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Logical contextualism

Paal Fjeldvig Antonsen

Department of Philosophy, University of Bergen, Bergen, Norway

ABSTRACT

This paper outlines a contextualist version of logical pluralism. One motivation for this idea comes from a desire to block a principal argument against pluralism called ‘the meaning-variance objection’. The paper also gives two contextualist analyses of validity: one according to which ‘is valid’ is use-sensitive, another according to which it is assessment-sensitive. It argues that local pluralists should accept the former, while global pluralists should accept the latter.



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1. Introduction

A widespread version of logical pluralism, due to Beall and Restall (2000, 2001, 2006), analyses validity in terms of a variable range of cases: an argument is valid_x if and only if, in every case $_x$ in which the premises are true, so is the conclusion. On this analysis, the validity relation permits a variety of precisifications, dependent on how one specifies what is meant by ‘case $_x$ ’. A specification is admissible, according to Beall & Restall, only if the resulting validity relation is necessarily truth preserving, formal and normative. Examples of specifications they think pass the test are *possible world* (classical validity), *construction* (intuitionistic validity) and *situation* (relevant validity).

More recently, however, some theorists have been exploring an alternative version, according to which validity is a context dependent relation (Hjortland 2013; Shapiro 2014; Caret 2017). As I will be using the term, *logical contextualism* is the view that logical expressions are sensitive to a contextually determined logical standard. Adopting this view

CONTACT Paal Fjeldvig Antonsen  pal.antonsen@uib.no,  paal.antonsen@gmail.com

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allows us to treat the logical vocabulary along the same lines as other allegedly context dependent expressions, such as 'knows', taste predicates and deontic modals. On the assumption that the logical standard varies from one context to another – say, from a classical to an intuitions-tic standard – contextualism also leads to pluralism.

One motivation for exploring contextualism comes from a desire to block the meaning-variance argument. According to this argument, the pluralist has to associate each logical expression with different meanings, one for each admissible specification of 'case_x'. This leads to the unhappy result that the pluralist is committed to the thesis that logical expressions are ambiguous – for example, that 'or' is ambiguous between expressing the meaning of classical disjunction and expressing the meaning of intuitionistic disjunction (Priest 2011, 2006; Griffiths 2013). Contextualism offers an attractive way of disentangling pluralism from this commitment. Because if the logical expressions are context dependent, the variation of cases need not entail variation in meaning. Let me give an analogy. Suppose 'knows' is context dependent, such that $\ulcorner x \text{ knows that } \phi \urcorner$ is true in a context c only if x can rule out all relevant possibilities in c incompatible with ϕ . Even though the set of relevant possibilities varies from one context to another, the expression 'knows' can still be associated with a single invariant meaning. By embracing contextualism, the pluralist can follow suit and say that which set of cases is in play is determined by a variable logical standard. As long as the variation of cases is brought about by alterations in the context, there is no longer a need to invoke multiple lexical entries for each connective. The upshot is that pluralism is no longer committed to the ambiguity thesis – or so I aim to convince you.

Here's how the rest of the paper proceeds. Section 2 gives a presentation of my preferred version of the meaning-variance argument, including an explanation for why I think it is persuasive when levelled against the case-based version of pluralism. Following up, Section 3 lays out some reasons for why this version also has difficulties with accommodating many-valued logics. Section 4 outlines an alternative contextualist semantics for the connectives. The semantics presented here is only intended to capture the connectives' behaviour according to some logics popular in the pluralist literature, but the same strategy can be carried out for other systems as well. Finally, Section 5 gives two contextualist analyses of validity: one that relativises validity exclusively to contexts of use, and another that also relativises it to contexts of assessment. The choice between the two depends on whether the logical standard is tied to particular domains, or whether there are several equally good all-purpose logics.

2. The meaning-variance objection

The starting point of Beall and Restall's (2006, 29) case-based pluralism is their thesis that validity is a generic truth-preserving relation across cases:

- *Generalized Tarski Thesis (GTT)* An argument is valid_x if and only if, in every case_x in which the premises are true, so is the conclusion.

