yet are potential, not actually existent, is different from that of things actual.” [1, 19a39-b3]

Aristotle infers that (RCP) fails for future contingents. Whitaker and Jones disagree, however, about his commitment to (BV) about them. (BV) is a claim about a single proposition, e.g., ‘There will be a sea battle tomorrow’. If he denies (BV), as Jones claims, we have a simple explanation of the failure of (RCP), since as we noted, (RCP) entails (BV). However, Whitaker [32, p. 125] claims that Aristotle is elsewhere committed to (BV), and never questions it in ch. 9. He is left with the difficult task of explaining how each member of the contradictory pair is true or false, by (BV), but in such a way that (RCP) fails. His answer is that they are true or false, but not determinately either, so that the question of which cannot be answered in a dialectical dispute. No determinate answer can be given in advance.

In sum, Whitaker’s claim that Aristotle challenges (RCP) in *De Interpretatione* has some textual support, but Aristotle’s counterexamples are neither clear nor convincing. Swyneshed will present a perhaps clearer example in his treatment of the logical paradoxes.

2. Swyneshed’s Third Thesis

So let us return to Swyneshed’s third thesis, and consider his argument for it. At the end of his treatise on insolubles, Roger writes:

“If in these remarks what is perfect or consonant with truth was found, it was gathered from the sayings of Aristotle and of other revered masters. If what was imperfect or dissonant with the truth is found, its insufficiency should be impugned only to me. So be it.”⁸

Indeed, Roger considers explicitly the objection that

“in the first book of *De Interpretatione* and in the first book of the *Posterior Analytics* and in many other places . . . Aristotle indicates that two contradictories cannot be false together, and (the third thesis) claims this, and so it is false.”⁹

His reply is that by ‘false’ here Aristotle means

“what signifies other than it is . . . except in the case of insolubles where he understands by ‘false’ not what signifies other than it is but what undermines itself, that is, falsifies itself, as, e.g., is clear

⁸Spade [29, §112, p. 220], reprinted in Spade [31]: *In istis autem si quid completum sive veritati consonum repertum fuerit, ex dictis Aristotelis et aliorum reverendorum magistrorum colligitur. Si quid diminutum aut veritati dissonum inveniatur, soli meae insufficientiae est impugnandum. Amen.* Translations from Spade [29] are my own.

⁹Spade [29, §38, p. 193]: *Contra ultimam conclusionem sic arguitur per Aristotelem in primo Periermeneias et in primo Posteriorum et in multis aliis locis. Videtur quod Aristoteles innuat quod duo contradictoria non possunt simul esse falsa; et illa hoc ponit; igitur, ipsa est falsa.*

in the fourth book of the *Metaphysics*, where the text says: “But it happens in all such cases that they undermine themselves.”¹⁰

Spade refers the reader to Aristotle’s *Metaphysics* Γ 8 (1012b15 ff.):

“All such theses end up notoriously by eliminating themselves; for anyone who says that everything is true also makes the statement contrary to his own true (for the contrary statement asserts that his is not true).”¹¹

Not all Roger’s contemporaries were persuaded by his response, however. Twenty-five years later, Ralph Strode wrote, concerning Roger’s first thesis (that a false proposition can signify as it is) in particular:

“It seems to be quite expressly contrary to age-old principles passed down by the most highly regarded philosophers and familiar to the whole community of moderns without any question or doubt and especially contrary to Aristotle’s principles in the first book of *De Interpretatione*, the first book of the *Prior Analytics*, the first book of the *Topics* and the fourth book of the *Metaphysics*.”¹²

and he aims similar criticism at the second and third theses. But if Whitaker and Jones are right, Roger is in agreement with Aristotle. Pairs of contradictories do not necessarily have opposite truth-values. Indeed, according to the third thesis there is a pair of contradictories both of which are false. Roger’s example is the simple Liar paradox: ‘This is false’, referring to itself. The usual argument to a paradox runs as follows. If it were true, assuming it signifies only that it is false, and that a proposition is true just when it signifies as it is, it would be false and so not true. So it is false. But if it is false, it signifies other than it is, by the usual account of falsehood, so it is not false but true. We have shown that it is true if and only if it is false, and so by *reductio ad absurdum*, it is both true and false.

Roger’s solution to the paradox is to strengthen the condition for truth and correspondingly weaken that for falsehood. Some propositions, he notes, are relevant to inferring their own falsehood, and so they could be said to falsify themselves even if they otherwise signify as it is. So a proposition is false, he said, not only if it is not as it signifies, but also if it falsifies itself. Correspondingly, it is true only if it not only signifies as it is, but does not

¹⁰Spade [29, §39, p. 194]: *illud fore falsum quod significat aliter quam est—nisi in materia insolubilem ubi intellegit per ‘falsum’ non tale quod significat aliter quam est sed tale quod est destruens se, id est, falsificans, sicut per eum patet quarto Melaphysicae, ubi dicit textus sic “Accidit autem omnibus talibus destruere se ipsas”.*

¹¹Aristotle [2, p. 26]. William of Moerbeke’s medieval Latin translation, which Swyneshed is quoting, reads [3]: *Accidit itaque et quod famatum est de omnibus talibus orationibus, ipsas se ipsas destruere. Nam qui omnia vera dicit orationis sue contrariam veram facit, quare suam non veram; contraria enim non dicit ipam esse veram.*

¹²Spade [28, p. 76]: *... videtur satis expresse esse contra antiqua principia a philosophis maxime approbata tradita et a tota communitate modernorum sine aliqua inquisitione seu dubitatione vsitata, et precipue contra principia Aristotelis primo Perygerminias et primo Priorum et primo Topicorum et quarto Methaphysice.* Translations from Spade [28] are my own.

falsify itself. The simple Liar is, accordingly, simply false, since it falsifies itself. The first thesis records this: here is a false proposition, ‘This is false’, which signifies as it is. How does it falsify itself? By the simple fact that from what it signifies, namely that it is false, it directly follows that it is false. In general:

