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Logic, Logical Form and the Disunity of Truth

Atomic sentences – or the propositions they express – can be true, as can logically complex sentences composed out of atomic sentences.[1] A *comprehensive* metaphysics of truth aims to tell us, in an informative way, what the truth of any sentence whatsoever consists in, be it atomic or complex. *Monists* about truth are committed to truth always consisting in the same thing, no matter which sentence you consider. *Pluralists* about truth think that the nature of truth is different for different sets of sentences. The received view seems to be that logically complex sentences – and indeed logic itself – somehow impose a monistic constraint on any comprehensive metaphysics of truth. In what follows, I argue that the received view is mistaken.

Some theorists have suggested that logically complex sentences impose a monistic constraint on our comprehensive metaphysics, on the grounds that a complex sentence needs to be true in the same way as its components. Here, for instance, is Roy Cook on conjunctions:

> A conjunction is true if and only if the conjuncts are true, and further, the conjunction should be true in the same way as its conjuncts are. (Cook 2011: 626)[2]

From this it follows that the two conjuncts need to be true in the same way as each other; so long as any truth-apt sentence can be conjoined with any other, it follows that all sentences are true in the same way, as per monism.[3]

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[1] I'm going to talk about sentences for ease, but I'm neutral on the nature of (primary) truthbearers. I also assume for the purposes of this paper that we can say something informative about the nature of truth, contra deflationism and primitivism. It's worth noting that other theories of truth deserve the name 'pluralism' too, but I stipulate what I will mean by the term below.

[2] For discussion, see: Cotnoir 2009; Edwards 2008, 2009; Künne 2003: 453; Lynch 2004, 2009: 54-67; Tappolet 2000; Williamson 1994. Note that the concept/property distinction has not always been clearly in mind in these discussions; some are either explicitly or more charitably interpreted as concerned with monism/pluralism about the *concept* of truth. I am concerned here with the *metaphysics* of truth, not the concept. One might try and argue from a unified concept to a unified metaphysics, but that is a different argument to those considered here.

[3] One may take issue with this reasoning (Cook himself tries to do so), but let's set it aside to focus on the underlying assumption. Note that this is often taken to be consistent with a more 'moderate' kind of pluralism, which says that truth is both one and many: truth is a single, unified, property which is nonetheless realized in, manifested in, or determined by different properties for different sentences.

But why should we buy this constraint? Little argument has been given for it; it seems to be assumed as obvious. Christine Tappolet, for example, suggests that it 'follows from the truism that a conjunction is true if and only if its conjuncts are true' (2000: 385). But that is not so. What follows from this 'truism' is:

Conjunction Constraint

If the truth of 'p' consists in F, the truth of 'q' in G, and the truth of 'p & q' in $H_{\&}$, then F, G, and $H_{\&}$ are such that: ('p' is F and 'q' is G) iff 'p & q' is $H_{\&}$.

To this, we might add an order of explanatory dependence from right to left: a conjunction is plausibly true *because* its conjuncts are true (Edwards 2008: 146-7). This is the 'because' of constitutive explanation, or grounding.

Critically, this constraint is not automatically satisfied just by postulating an identity between F, G, and $H_{\&}$, as the monist does. This is obvious: a conjunction does not possess every property that is possessed by both of its conjuncts. Consider the property of *being logically simple*.

The same point goes for other logical complexes, like negations, disjunctions, or whatever. Assuming that these are truth-functional,[4] our metaphysics is subject to the following constraints:

Negation Constraint

If the truth of 'p' consists in F and the truth of '~p' in $H_{\sim}$, then F and $H_{\sim}$ are such that: 'p' is not F iff '~p' is $H_{\sim}$.

[4] It is really truth-functional complexes in particular that I am interested in here, whichever these may be; i.e., those complexes whose status with regards to truth is determined entirely by their components' status with regards to truth. It is these that are most prominently thought to motivate monism. Non-truth-functional complexes need to be accounted for by a comprehensive metaphysics of truth too, of course, but it is hard to see how these could pose any special problem for the pluralist. After all, the *monist* is constrained to say that the truth of such sentences consists in the *same thing* as the truth an ordinary atomic sentence. If this is plausible, the pluralist can say it too; but if not, then the monist is stuck, while the pluralist can say it consists in something else.