The thing to note about GTT at the moment is that whether an argument is valid or not depends on the truth-in-a-case_x profiles of its premises and conclusion. According to Beall & Restall, specific validity relations are obtained by precisifying 'is valid', which in turn comes as a result of specifying 'case_x' – and the way we specify what is meant by 'case_x' is by 'specifying truth conditions' (2006, 89). We should therefore expect that a semantic theory compatible with case-based pluralism will include a description of how the connectives contribute to the truth-in-a-case_x conditions of sentences in which they can occur. This expectation places some restrictions on the kind of meanings we can assign to the connectives, making it the first step in the meaning-variance objection.

The next step is to grant the assumption that there are at least two admissible specifications of 'case_x'. Using Beall & Restall's example, let's suppose that both (1) and (2) are 'explications of the behaviour of negation' (2006, 97).

- (1) 'not ϕ ' is true in a case_w iff ϕ is not true in case_w.
- (2) 'not ϕ ' is true in a case_k iff ϕ is not true in every case_{k'} extending case_k.

Here 'case_w' stands for possible world and 'case_k' stands for construction, such that (1) is the clause for classical negation and (2) is the clause for intuitionistic negation. In general, the meaning of a connective is represented by a description of the way in which it contributes to the semantic value of sentences in which it is a constituent. Taken at face value, then, (1) and (2) are associating 'not' with two distinct meanings. As we move from classical to intuitionistic logic, the meaning of 'not' varies from the one described in (1) to the one described in (2). Beall & Restall's claim that there is more than one clause for each connective seems to lead to the ambiguity thesis:

If we give different truth conditions for the connectives, we are giving the formal connectives different meanings. When we apply the logics to vernacular

reasoning we are, therefore, giving different theories of the meanings of the vernacular connectives. We have a case of theoretical pluralism; and the theories cannot both be right – or if they are, we simply have a case of ambiguity. (Priest 2006, 204)

Why is this consequence of case-based pluralism undesirable? The first reason is straightforward: the ambiguity thesis is itself implausible. At least, we can't find any evidence for it by looking at standard tests of ambiguity (Zwicky and Sadock 1975). One possible response to this observation is to deny that there is an intimate connection between the semantics of logical expressions and the 'vernacular connectives'. In that case the semantics we use in our logical theory just wouldn't have any of the alleged implications concerning the meaning of words in our natural language. Although this would effectively counter the objection, it is not the route taken by Beall & Restall. Instead, they grant the linkage assumed by Priest and agree further that the meaning-variance argument 'would be a fatal objection' if correct (2006, 98). I also take it to be common ground among pluralists that they want to avoid having their theory rest on an unsupported linguistic claim. So if pluralism can be given a formulation which avoids this commitment, that alternative would, all things equal, be preferable.

The second reason one might want to avoid the ambiguity thesis is that it comes with a noteworthy theoretical cost. Since 'not' can operate on any sentence, if it is ambiguous between (1) and (2), the truth conditional profiles of all sentences would have to be sensitive to both possible worlds and constructions. That is, treating the connectives as ambiguous has a widespread effect on the semantic theory as a whole. This makes ambiguous connectives behave very differently from other (genuinely) ambiguous expressions, such as 'bat' or 'ball'. Not only does the ambiguity thesis require a laborious reformulation of the semantics, but it is also hard to make sense of a sentence's truth-in-a-case_x conditions under this conception. To give an example, we want the semantic theory to give systematic truth conditions for sentences such as 'it is not the case that there are manatees in Great Britain'. A compositional semantics ought to give the truth-in-case_x conditions for this sentence as a function of the truth-in-case_x conditions for the embedded sentence together with the clause(s) for 'not'. If negation is treated as (1), it must operate on the truth-in-case_w conditions for 'there are manatees in Great Britain', and if negation is treated as (2) it must operate on the truth-in-case_k conditions instead. If (1) and (2) are both accurate, each sentence must either be associated with two different sets of truth conditions (making all

sentences ambiguous), or they must be relativised to both possible worlds and constructions.

This takes us to Beall & Restall's proposal for how to incorporate (1) and (2) in a pluralist semantics, namely that we relativise truth to a 'model with both worlds and constructions' (2006, 98). This proposal can be fleshed out in different ways. Perhaps the most straightforward one is to treat the core of the semantic theory as a definition of a valuation function v that maps sentences, possible worlds and constructions to truth values. We would then reformulate (1) and (2) as follows:

(3) $v(\ulcorner \text{not } \phi \urcorner, w, k) = 1$ iff $v(\phi, w, k) = 0$.