“Some propositions falsify themselves indirectly, some directly. A proposition falsifying itself indirectly is a proposition signifying principally as it is or other than it is and that, so signifying, falsifies another proposition falsifying it . . . A proposition falsifying itself directly is a proposition signifying principally as it is or other than it is, relevant to inferring itself to be false. And it is of two kinds. Some are relevant sufficiently, some are relevant insufficiently. Relevant sufficiently are propositions signifying principally as it is or other than it is from which, signifying in this way, it directly follows or is apt to follow that they are false. An example: let the proposition ‘This is false’ signify principally that this is false, referring to itself. Then it directly follows ‘This is false, therefore, this is false’. And in this way it is relevant sufficiently to inferring itself to be false. A proposition relevant insufficiently . . . is a proposition signifying as it is from which, signifying in that way, with its being wholly as it is, it follows in reality or is apt to follow that it itself is false and without this addition that does not follow. An example: suppose that there is only one Socrates and that only he says ‘Socrates says a falsehood’ and that it principally signifies by imposition that Socrates says a falsehood. Then it follows: Socrates says a falsehood, and only he says ‘Socrates says a falsehood’, therefore it is false. And it is relevant to inferring in that scenario that ‘Socrates says a falsehood’ signifies principally as it is.”¹³

From here, the proof of Roger’s third thesis is fairly immediate. ‘This is false’ signifies of itself that it is false. To contradict this, we take the proposition

¹³Spade [29, §§4–8, pp. 182–4]: *Quaedam falsificat se mediate, quaedam immediate. Propositio falsificans se mediate est propositio significans principaliter sicut est vel aliter quam est et ipsa sic significando falsificat propositionem aliam a se falsificantem se . . .*

Propositio falsificans se immediate est propositio significans principaliter sicut est vel aliter quam est pertinens ad inferendum se ipsam fore falsam. Et illa est duplex. Quaedam est pertinens sufficiens, quaedam est pertinens insufficientis. Pertinens sufficiens est propositio significans principaliter sicut est vel aliter quam est ex qua sic significando immediate sequitur vel est natum sequi ipsam fore falsam. Exemplum: Significet illa propositio ‘Hoc est falsum’ principaliter quod hoc est falsum, ipsamet demonstrata. Tunc sequitur immediate ‘Hoc est falsum; igitur, hoc est falsum’. Et sic illa est pertinens sufficiens ad inferendum se ipsam fore falsam.

Propositio pertinens insufficientis . . . est propositio significans sicut est ex qua sic significando cum totaliter sic esse sicut est ex parte rei sequitur vel natum est sequi ipsam fore falsam et ex ita esse sine illa non sequitur illud. Exemplum: Ponatur quod tantum sit unus Sortes et quod solum dicat illam ‘Sortes dicit falsum’ et quod illa ex impositione principaliter significet quod Sortes dicit falsum. Tunc sequitur: Sortes dicit falsum et solum dicit illam ‘Sortes dicit falsum’, igitur illa est falsa. Et illa est pertinens ad inferendum cum casu posito quod illa ‘Sortes dicit falsum’ significat principaliter sicut est.

which denies of that first proposition that it is false, namely, ‘That is not false’, referring by ‘that’ to ‘This is false’. Then clearly ‘This is false’ is false because it falsifies itself, and ‘That is not false’ is false because it signifies other than it is, namely, that the false proposition ‘This is false’ is not false. Two contradictories are at the same time false.

All Ralph Strode can find to say in response to this is to repeat his claim that it is contrary to Aristotle’s teaching:

“The opposite of [the conclusion that two contradictories mutually contradicting each other are at the same time false] is clear by Aristotle in the *Postpredicaments*, in the fourth book of the *Metaphysics* and in the first book of the *Perihermeneias*, where he quite expressly insists that it is impossible that two contradictories mutually contradicting one another are at the same time true or at the same time false.”¹⁴

In a similar way, Robert Eland [28, p. 65] simply describes Roger’s conclusion as “impossible” and splutters that “these conclusions are contrary to the opinion of many of the wise”.¹⁵ But William Heytesbury [12, pp. 26–27] does try to provide an argument against Roger’s position.¹⁶ To do so, he takes the proposition ‘This proposition signifies other than it is’, call it *A*, assuming it to signify only that *A* signifies other than it is. Next, take another proposition, *B*, which signifies just as *A* does, namely, that *A* signifies other than it is. Now either *A* signifies wholly as it is, or not. William’s idea is to derive a contradiction from each leg of this disjunction using only principles that Roger endorses. So first, suppose that it is not wholly as *A* signifies, that is, *A* signifies other than it is. Since *B* signifies that *A* signifies other than it is, and only that, it is as *B* signifies. Moreover, *A* signifies exactly as *B* does, so it is as *A* signifies, contradicting our assumption that it was not wholly as *A* signifies.

On the other hand, suppose it is wholly as *A* signifies. Let *C* be the contradictory of *B*, that is, let *C* deny of *A* whatever *B* affirms of *A*. So *C* signifies that *A* does not signify other than it is, that is, that *A* signifies as it is. Then *C* is true, for we have assumed that it is as *A* signifies, and *C* does not falsify itself. Moreover, *B* and *C* are contradictories, so *B* is false. (Here, William correctly assumes that Roger does not think that a pair of contradictories can both be true, even if he believes that they can both be false.) Moreover, *B* does not falsify itself either, so *B* must signify other than it is. Since *A* signifies exactly as *B* does, and *B* signifies that *A* signifies other than it is, it follows that *A* must signify other than it is, contradicting our assumption that it was wholly as *A* signifies. So either way, Roger’s theory leads to contradiction.

¹⁴Spade [28, pp. 76–7]: *Oppositum . . . patet per Aristotelem in Postpredicamentis et quarto Metaphisice et primo Peryrmenias, ubi satis expresse vult quod impossibile est duo contradictoria sibi invicem contradicentia esse simul vera vel simul falsa.*

¹⁵[28, p. 68]: *Istae conclusiones sunt contra opinionem plurium sapientium.* On the identity of Robert Eland, called ‘Fland’ by Spade, see Read and Thakkar [27].

¹⁶For the Latin text, see Pozzi [22, p. 218].