Disjunction Constraint

If the truth of 'p' consists in F, the truth of 'q' in G, and the truth of 'p ∨ q' in H_V, then F, G, and H_V are such that: ('p' is F or 'q' is G) iff 'p ∨ q' is H_V.

Perhaps with the relevant right-to-left explanatory dependencies too. None of these constraints is satisfied merely by postulating an identity between the properties F, G, and H: a negation does not possess every property that its negand does not possess; a disjunction does not possess every property possessed by either of its disjuncts. So *merely being a monist* does not guarantee that one's metaphysics satisfies these constraints. This needs to be *shown*.

Indeed, once we realize this it is striking that the most prominent monistic theories may *not* satisfy these constraints. The correspondence theory of truth says that truth consists in correspondence with the facts, but do negations correspond to *negative* facts, or conjunctions to *conjunctive* facts, etc.? If we find that implausible, then we find the idea that the correspondence theory satisfies any of these constraints implausible.[5] The superwarrant theory says (roughly) that a sentence is true just in case it is warranted in a state of information, and would remain warranted through any expansion to this state of information. But then a disjunction might be superwarranted even if neither of its disjuncts are superwarranted, violating *Disjunction Constraint*: we might, say, have a proof that the disjunction is true without having a proof concerning *which* disjunct is true. The coherence theory says that truth consists in being coherent with some specified set of beliefs. But a sentence's failure to cohere by no means guarantees that its negation will cohere, since the relevant beliefs may not lend support either way, violating *Negation Constraint*. I do not intend this as an *objection* to these monistic theories – there is a multiplicity of responses one might give, including rejecting the constraints for the complexes in question; and perhaps when the theories are properly fleshed out, they will avoid these difficulties. But my point is just that *merely* postulating an identity here – i.e., *merely* being a

[5] The correspondence theory is discussed in this context by Edwards (2008). The worry is an acute one. To avoid postulating negative facts, truthmaker maximalists for instance have postulated exotic entities like totality facts (Armstrong 2004) or absences (Martin 1996), or even denied that there are negative truths (Mumford 2007).

monist, even of one of the mainstream, 'popular' varieties – does not guarantee that one's metaphysics satisfies the relevant constraints.[6] Rather, these are perfectly general constraints that *any* comprehensive metaphysics will have to show that it meets.

In a similar vein, monists are taken to have the upper hand when it comes to validity. According to the semantic account, we are told, validity consists in *necessary truth preservation*. But then, for any valid inference, there must be a single property that the truth of every sentence involved consists in, for it is the necessary preservation of this property that the validity of the inference consists in. Since one can validly infer from 'p' and 'q' to 'p & q', there must be a property – truth – that is necessarily preserved from 'p' and 'q' to their conjunction. Similarly, since one can validly infer from 'p' and 'p → q' to 'q', there must be a property – truth – preserved from 'p' and the conditional to 'q'. The truth of the complexes must therefore consist in the same thing as the truth of the atomics, which must therefore consist in the same thing as each other.[7]

Talk of 'preservation' certainly implies that there needs to be something that is preserved. However, we ought to be careful not to take the idea of necessary truth *preservation* too seriously here, for it is not meant literally. First, PRESERVATION is a *diachronic* concept: things are preserved *across time*. VALIDITY, by contrast, is *synchronic*: arguments are not valid across time, they are valid at a time. We do not have to *wait* for the truth of the conclusion once we have the truth of the premisses. And, in any case, there are clear cases of valid arguments where no one would want to say that any property has been 'preserved' from the premisses to the conclusion. For instance, there are 0-premiss valid arguments with necessarily true conclusions. There is no question of a property being 'preserved' from the premisses to the conclusion, because there are no premisses. Similarly, arguments with inconsistent premisses are valid; indeed, they are valid

[6] Cotnoir (2009: 477-8) suggests that we 'let' negations be true in the same way as their negands, and disjunctions in the same way as (perhaps both of) their disjuncts. But, as these worries make clear, we cannot simply *stipulate* these substantive metaphysical theses!