(4) $v(\ulcorner \text{not } \phi \urcorner, w, k) = 1$ iff $v(\phi, w, k') = 0$, for all k' extending k .

While clauses of this kind are compatible with the driving idea behind pluralism, they won't do much good in light of the meaning-variance objection. Rather, (3) and (4) merely underlines the thought that 'not' is ambiguous. Classical and intuitionistic negation are, in effect, treated as two clearly distinct intensional operators, differentiated by which parameter they shift around. Also, on this proposal sentences don't have truth conditions that give us the required specifications of 'case _{x} '. Instead, they have truth-in-case _{w} -and-case _{k} conditions. A sentence's truth value, say 'John is happy', would then depend on the extension of 'is happy' at a possible world and a construction. But there is no reason to suppose that the possible world and the construction in question will align in the appropriate way. A sentence may be true in a possible world, yet fail to be true in a construction – even if we add the extra restriction that the construction has to overlap with the possible world to a large extent.

Fortunately, Beall & Restall have another suggestion:

We may as well take worlds to be a special kind of construction: worlds decide every statement as true or false, so they do the job of *final* constructions, those constructions that are not extended by any other constructions. So, our model will contain a family of constructions, some of which are *worlds*. The constructions are ordered by the partial order of *extension*, which we represent by ' \sqsubseteq '. Worlds are endpoints in the ordering: if w is a world, there is no $c \neq w$ where $w \sqsubseteq c$. (Beall and Restall 2006, 98)

On this approach, the valuation function should only map sentences and constructions to truth values. Their examples (1) and (2) must therefore be understood as casual glosses of the same clause for negation:

(5) $v(\ulcorner \text{not } \phi \urcorner, k) = 1$ iff $v(\phi, k') = 0$, whenever $k \sqsubseteq k'$.

If (5) is the official clause for ‘not’ across the board, case-based pluralism is not committed to the ambiguity thesis. As such, I think Beall & Restall’s suggestion has a lot going for it. But although I think it takes us in the right direction, I’m uncertain about how well it squares with other parts of their pluralist story.

My first worry about combining GTT with clauses along the lines of (5) is that doing so goes against the idea that ‘case_x’ is supposed to be specified by specifying truth conditions. Notice that on the current proposal the semantics is only operating with truth-in-a-case_k conditions. But if (5) gives the truth conditions for $\ulcorner \text{not } \phi \urcorner$, it is no longer true that we can differentiate between case_w and case_k by specifying the truth conditions. Furthermore, recall that ‘is valid_x’ in GTT is supposed to be precisified through a specification of the truth-in-case_x conditions for premises and conclusions. As long as the semantics only tells us about the sentences’ truth-in-case_k conditions, it seems that the only available interpretation of GTT is that it describes a valid_k relation (i.e. intuitionistic validity). In other words, pluralism drops out.

If the clauses don’t differentiate between cases, something else has to. This brings us to my second worry, which is that I don’t see what resources the case-based pluralist has to perform this task. Beall & Restall correctly point out that if k is restricted to being a final construction, then (5) describes the behaviour of classical negation. But what is the mechanism that triggers this restriction when, and only when, ‘not’ is supposed to behave classically?

To get a better feeling of this worry, consider the standard semantics for the necessity operator: $\ulcorner \text{necessarily } \phi \urcorner$ is true in a possible world w if and only if ϕ is true in every w' , where w' is accessible from w . As a piece of semantics, this gives us sufficient information about the truth conditions for $\ulcorner \text{necessarily } \phi \urcorner$. It does not, however, supply us with the information required for evaluating an assertion_k of a sentence with this form. The clause for ‘necessarily’ is about the truth value of sentences relative to an arbitrary world, but when we evaluate a statement with the form $\ulcorner \text{necessarily } \phi \urcorner$ we are usually interested in its truth value relative to the world of utterance. So we need to add something to the semantics in order to pick out the right world. Here the standard strategy is to say that the supplemented mechanism is the context of use’s determination of which possible world gets to be the world of evaluation.