In his treatise on ‘Insolubles’, the final treatise of his *Logica Magna*, Paul of Venice presents and defends a theory of insolubles in many ways similar to Roger’s. He then considers a succession of arguments against the theory, rehearsing each of William’s objections in turn, including that deriving a contradiction from supposing that ‘This proposition signifies other than it is’ either signifies other than it is or not. He offers two responses to the objection. His first is this:

“To the second argument, I say, accepting the scenario, that it is not wholly as *A* signifies, and so consequently, I grant that *A* signifies other than it is. And then ⟨in reply⟩ to the argument: ‘*A* signifies other than it is, and *B* signifies only that *A* signifies other than it is, therefore it is wholly as *B* signifies’: I grant the inference and the conclusion; and then ⟨in reply⟩ to the argument: ‘It is wholly as *B* signifies and the proposition *A* wholly signifies as *B* does and vice versa, therefore it is wholly as *A* signifies’: I deny the inference, but one would need to add in the premise that it is not inconsistent that *A* is true, and this I deny. For *A* falsifies itself, because it asserts itself to signify other than it is, and this is why it is inconsistent for *A* to be true.”¹⁷

Thus Paul believes that the proposition in question, *A*, is an insoluble, and so falsifies itself in signifying other than it is. We have a Moorean paradox: if I say ‘This very proposition is false’, or ‘This proposition signifies other than it is’, I may also immediately say correctly, ‘and what I just said was false’.¹⁸

Paul subsequently proposes a different solution to the first three objections (of William’s) that he considers:

“But one can respond to all these ⟨arguments⟩ in another way, always admitting the scenario, by denying both contradictories, namely, ‘It is as Socrates says it is’, ‘It is not as Socrates says it is’; ‘It is as *A* signifies’, ‘It is not as *A* signifies’; ‘Some proposition signifies other than it is’, ‘No proposition signifies other than it is’. For just as it is not impossible for two contradictories to be false at the same time in the case of insolubles, so it is not impossible for the same thing to be denied at the same time in the same case, and especially when

¹⁷Paulus Venetus [20, f. 196^r^b] corrected against manuscript Biblioteca Apostolica Vaticana lat.2132, f. 241^r^a: *Ad secundam rationem dico admisso casu quod non est ita totaliter sicut a significat, et ita consequenter concedo quod a significat aliter quam est. Et tunc ad argumentum: a propositio significat aliter quam est et b significat solummodo quod a significat aliter quam est, igitur ita est totaliter sicut b significat: concedo consequentiam et consequens; et tunc ad argumentum: ita est totaliter sicut b significat et a propositio totaliter significat sicut b et e contra, igitur ita est totaliter sicut a significat: nego consequentiam, sed deberet addi in antecedente quod non repugnat a esse verum et hoc negatur. Unde a falsificat se ex quo asserit se significare aliter quam est, quare repugnat a esse verum.* (Text and translation from Paul’s treatise on ‘Insolubles’ are from an edition currently in preparation by Barbara Bartocci and myself.)

¹⁸Moore’s paradox [see, e.g., [18]] is the apparent absurdity of making an assertion of the form ‘*p* but I don’t believe that *p*’.

the insolubles principally have reflection on their own signification, as experience has taught in the foregoing arguments.”¹⁹

This is to deny both that *A* signifies as it is and that *A* signifies other than it is. It is a denial of (EM), and consequently of (BV).

This is in fact how Roger himself would deal with the paradox, as we will see. One might wonder, however, whether it is a coherent response from Paul. Does he really accept this alternative response, or is he simply including it in deference to Roger? The problem arises because Paul’s account of truth, though obviously inspired by Roger’s, is somewhat different. Paul writes:

“A true proposition is one whose exact significate is true and (for which) it is not inconsistent that the proposition is true. This is clear from what has been said in the treatise ‘On the truth and falsity of propositions. . . A false proposition is one which either falsifies itself or whose falsity does not arise from its terms, but from its false exact significate.”²⁰

Talk of the “exact significate” (*significatum adequatum*) is found in many fourteenth-century authors, notably Gregory of Rimini and Peter of Ailly, from whom Paul took it.²¹ Gregory uses the term to denote the object of demonstrative knowledge, the famous *complexe significabile*, what is signified complexly, namely, by propositions. Paul adapts Gregory’s theory in a radical way, claiming that the “exact significate” of a subject-predicate proposition is the exact significate of its subject or predicate:

“For any true affirmative present-tense proposition that has no ampliative verb or a term that is somehow distracting, the exact significate of the subject or of the predicate is really identical with its principal significate.”²²

Thus, whereas for Gregory and others what is complexly signifiable has itself some real propositional complexity, for Paul it has it only formally, even though in reality, it is identical to the exact significate of the subject or predicate:

¹⁹Paulus Venetus [20, f. 196^{rb}, BAV lat.2132, f. 241^{ra}]: *Potest tamen ad hec omnia aliter responderi negando semper admisso casu utrumque contradictorium, videlicet: ita est sicut sortes dicit, non est ita sicut sortes dicit; ita est sicut a significat, non est ita sicut a significat; aliqua propositio significat aliter quam est, nulla propositio significat aliter quam est. Sicut enim non est inconueniens duo contradictoria esse simul falsa in materia insolubilium ita non est inconueniens eadem simul negari in eadem materia, et precipue quando insolubilia habent principaliter reflexionem ad significationem propriam, ut in predictis motivis experientia docuit.*

²⁰Paulus Venetus [20, f. 194^{vb}, BAV lat.2132, f. 239^{rb}]: *Propositio vera est illa cuius adequatum significatum est verum et non repugnat ipsam esse veram. Patet ex dictis in de veritate et falsitate propositionum . . . propositio falsa dicitur esse illa que falsificat se, aut cuius falsitas non consurgit ex terminis sed ex adequato significato falso.* See also Paulus Venetus [21, pp. 62].

²¹See Conti [8, p. 474] and Nuchelmans [19, p. 231].

²²Paulus Venetus [21, p. 166]: *Quarta conclusio . . . cuiuslibet propositionis verae et affirmativae de praesenti sine verbo ampliativo aut termino distrahente aliqualiter, adaequatum significatum subiecti aut praedicati principali significato est communicabile identice realiter.* Translations from Paulus Venetus [21] are my own.