[7] See especially: Beall 2000; Cotnoir 2013; Lynch 2004, 2009; Pedersen 2006; Strollo 2016; Tappolet 1997, 2000; Williamson 1994. Beall, Cotnoir, Pedersen, and Strollo each suggest an interpretation of validity that they contend is consistent with pluralism, but in doing so grant the underlying point that I reject: that there is any incompatibility between the *orthodox* semantic account of validity and pluralism about truth.

even if they have necessarily false conclusions. Once again, there is no question of some property being 'preserved' from (all) the premisses to the conclusion.

This is because the semantic account does *not* hold that validity *literally* consists in some property being preserved from the premisses to the conclusion: the idea of necessary truth preservation is *metaphorical*. It is a nice way of talking about the principle that: necessarily, if the premisses are true, then the conclusion is true. What constraint does this put on our metaphysics of truth? Again, I think the constraint is structural:

> *Semantic Validity Constraint*
>
> For any valid argument from premisses $\{A_1, \ldots, A_n\}$ to conclusion B, if the truth of A_1 consists in F_1, …, the truth of A_n in F_n, and the truth of B in G, then F_1, …, F_n, and G are such that: necessarily, if (A_1 is F_1, …, and A_n is F_n), then B is G.

It is immediately apparent once this is made explicit that it too is not automatically satisfied by postulating an identity between F_1, …, F_n, and G: the conclusion of a valid argument is not in general guaranteed to possess a property just because it is exemplified by all the premisses of that argument. If one is sceptical of this, take your favourite valid argument Arg and consider the property of *being a premiss in Arg*. All the premisses exemplify that property; the conclusion does not. (Unless your favourite argument begs the question, of course.) Once again, *merely being a monist* does not guarantee that one's metaphysics is consistent with the semantic account of validity.

What is important to validity is not identity or literal 'preservation' of a property, but *structural dependency*: the truth of the different sentences must depend on each other in the right way, such that the conclusion cannot fail to be true when the premisses are so. This is unsurprising: logicians are not concerned with 'tracking' some property as it moves hither and thither across inferences; they are concerned with modelling the structural dependencies between the truth of different sentences. My point is that postulating a uniformity in the nature

of truth does not guarantee that one's metaphysics incorporates the relevant structural dependencies.

As far as I can see, then, there is nothing about the truth of truth-functional complexes or the semantic account of validity that imposes a monistic constraint on our metaphysics of truth. On the contrary, they both impose *structural* constraints on our metaphysics of truth, and monistic theories are not guaranteed to satisfy these constraints just because they are monistic. Indeed, the monist is, if anything, at a tactical *dis*advantage here, insofar as she is *constrained* to postulate an identity, where the pluralist is not. Imposing a *further* constraint on one's metaphysics of truth can hardly be thought to put one at a theoretical advantage!

Of course, it is one thing to argue that these constraints are not automatically satisfied by postulating an identity between the relevant properties, and quite another to show that they *can* be satisfied by a theory that does *not* postulate such an identity. Even showing the former is sufficient to undermine two of the prominent objections to pluralism about truth. But the latter, too, can be done quite straightforwardly.

First, let 'T_A' stand for whichever property one thinks the truth of an atomic sentence consists in. If one is a monist at the level of atomics, this might be *correspondence* with the facts, say, or *superwarrant*, or *coherence*. If one is a pluralist at the level of atomics, such that the truth of an atomic sentence in set S_1 consists in T_1, …, and set S_n consists in T_n, then let it abbreviate the disjunction: 'is (in S_1 and T_1) or … or is (in S_n and T_n)'. (This is ultimately dispensable – see fn.12 – but will help for ease of exposition.) Next, let the *order* of a complex sentence be one order greater than its highest-order component, and let atomics be 0^{th}-order. Here, then, is a pluralist theory of truth for first-order: negations, $T_{\sim 1}$; conjunctions, $T_{\&1}$; disjunctions, $T_{\vee 1}$; and conditionals, $T_{\rightarrow 1}$:

$\forall p\ (T_{\sim 1}(\text{`}\sim p\text{'}) \leftrightarrow \sim T_A(\text{`}p\text{'}))$.