Back to negation. Suppose we wanted to assess whether an inference to ϕ from $\neg\neg\phi$ is valid. We might already know that the inference is valid_w and not valid_k , but that is only because we happen to have information that goes beyond what (5) together with GTT tell us. As far as the actual theory is concerned, (5) and GTT will only allow us to say that the inference is not valid_k . If we wanted the theory itself to make the prediction that the inference is valid_w , we would have to add something to (5) which determines that k is supposed to be a possible world. Skipping ahead a bit, it is at this point contextualism starts looking attractive. Because if we relativise the evaluation of sentences to a context, the pluralist can explain the variation of cases in the same way as we explain the variation across worlds for ‘necessarily’. That is, we can leave it to a context to determine whether any particular sentence should be assessed relative to a possible world or a construction. Lacking some additional resources along these lines, Beall & Restall’s semantic clauses, together with GTT, cannot tell us whether a particular argument is valid in the intended sense.

3. Many-valued logic

Before moving on to the contextualist alternative, I want to discuss another potential limitation inherent to GTT. As noted earlier, Beal & Restall hold that we are supposed to precisify ‘is valid_x ’ by ‘specifying truth conditions’. Even if we suppose that this strategy works for classical and intuitionsitic logic, it is less clear that it could be employed by pluralists who want to include many-valued logics.

Hjortland uses the example of the Kleene logic K3 and the logic of paradox LP arguing for this point:

It is well known that K3 has no theorems (no formula takes value 1 in every valuation), so, in particular, the Law of Excluded Middle (LEM) is invalid. In recent terminology, we can say that the logic is *paracomplete*. In contrast, the Logic of Paradox, LP, is a *paraconsistent* logic. It has the same truth-values $V = \{0, i, 1\}$, but both 1 and i are designated values, $D = \{1, i\}$... As opposed to K3, LEM holds in LP. However, whereas *ex falso quodlibet* (EFQ) holds in K3, it fails in LP. Summed up, the two logics have distinct consequence relations. Even though they share the same interpretations of the connectives, they treat the truth-values differently with respect to validity. (Hjortland 2013, 367)

Both K3-models and LP-models can be described by valuation functions that map sentences to the set of truth values $\{1, 0, \frac{1}{2}\}$. The clauses for negation and conjunction, for instance, are (6) and (7), respectively.

$$(6) v(\ulcorner \text{not } \phi \urcorner) = \begin{cases} 1 & \text{if } v(\phi) = 0 \\ 0 & \text{if } v(\phi) = 1 \\ \frac{1}{2} & \text{otherwise} \end{cases}$$

$$(7) v(\ulcorner \phi \text{ and } \psi \urcorner) = \begin{cases} 1 & \text{if } v(\phi) = 1 \text{ and } v(\psi) = 1 \\ 0 & \text{if } v(\phi) = 0 \text{ or } v(\psi) = 0 \\ \frac{1}{2} & \text{otherwise} \end{cases}$$

As Hjortland notes, although the connectives share the same semantics, K3 and LP classify different arguments as valid. But if sentences in K3 and LP share the same truth conditions, GTT cannot differentiate between the validity relations. In order for ‘is valid’ to be precisified in the required manner, the pluralists need a more fine-grained conception of truth conditions.

One solution that immediately recommends itself is to admit two further specifications of ‘case_x’, for example *incomplete world* for K3 and *impossible world* for LP. With this amendment, the two kinds of negation can be differentiated in terms of truth conditions, since a K3-valuation maps sentence/incomplete world pairs, and a LP-valuation maps sentence/impossible world pairs, to $\{1, 0, \frac{1}{2}\}$. This remedy is not without its costs, though. First, adding further types of cases that sentences are relativised to just expands the semantics with more meanings that negation has to be ambiguous between. Second, once it is permitted that sentences can take a third truth value, this cannot be isolated to a small fragment of the language. The semantics would have to include three values when we understand negation classically or intuitionistically as well, which means that the clauses discussed in the previous section would obviously be unsuited.

There is also a more fundamental problem with the proposed solution. When characterising validity for a many-valued logic we talk about preservation of designated values, instead of just truth-preservation as in GTT. Unfortunately, this cannot be fixed by merely rephrasing GTT such that it talks about the conclusion being designated in all the cases in which the premises are designated. What counts as a designated value varies from one logic to the next, and there is nothing in the rephrased GTT which determines which subset of the truth values to select. Nor can we surmise this from the semantics – even if relativised to incomplete or impossible worlds – since the distinction between designated and undesignated values plays no role there. So the selection of designated values would have to be performed by some supplementation to the semantics, again defeating the point that it was the specification of ‘case_x’ which was supposed to precisify the validity relation in GTT.