“What is exactly and complexly signifiable by any proposition and has a place in reality, is somehow distinct from what is stateable and non-complexly signifiable by its subject or predicate. . . . that God exists is formally distinct from God . . . These notions are distinct, but not really distinct, therefore, formally distinct . . . There is a formal distinction between those signifiable by a complex and those signifiable by a non-complex.”²³

To say that two notions are formally distinct means that though the things signified are the same, the terms expressing one notion cannot always be substituted *salva veritate* for the other.

3. Truth and Signification

Nonetheless, Paul’s account of truth and falsity is puzzling: a proposition’s truth was linked in the above passage to the truth of its exact significate, and the same for falsehood. But when is the exact significate true, and what does its truth consist in?

Conti [9, §3] claims that Paul inverts the order of explanation followed by Gregory:

“Paul deals with the question of the truth and falsity of a proposition before examining the problem of its meaning, and solves the latter on the basis of the answer to the former.”²⁴

Paul does indeed place his treatise on truth and falsity in the *Logica Magna* before that on the significate of the proposition, so that he addresses the question of the truth and falsity of propositions before turning to the problem of meaning. At the end of that earlier treatise Paul connects the truth of the proposition with that of its exact significate, so leading into the subsequent discussion of its exact significate. Paul’s first thesis in his account of truth reads:

“If the exact significate of a proposition is true and it is not inconsistent that the proposition, thus exactly signifying, should be true, then the proposition is true.”²⁵

The preceding discussion in this treatise, however, consists entirely of refutation of other accounts of truth. There is no preceding account of the truth of propositions that is endorsed and accepted by Paul, other than the connection with the exact significate.

²³Paulus Venetus [21, pp. 156–8]: *Cuiuslibet propositionis adaequate complexe significabile quod in natura ponitur a suo incomplexe significabili per subiectum vel praedicatum enuntiable aliquantiter distinguitur. . . . [F]ormaliter distinguitur . . . Deus a Deum esse. . . . [E]st distinctio formalis . . . inter complexe et incomplexe significabilia.*

²⁴See also Conti [8, p. 483].

²⁵Paulus Venetus [21, p. 62]: *Prima (conclusio) est si alicuius propositionis significatum adaequatum est verum, et non repugnat illam propositionem esse veram, sic significando adaequate, illa propositio est vera.*

Although Paul states, in his second thesis, that if a proposition is true, so too is its exact significate,²⁶ he also believes that its exact significate can be true even if the proposition itself is false because it falsifies itself. In that case, however, the truth of the significate cannot be grounded on that of the proposition. Take ‘This proposition is both true and false’, for example. Its exact significate is false, whereas the exact significate of ‘This proposition is false’ is true, and they both falsify themselves. So the truth of the exact significate of a proposition cannot be defined in terms of the truth or falsity of the proposition itself. Conti is right when he writes that all non-insoluble propositions “are true if and only if what they signify is true and false if and only if what they signify is false.”²⁷ However, Paul includes ‘This proposition is both true and false’ as an insoluble, for it implies its own falsity:

“An insoluble proposition is a proposition having reflection on itself wholly or partially implying its own falsity or that it is not itself true.”²⁸

So the truth or falsity of the exact significate of insoluble propositions cannot be grounded on that of the insoluble proposition itself. The insoluble proposition is always false. But sometimes its exact significate is true, sometimes false.

The order of the treatises can, moreover, be explained consistently with solving the problem of truth on the basis of the theory of meaning: having found all other accounts of truth wanting, Paul proposes his own, which defines the truth of the proposition in terms of the truth of its significate (taking the first thesis at face value); that then serves to motivate the following treatise, on the significate of the proposition.

Recall from §2 above that Paul takes the exact significate of a proposition to be the exact significate of its subject (or predicate), but described in propositional terms, e.g., not just God, but God as that God exists (formally distinct from God, but really identical). That is, the exact significate (God, or a man), considered as the significate, is itself a truth or a falsehood.

One may be reminded here of a distinction made by David Armstrong in his book, *A World of States of Affairs* (1997), between the thin and the thick particular. The thin particular is an abstraction, considered shorn of all its properties; the thick particular is “the particular taken along with all and only the particular’s non-relational properties.”²⁹ As such,

“Quineans . . . do have a truthmaker (if they want it!) for truths that ascribe properties to a particular. The truthmaker is the particular itself. The particular would have to be what has just been called

²⁶Paulus Venetus [21, p. 62]: *Secunda conclusio: Si aliqua propositio est vera, aequaliter esse adaequate significans, suum adaequatum significatum est verum.*

²⁷Conti [8, p. 487], referring to Paulus Venetus [21, p. 64].

²⁸Paulus Venetus [20, f. 194^{vb}, BAV lat.2132, f. 239^{ra}]: *Propositio insolubilis est propositio habens supra se reflexionem sue falsitatis aut se non esse veram, totaliter vel partialiter illativa.*

²⁹Armstrong [4, p. 124].

the thick particular, and, indeed, the thick particular would be a suitable truthmaker. Perhaps this accounts, or helps to account, for the feeling among those philosophers who take the Quinean position that they have left nothing out. Their feeling is justified. But if our argument is on the right lines, then though it is true that they *have* left nothing out, their truthmaker is really a state of affairs .”

This is not quite Paul’s view (Armstrong continues: “their truthmaker is really a state of affairs”), ascribing propositional complexity to the particular, which we have seen Paul denies, at least in reality. Nor are Paul’s exact significates as thick as the thick particular, which includes all its non-relational properties. But considered formally, *as* a significate, each exact significate is in itself true or false. That is where the regress is stopped.

Such an account as Paul’s is definitely realist, postulating a real (albeit, non-propositional) correlate to every significant proposition. The consequence is that Paul appears to be committed to (BV) and (EM) where Roger is not.³⁰ Talk of the significate of the proposition does not occur in Roger, where instead he talks of “signifying principally”. By the principal signification (Roger) and the exact signification (Paul) each means what the whole proposition signifies but ignoring any secondary or consequential signification.³¹ Maierù [17, pp. 490] cites Strode’s *Consequentiae* as saying:

“A grammatical indicative utterance exactly significative of truth or falsity is called a proposition. And what results exactly from all the significations of its immediate verbal parts is called the exact or principal or total signification of the proposition.”³²

In contrast to Paul’s, Roger’s account of truth and falsehood, though described in terms of how a proposition principally signifies, does not appeal to any corresponding true or false entity or significate:

“There follow four definitions or descriptions. The first is this: a proposition is a congruent indicative utterance significative either naturally or by an imposition by which it was last imposed to signify complexly.