$\forall p \forall q\ (T_{\&1}(\text{`}p \,\&\, q\text{'}) \leftrightarrow (T_A(\text{`}p\text{'}) \,\&\, T_A(\text{`}q\text{'})))$.

$\forall p \forall q\ (T_{\vee 1}(\text{`}p \vee q\text{'}) \leftrightarrow (T_A(\text{`}p\text{'}) \vee T_A(\text{`}q\text{'})))$.

$\forall p \forall q\ (T_{\rightarrow 1}(\text{`}p \rightarrow q\text{'}) \leftrightarrow (T_A(\text{`}p\text{'}) \rightarrow T_A(\text{`}q\text{'})))$.[8]

For instance, the truth of a first-order conjunction consists in its conjoining a sentence that is T_A with another sentence that is T_A; the truth of a first-order negation consists in its negating a sentence that is not T_A. It should go without saying that this account trivially satisfies the constraints laid out above. For instance, the dependence of $T_{\rightarrow 1}$ on T_A is such that, necessarily, if 'p' is T_A and 'p → q' is $T_{\rightarrow 1}$, then 'q' must be T_A; for if 'p' is T_A and 'q' is *not* T_A, then by definition 'p → q' is not $T_{\rightarrow 1}$. Similar considerations run for the inference from 'p' and 'q' to 'p & q'. It should also go without saying that the proposal is pluralistic: the property of *conjoining a sentence that corresponds with the facts with a sentence that corresponds with the facts* is a different property from simply *corresponding with the facts*, for example; so even if atomics are only ever true in virtue of corresponding, this theory has it that the truth of the complex consists in a property distinct from, but grounded in, the property the truth of its components consists in.[9] One may doubt that, e.g., $T_{\&1}$ is really a *property* in some plumped-up, 'sparse' or 'natural' sense. If so, one can translate the paper into terms one prefers. The important claim is that this is what the truth of the complex consists in (see also fn.10).

This proposal might look unappealing at first glance, but this impression quickly fades. Indeed, what is most striking about it is that *any* inflationist is *already* committed to the extensional adequacy of the properties in question for the relevant sets of sentences. The correspondence monist, for instance, is committed to all and only those first-order conjunctions that are true being those that conjoin a sentence that corresponds with a sentence that corresponds, which is just the property of being $T_{\&1}$ (by their lights). What she denies is that this is what the truth of the conjunction consists in. Instead, she maintains that the conjunction *itself*

[8] The single-quotes here should strictly be understood as so-called 'quasi-quotes', where this is a metalinguistic device that allows us to refer to the form of an expression without referring to the symbols. The point is: the *complex* has such-and-such property just in case *its components* have thus-and-so property.

[9] Perhaps others will find this pluralism as obvious as I do. As Lynch (2009: 88) points out, as far back as the early Wittgenstein we find correspondence theorists denying that the logical constants are *themselves* representational. But there is remarkably little discussion of the resultant disunified metaphysics of truth.

also corresponds. Ontologically speaking, then, the monist is committed to everything my pluralist is committed to, *and* something else besides: not only is the conjunction $T_{\&1}$, but it is *also* T_A itself; and it is this latter property that its truth consists in.[10]

This puts the monist on the dialectical backfoot: given the extensional adequacy of the pluralist's properties by the monist's own lights, and that these properties satisfy the relevant constraints, we need to be given some *other* reason to think that truth always and everywhere consists in the same property.[11] For all I want to insist on here, there may be such a reason. What I am arguing is that no such constraint arises from logic or logical form.