The second is this: a true proposition is a proposition not falsifying itself signifying principally as it is either naturally or by an imposition by which it was last imposed to signify.

Third definition: a false proposition is an utterance falsifying itself or an utterance not falsifying itself signifying principally other

³⁰But see Hanke [11], who elaborates a non-bivalent semantics for Paul’s and Roger’s theories.

³¹See, e.g., Spade [30, p. 106].

³²*Et oratio indicativa congrua veri vel falsi adaequate significativa dicitur propositio. Et dicitur adaequata vel principalis vel totalis significatio propositionis quae resultat adaequate ex omnibus significationibus suarum partium propinquarum quae sunt dictiones.* (My own translation.) Note, however, that although Paul’s exact and Roger’s principal signification may be the same, Paul believes that the total signification is greater than its exact signification. See Paulus Venetus [21, ‘On the Significatum of a Proposition’, thesis 3: p. 192].

than it is either naturally or by an imposition by which it was last imposed to signify.

The fourth is this: an insoluble as put forward is a proposition signifying principally as it is or other than it is which is relevant to inferring itself to be false or unknown or not believed, and so on.”³³

One might think that this rules out a proposition’s being neither true nor false. However, Roger points out right at the start of his treatise that there is a third option:

“A proposition neither signifying principally as it is nor other than it is, that is, which is neither true nor false, is a proposition signifying in some way and that so signifying is relevant to inferring itself not to signify principally as it is, for example, the proposition ‘This proposition does not signify as it is’, referring to itself, which principally signifies that it itself does not signify as it is. And this similarly, ‘Every proposition signifies other than it is’, which principally signifies that every proposition signifies other than it is.”³⁴

The equation of ‘neither signifying as it is nor other than it is’ with ‘that is, is neither true nor false’ occurs in only one manuscript.³⁵ But it is borne out by later remarks, in particular, an objection which Roger considers. It runs:

“One argues against these proposals in many ways. First, like this: one of those proposals claims that some proposition is neither true nor false, which is contrary to Aristotle in the *Categories* where he says in one place: “Now it seems that every affirmation is true or false”,³⁶ from which it follows that every affirmative is true or false. And if this is true of these affirmatives, for the same reason it will be true of negatives.”³⁷

³³Spade [29, §§13–16, pp. 185–6]: *Post illa sequuntur quattuor diffinitiones seu descriptiones. Prima est haec: propositio est oratio indicativa congrua naturaliter, ex impositione, vel impositionibus qua vel quibus ultimo fuit imposita complexe ad significandum significativa. Secunda est haec: propositio vera est propositio non falsificans se principaliter sicut est significans naturaliter aut ex impositione vel impositionibus qua vel quibus ultimo fuit imposita ad significandum. Tertia definitio: propositio falsa est oratio falsificans se vel oratio non falsificans se principaliter aliter quam est significans naturaliter, ex impositione, vel impositionibus qua vel quibus ultimo fuit imposita ad significandum. Quarta est haec: insolubile ad propositum est propositio significans principaliter sicut est vel aliter quam est pertinens ad inferendum se ipsam fore falsam vel nescitam vel (non)creditam, et sic de singulis. ('non' is added in that final clause at the suggestion of Pozzi [22, p. 182].)*

³⁴Spade [29, §2, pp. 180–1]: *Propositio nec principaliter significans sicut est nec aliter quam est, id est, quae nec est vera nec falsa, est propositio significans aliquid esse et illa sic significando est pertinens ad inferendum se ipsam non significare principaliter sicut est, sicut haec propositio ‘Haec propositio non significat sicut est’, demonstrata illa eadem, quae principaliter significet quod ipsa non significat sicut est. Et haec similiter ‘Omnis propositio significat aliter quam est’ quae principaliter significet quod omnis propositio significat aliter quam est.*

³⁵See Spade [29, p. 180 n.27].

³⁶Spade refers to *Categories* 4, 2a6–7.

³⁷Spade [29, §28, p. 190]: *Contra illas propositiones arguitur multipliciter. Primo sic: una illarum propositionum ponit aliquam propositionem fore nec veram nec falsam, quod est*

Roger responds:

“Where Aristotle claims authoritatively, “Now it seems” etc., he means to draw a distinction between propositions and the incomplex terms from which propositions are composed. Therefore, his point is that every truth or falsehood is an affirmative or negative proposition. And it follows that no incomplex term is true or false. Thus the first appeal to authority is accommodated. . . .

It should be understood that every proposition signifying principally as it is or other than it is, whether it is of the present or the past or the future tense, whether of necessity or of contingency, whose truth depends on the present, is either true or false and no others. From this it is clear that there are many propositions which are neither true nor false, such as ‘This signifies other than it is’, referring to itself and principally signifying in that way, ‘You will be dead tomorrow’, and universally all propositions of future contingency whose truth does not depend on the present,”³⁸

alluding specifically to Aristotle’s apparent rejection of (BV) in *De Interpretatione* ch. 9.

In fact, although ‘This proposition signifies other than it is’ is the first problematic example which Roger mentions in his ‘Insolubles’ (§3, p. 181), he goes on to claim that it is in fact not an insoluble, for it does not falsify itself, and is not false:

“It remains to solve some sophisms which appear to be insolubles but are not, e.g., ‘A is known’, ‘This proposition signifies other than it is’, ‘That proposition does not signify other than it is’, ‘This proposition does not signify as it is’, and similar ones.”³⁹

‘This proposition signifies other than it is’ should be denied, Roger says. It doesn’t signify other than it is, nor as it is. It doesn’t signify as it is, for if

Footnote 37 continued

contra Aristotelem in *Praedicamentis* ubi dicit in uno loco sic: “Videtur autem omnis affirmatio vera vel falsa”. Ex qua sequitur quod omnis affirmativa est vera vel falsa. Et si hoc est verum de istis affirmativis, eadem ratione erit verum de negativis.

³⁸Spade [29, §§30–2, p. 190–1]: Ubi Aristoteles ponit illam auctoritatem, “Videtur autem,” et cetera, intendit ponere differentiam inter propositiones et incomplexa ex quibus componuntur propositiones. Differentia igitur sua est quod omne verum vel falsum est propositio affirmativa vel negativa. Et sequitur quod nullum incomplexum est verum vel falsum. Et sic salvatur prima auctoritas . . . Pro quo est sciendum quod omnis propositio significans principaliter sicut est vel aliter quam est sive sit de praesenti sive de praeterito sive de futuro, sive de necessaria sive de contingenti, cujus veritas dependet a praesenti est vera vel falsa et nulla alia. Ex quo patet quod multae sunt propositiones quae nec sunt verae nec falsae cujusmodi sunt illae ‘Haec significat aliter quam est’, eadem demonstrata sic principaliter significante, ‘Tu eris mortuus cras’, et universaliter omnes propositiones de futuro contingenti quarum veritas non dependet a praesenti.

³⁹Spade [29, §100, p. 215]: . . . superest solvere quaedam sophismata quae apparent insolubilia et non sunt, sicut sint ‘a est scitum’, ‘Ista propositio significat aliter quam est’, ‘Illa propositio non significat aliter quam est’, ‘Ista propositio non significat sicut est’, et his similes.

it did, it wouldn't, and so by the usual *reductio* argument, it doesn't. But if it doesn't, it is tempting to argue for a contradiction as follows: if it doesn't signify other than it is, then it must signify as it is, since it does signify in some complex way. But if so, then it must signify other than it is, for that is what it signifies. That move is invalid, Roger says. For recall the discussion of signifying from the start of the treatise: some propositions signify as it is, others other than it is, and yet others neither as it is nor other than it is. That last group consists of those that signify in some complex way but, signifying in that way, are relevant to inferring themselves not to signify as it is. That is the case with 'This proposition signifies other than it is', for we can immediately infer from the proposition's signifying other than it is that it doesn't signify as it is. So it does not follow from the fact that it doesn't signify other than it is that it signifies as it is, even though what it signifies is that it signifies other than it is.

Recall Heytesbury's argument. It was premised on the assumption that either a proposition signifies as it is or not (given that it signifies in some way). Roger simply denies that basic assumption of (EM) and the instance of (BV) that goes with it. However, one might question whether Roger's rejection of (EM) is really open to Paul, given his much more strongly realist account of truth.

Roger considers a final objection: his proposed solution means that "there are two mutually contradictory contradictories one of which signifies as it is while the other does not signify other than it is."⁴⁰ Take *B*: 'A does not signify other than it is', the contradictory of *A*: 'This proposition signifies other than it is'. Then *B* signifies as it is, while, as we have seen, *A* does not signify other than it is (or as it is, for that matter). For *B* is not relevant to inferring that it does not itself signify as it is, whereas *A* is. So indeed, the opponent is right, and we have a further thesis, parallel to Roger's third thesis, and again contradicting (RCP).

In fact, *B* is true, so Roger is indeed committed to the thesis Eland levels at him as an objection,⁴¹ and as elaborated by Strode:

"The sixth conclusion is this, that there are two contradictories of which one is true and the other neither signifies as it is nor other than it is, and in consequence, according to [Roger's] opinion, neither true nor false . . . And that this thesis is unacceptable is clear enough according to Aristotle in the *Postpredicaments*, and the first book of *De Interpretatione*, where he quite expressly insists that if one of contradictories is true the other is false, and vice versa."⁴²

⁴⁰Spade [29, §105, p. 218]: *aliqua sunt duo contradictoria sibi invicem contradicentia et unum illorum significat sicut est et aliud non significat aliter quam est.*

⁴¹See [28, p. 65] and Read and Thakkar [27, p. 169].

⁴²Spade [28, p. 78–9], corrected against manuscript Erfurt Amploniana Q255: *Sexta conclusio est ista, quod aliqua sunt duo contradictoria, quorum unum est verum et reliquum nec significans sicut est nec aliter quam est, et per consequens secundum istam opinionem*

But as we have seen, this is arguably not contrary to Aristotle's account of contradictories in the *De Interpretatione* but, according to Whitaker and Jones, very much in accord with it.

4. Negation and Denial

What is the contemporary relevance of these reflections? On the semantic account of contradictories, whereby pairs of contradictories must have opposite truth-value, it might seem impossible for there to be true contradictions, pairs of contradictories both of which are true, or both false. But that they are not both is a Gricean implicature, as mentioned earlier. Indeed, by (RCP), or even by a weak form of (RCP) which says that if one of the pair is true the other false and vice versa, if both are false then both are true. This weak form of (RCP) is compatible with their lacking truth-value altogether and with their both being both true and false. But it is not compatible with Swyneshed's third thesis, their both being false and not true, nor with Aristotle's claims in chs. 7–8 of *De Interpretatione*, at least.

On the syntactic account, however, whereby one member of each contradictory pair denies what the other affirms, numerous counterexamples to (RCP) are to be found, notably among the logical paradoxes, according to some medieval responses to the insolubles. Indeed, there seem to be counterexamples even to (EM) and (BV).

Graham Priest is a Roger Swyneshed for our own times, with his own iconoclastic thesis:

“Dialetheism is the view that some contradictions are true: there are sentences (statements, propositions, or whatever one takes truth-bearers to be), α , such that both α and $\neg\alpha$ are true, that is, such that α is both true and false.”⁴³

Here $\neg\alpha$ is the negation of α . Priest [24, p. 70] rejects the principle that the truth of $\neg\alpha$ excludes the truth of α . Indeed, he equates the falsehood of α with the truth of $\neg\alpha$.

But care is needed here in identifying $\neg\alpha$. Priest [23, p. 76 n.2] refers us to Priest [25, §7.2], where he describes Aristotle's account of negation as being encapsulated in the square of opposition. That is only part of the story, Aristotle's account as applied specifically to the A, E, I and O forms of subject-predicate propositions. Such propositions are not among those which Aristotle claims as counterexamples to (RCP). Aristotle seems to accept (RCP) for the particular and universal propositions one finds in the Square of Opposition.⁴⁴ But even here, Swyneshed's solution to the Liar provides counterexamples.