Of course, the above account only provides a theory for first-order negations, conjunctions, disjunctions, and conditionals; and since there are other logical operations and logical operations can be iterated infinitely, we will need further theories to cover sentences of arbitrary form and complexity. Fortunately, we have a straightforward recipe for any truth-functional complex. Any complex will ultimately be composed of atomic sentences. As such, for any sentence, the right-hand side of the relevant definitional biconditional will be of the same logical form as the sentence itself, but attributing T_A to its atomic components.[12]

For instance, take sentences of an arbitrary complexity and form, '$p \rightarrow ((q \,\&\, r) \vee \sim(s \,\&\, t))$' (where the schematic letters stand for the atomic components). Our theory of truth, $T_!$, for such sentences is as follows:

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[10] An anonymous referee suggests that the monist might resist this by denying that the predicates like '$T_{\&1}$' ascribe properties, perhaps because $T_{\&1}$-ness is insufficiently sparse or natural. But what is important is the extensional adequacy of the predicate. If one denies that such predicates ascribe properties, one is committed to, e.g., nominalistic paraphrases of such talk – perhaps using the very definitional biconditionals the pluralist provides. The pluralist can then say that the truth of the sentence consists in its satisfying the relevant paraphrase; and while the monist will admit that the relevant sentences satisfy these paraphrases, she will have to postulate that the sentences are also T_A.

[11] Note that, *even if the complex is T_A*, we reach a stand-off, as far as logic and logical form are concerned: for even if the complex *has* the relevant monistic property, it *also* has the relevant pluralistic property. We need to be given a reason to think that its truth consists in one rather than the other.

[12] On this account, then, the truth of complexes of the same *order* of complexity composed of *different* kinds of complex will, strictly speaking, consist in different properties. The *atomic* pluralist can likewise allow that the truth of different complexes composed of atomics with different *content* can consist in different properties. That's why the disjunctive aspect of 'T_A' is ultimately dispensable for such a pluralist. I have framed the proposal in terms of T_A to emphasize that the pluralistic metaphysics of truth for complexes articulated here is officially *neutral* with regards to the nature of truth at the atomic level.

$\forall p \forall q \forall r \forall s \forall t$ ($T_!$(‘p → ((q & r) ∨ (s & ~t))’) ↔ (T_A(‘p’) → ((T_A(‘q’) & T_A(‘r’)) ∨ ~(T_A(‘s’) & T_A(‘t’)))))).

As we can see, the right-hand side of this definitional biconditional (highlighted) is of the same form as the complexes for which we are giving a theory of truth. Again, *any* inflationist will be committed to the extensional adequacy of this property within the relevant sentences, so despite this ‘infinite proliferation’ of truth properties, the pluralist is not committed, ontologically speaking, to anything more than the monist is.[13] The disagreement is about whether or not the sentences *also* have a further property, as the monist contends; and, if they do, about which property their truth consists in.

Let this be a standing challenge to the monist, then: to articulate some shortcoming the pluralistic theory articulated has with regards to logic or logical form in virtue of being pluralistic. My suspicion is that this challenge cannot be met. Until some such shortcoming is articulated, we are entitled to conclude (i) that logic and logical form only impose *structural* constraints – constraints on the *relations between* the truth of different sentences – on a comprehensive metaphysics of truth, which are not automatically satisfied by a metaphysics just because it is monistic; and (ii) that there is a pluralistic metaphysics of truth that satisfies these constraints. Logic and logical form therefore give us no reason to prefer monism about truth to pluralism about truth. There may, of course, be some *other* reason to think this pluralistic metaphysics is dissatisfactory, but that is simply another argument for another day.[14]

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[13] I, with Cotnoir (2009), read Edwards 2008 as proposing a theory somewhat like this; but Edwards (2009) himself disavows this interpretation. On Edwards’s considered view, the truth of a logically complex sentence consists in whatever property is relevant for truths about logic. This is on the one hand surprising and counterintuitive, since a logically complex sentence need not be *about* logic itself. But, more importantly, until we are told what this property is, we cannot begin to evaluate whether or not Edwards’s metaphysics satisfies the relevant constraints. This makes it remarkable that Strollo (2016) attempts to use Edwards’s proposal to provide a pluralist-friendly account of validity, also without offering any details about what this property is meant to be. Until we are given some details, these proposals are no proposals at all; we might as well say that the truth of a complex consists in *something-or-other*, which satisfies the constraints.

[14] I’ve been thinking and talking about the issues in this paper for a few years now, so apologies that I cannot recall all those who have helped me along the way. Special thanks are due to Robbie Williams and Michael

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