Footnote 42 continued

nec (est) verum nec falsum . . . Et quod ista conclusio sit inconueniens satis patet per Aristotelem in Postpredicamentis et primo Peryrminias, ubi satis expresse vult (quod) si unum contradictorium sit (verum), reliquum est falsum, et e converso.

⁴³Priest [23, p. 1].

⁴⁴See *De Interpretatione* 7, 17b17–21.

Suppose, to take a medieval example, God has annihilated all particular affirmative propositions apart from ‘Some particular affirmative is false’. Then that proposition, being the only particular affirmative proposition, falsifies itself, and so on Swyneshed’s account is false. But ‘No particular affirmative is false’ is also false, for there is a false particular affirmative proposition, namely, ‘Some particular affirmative is false’. So they are both false, yet they are contradictories, in that one denies what the other affirms.

Although ‘negation’ and ‘denial’ are often run together by the translators, perhaps even by Aristotle himself, let us take it that $\neg\alpha$ and α are intended by Priest and other modern authors to correspond to Aristotle’s pairs of contradictories or opposites.⁴⁵ Priest [23, p. 77] writes:

“We have a grasp of negation . . . and we can use this to determine when ‘notting’ negates . . . [T]here appears to be a relationship of a certain kind between pairs such as ‘Socrates is mortal’ and ‘Socrates is not mortal’; and ‘Some man is mortal’ and ‘No man is mortal’. The traditional way of expressing the relationship is that the pairs are *contradictories*, and so we may say that the relationship is that of contradiction. Theories of negation are theories about this relation.”

But recall that Aristotle described $\neg\alpha$ (that is, the opposite, or contradictory, of α) as denying what α affirmed, or asserted. However, Priest [23, p. 104] rejects an identification he attributes to Frege:

“to deny α is simply to assert $\neg\alpha$.”

Rather, he says, we can deny something in many different ways:

“I can shake my head, say ‘no’ or even stomp off in a rage. Perhaps more importantly, consider someone who supposes that some sentences are neither true nor false.” (*loc.cit.*)

But none of these is incompatible with asserting $\neg\alpha$, indeed, most of them entail it. That’s certainly true of the head shake and saying ‘no’. Stomping off suggests either implicit assertion of $\neg\alpha$ or the (badly named) metalinguistic rejection of α , as in ‘I’m not the UK expert, I’m the world expert’.⁴⁶ That is not to deny you’re the UK expert, it entails that you are. Lastly, if a sentence is neither true nor false, it’s not true.⁴⁷ So denying α actually entails asserting $\neg\alpha$.

It is the converse that Priest rejects. He claims that we can assert $\neg\alpha$ without denying α . He is forced to do this by his definition of falsehood:

“The definition of falsity assures us that $\neg\alpha$ is true iff α is false.”⁴⁸

⁴⁵However, some commentators, e.g., Whitaker [32, p. 81], claim that for Aristotle, negation was not an external operation, but rather, internal to the assertion, and so the notation $\neg\alpha$ is not appropriate in his case.

⁴⁶See [23, p. 77] and Horn and Wansing [14, §1.10].

⁴⁷Intuitionists reject (BV) in a more subtle way, by refusing to assert that every proposition is either true or false, but not by claiming that any given sentence is neither true nor false. Since they assert the double negation of (EM), it would be inconsistent either to deny (BV) or to assert its contradictory.

⁴⁸Priest [23, p. 81].

That is the weak (RCP), that if one of a pair of contradictories is true, the other is false, and vice versa. Indeed, given his endorsement of (BV),⁴⁹ Priest is in fact committed to (RCP) in full, albeit cancelling the implicature of (CV). Thus Priest retains (RCP) and rejects Frege's Aristotelian identification of the assertion of $\neg\alpha$ with the denial of α .

By rejecting (RCP), Aristotle is able to square rejecting (BV) and (EM) with identifying negation and denial—and he could even reject (NC) and (CV), though he chooses not to. Aristotle claims that if β denies (of x) what γ affirms (of x), then β and γ are contradictories, that is, $\beta = \neg\gamma$. Faced with the counterexamples in chs. 7–9 of *De Interpretatione*, Aristotle rejects (RCP), even in its weakened form. Negation is accordingly non-truth-functional. The truth-value of α does not determine that of $\neg\alpha$ (any more than that of, say, $\Box\alpha$). How '¬' behaves will depend on which, if any, of Aristotle's, or Swyneshed's, counterexamples one accepts.

In contrast, Priest's negation is truth-functional and his conception of contradiction is semantic. Denying is no longer identified with the assertion of the negation. So Aristotle's and Swyneshed's claim that contradictories can both be false is a very different iconoclasm from dialetheism.

5. Conclusion

To sum up: Swyneshed enunciated three notorious consequences of his proposed solution to the insolubles, the most famous of which is his claim that it is possible for both members of a contradictory pair to be false. This appears to run contrary to a basic principle, the Rule of Contradictory Pairs, that in each such pair, one member is true and the other false, a principle often attributed to Aristotle. But two recent authors who have looked closely at Aristotle's arguments in the central chapters of his treatise *De Interpretatione* claim that Aristotle rejects this principle, presenting a succession of counterexamples to it, culminating in his discussion of the future sea-battle in ch. 9.

Swyneshed himself likens his approach to the insolubles to the problem of future contingents, citing them as counterexamples not only to the Rule of Contradictory Pairs, (RCP), but also to the Principle of Bivalence, (BV). Indeed, the paradoxes of signification, exemplified by the self-referential proposition 'This proposition signifies other than it is', are counterexamples also to the Law of Excluded Middle, (EM). Whatever may be wrong with Swyneshed's solution it is not that it is contrary to Aristotle's teaching, if Whitaker and Jones are right.

Graham Priest's dialetheism claims that some contradictions, that is, pairs of contradictories, are true, equivalently, that some propositions are both true and false. In fact, Priest endorses (RCP), equating the falsehood of α with the truth of $\neg\alpha$ (its negation). As a consequence, negation and denial come apart, and $\neg\alpha$ is no longer the (Aristotelian) contradictory of α . Aristotle

⁴⁹Priest [25, p. 146] observes that in his logic of paradox (LP), "each sentence is either true or false or both."

and Swyneshed might appear to be in agreement with dialetheism, allowing contradictories to be true or false together. But in contrast, they reject (RCP), and at least in the case of the latter, (BV), and so this is only a superficial agreement.

Open Access. This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

References

- [1] Aristotle: *Categories, On Interpretation, Prior Analytics*. The Loeb Classical Library. Heinemann, London. *Categories and On Interpretation* ed. and tr. Harold P. Cooke, *Prior Analytics* ed. and tr. Hugh Tredennick (1938)
- [2] Aristotle: *Metaphysics Books Γ, Δ*, E. Clarendon Aristotle Series. Clarendon Press, Oxford. Translated with Notes by C. Kirwan (1971)
- [3] Aristotle: *Metaphysica, Lib. I-XIV: Recensio et Translatio Guillelmi de Moerbeka*. *Aristoteles Latinus XXV 3, 1-2*. Brill, Leiden. G. Vuillemin-Diem (ed.) (1995)
- [4] Armstrong, D.: *A World of States of Affairs*. Cambridge UP, Cambridge (1997)
- [5] Boethius, A.: In: Meiser, C. (ed.) *Commentarii in librum Aristotelis Peri Hermeneias: Editio Secunda*. Teubner, Leipzig (1880)
- [6] Boethius, A.: *On Aristotle On Interpretation*. Boethius' Second Commentary, tr. Andrew Smith, pp. 1–3. Duckworth, London (2010)
- [7] Bradwardine, T.: *Insolubilia*. Peeters, Leuven. Edited with English translation by Stephen Read (2010)
- [8] Conti, A.: *Complexe significabile and truth in Gregory of Rimini and Paul of Venice*. In: Maierù, A., Valente, L. (eds.) *Medieval Theories on Assertive and Non-Assertive Language*, pp. 473–94. Leo S. Olschki Editore, Florence (2004)
- [9] Conti, A.: *Paul of Venice*. In: Zalta, E.N. (ed.) *The Stanford Encyclopedia of Philosophy* (summer 2017 edition). Metaphysics Research Lab, Stanford University, Stanford (2017)
- [10] De Rijk, L.: *Aristotle: Semantics and Ontology*, vol. I. Brill, Leiden (2002)

- [11] Hanke, M.: Paul of Venice and realist developments of Roger Swyneshed's treatment of semantic paradoxes. *History and Philosophy of Logic* **38**, 299–315 (2017)
- [12] Heytesbury, W.: On "Insoluble" Sentences: Chapter One of his Rules for Solving Sophisms. Translated with an Introduction and Study by Paul Vincent Spade. Pontifical Institute of Mediaeval Studies, Toronto (1979)
- [13] Horn, L.R.: Contradiction. In: Zalta, E.N. (ed.) *The Stanford Encyclopedia of Philosophy*, spring 2014 edn. Metaphysics Research Lab, Stanford University, Stanford (2014)
- [14] Horn, L.R., Wansing, H.: Negation. In: Zalta, E.N. (ed.) *The Stanford Encyclopedia of Philosophy*, spring 2017 edn. Metaphysics Research Lab, Stanford University, Stanford (2017)
- [15] Jones, R.: Truth and contradiction in Aristotle's *De Interpretatione* 6–9. *Phronesis* **55**, 26–67 (2010)
- [16] Kneale, W., Kneale, M.: *The Development of Logic*. Oxford UP, Oxford (1962)
- [17] Maierù, A.: *Terminologia Logica Della Tarda Scolastica*. Editioni dell'Ateneo, Rome (1972)
- [18] Moore, G.: Moore's paradox. In: Baldwin, T. (ed.) *G.E. Moore: Selected Writings*, pp. 207–12. Routledge, London (1993)
- [19] Nuchelmans, G.: *Theories of the Proposition*. North-Holland, Amsterdam (1973)
- [20] Paulus Venetus: *Logica Magna*. Bonetus Locatellus for Octavianus Scotus, Venice (1499)
- [21] Paulus Venetus: *Pauli Veneti Logica Magna Secunda Pars, Tractatus de Veritate et Falsitate Propositionis, et Tractatus de Significato Propositionis*. Oxford UP, Oxford. Published for the British Academy. Edited by Francesco del Punta and Marilyn McCord Adams (1978)
- [22] Pozzi, L.: *Il Mentitore e il Medioevo*. Edizioni Zara, Parma (1987)
- [23] Priest, G.: *Doubt Truth to be a Liar*. Clarendon Press, Oxford (2006a)
- [24] Priest, G.: In *Contradiction*, 2nd edn. Clarendon Press, Oxford (2006b)
- [25] Priest, G.: Paraconsistency and dialetheism. In: Gabbay, D., Woods, J. (eds.) *The Many-Valued and Non-Monotonic Turn in Logic*. *Handbook of the History of Logic*, vol. 8, pp. 129–204. Elsevier, Amsterdam (2007)
- [26] Read, S.: The rule of contradictory pairs, insolubles and validity. *Vivarium* (2020) **(to appear)**
- [27] Read, S., Thakkar, M.: Robert Fland—or Elandus Dialecticus? *Mediaeval Stud.* **78**, 167–80 (2016)
- [28] Spade, P.: Robert Fland's *Insolubilia*: an edition, with comments on the dating of Fland's works. *Mediaeval Stud.* **40**, 56–80 (1978)
- [29] Spade, P.: Roger Swyneshed's 'Insolubilia': edition and comments. *Archives d'histoire doctrinale et littéraire du moyen âge* **46**, 177–220 (1979). Reprinted in Spade (1988)
- [30] Spade, P.: Roger Swyneshed's theory of 'Insolubilia': a study of some of his preliminary semantic notions. In: Eschbach, A., Trabant, J. (eds.) *History of Semiotics*, pp. 105–13. John Benjamins, Amsterdam (1983). Reprinted in Spade (1988)

- [31] Spade, P.: *Lies, Language and Logic in the Late Middle Ages*. Variorum, London (1988)
- [32] Whitaker, C.: *Aristotle's De Interpretatione: Contradiction and Dialectic*. Oxford Aristotle Studies. Clarendon Press, Oxford (1996)

Stephen Read
Arché Research Centre
University of St Andrews
17-19 College St.
St Andrews KY16 9AL
Scotland, UK
e-mail: `slr@st-andrews.ac.uk`

Received: January 15, 2019.

Accepted: January 21, 2020.