There is another possible solution to Hjortland's problem. We might try to accommodate K3 and LP by dispensing with the third truth value and introducing a variable relation instead. In particular, we can say that the truth value of $\neg\phi$ in a case_x does not need to depend on the truth value of ϕ in case_x , but, rather, on its truth value in other compatible cases (Restall 1999, 2002; Berto 2015). Here we are relying on the following clause:

- (8) $\neg\phi$ is true in a case_x iff ϕ is not true in $\text{case}_{x'}$, for every $\text{case}_{x'}$ compatible with case_x .

Not only is (8) intended to be the appropriate clause for negation in LP and K3, but it might replace (1) and (2) as well. The different kinds of negation are obtained by varying two features: what is meant by ' case_x ' and what it means for one case to be compatible with another. This suggestion leads, however, to the same kind of worries as with (5). There is nothing in (8) which says how ' case_x ' is specified, nor how the relevant features of the compatibility relation are selected. That is, (8) will only give the right result together with an explanation of the mechanism that allows us to vary their interpretation. We are therefore left in the following situation. If we maintain that (8) does specify the truth conditions for $\neg\phi$, then we fail to provide a specification of ' case_x ' by specifying truth conditions. And if (8) needs some further information in order to specify the truth conditions, then we need to supplement the clause with something that manages to determine the content of ' case_x ' and 'compatible'. To repeat an earlier point, it seems like the obstacles to (5) and (8) are both pointing towards contextualism, because contextual features are well-suited to carry out this particular task.

4. Context dependence

We've seen that there are some reasons for being dissatisfied with GTT as fundamental to pluralism. In this section, I want to outline an alternative contextualist treatment of the connectives that lets the pluralist block the meaning-variance objection. By drawing on MacFarlane's (2009; 2014) account of context dependence, we can actually give two slightly different analyses of the connectives, both capable of replacing the ambiguity thesis.

The idea itself – that logical expressions are context dependent – is certainly not novel. It is, for example, generally agreed upon that the quantifier in a sentence like ‘everything is wrong with John’ is subject to contextual restrictions. The sentence will express something very different when used by Kaidan telling us how his date went, than if Liara used it to explain how her new patient is doing. As long as it is a feature of the context which determines the set of things ‘everything’ ranges over, the quantifier is context dependent.

The modal auxiliary verb ‘must’ exhibits a similar trait. Depending on the situation, ‘must’ take different readings, including an epistemic (‘the butler must be the murderer’) and a bouletic (‘you must try the cake’). One could, I suppose, try to construe the multitude of readings as a matter of ambiguity, but not much recommends going down this path. A better option is Kratzer’s (2012) influential view, according to which ‘must’ functions like a universal quantifier over a contextually determined set of possible worlds, such that Γ must ϕ is true just in case ϕ is true in all of those worlds. Although ‘must’ is context dependent on this analysis, it is also associated with an invariant relational meaning. Roughly, the meaning of ‘must’ can be modelled as a function f from classical propositions (functions from possible worlds to truth values) to classical propositions, such that for every world w , and every proposition p , $f(p)(w) = \text{true}$ just in case $p(w') = \text{true}$, for every w' accessible from w . Here the accessibility relation is determined by the context. On the epistemic reading of ‘must’, we might say that w' is accessible from w just in case w' is compatible with the information that the relevant agents in c has in w . On the bouletic reading, on the other hand, w' must be compatible with their desires.

My suggestion is that the pluralist should continue down this path and construe the connectives as context dependent as well, where the salient contextual feature is a logical standard. To illustrate how this could be carried out, I find it useful to think in terms of a semantics for a propositional language with a categorial grammar. In a grammar of this kind, we only need one basic category: e for sentences. For any two grammatical categories x and y , there is also a derived category $\langle x, y \rangle$, such that $\langle x, y \rangle$ comes together with expressions in category x to form y . Negation, for example, belongs to the category $\langle e, e \rangle$ – it is an expression that yields a sentence given any sentence. The binary connectives belong to the category $\langle e, \langle e, e \rangle \rangle$ – something that, when given a sentence, yields an item in $\langle e, e \rangle$.

When interpreting a language with this grammar, we stipulate that each grammatical category corresponds to a particular semantic type. In the discussion so far, we've made use of two resources: a set of truth values V and a set of cases S . As we moved from one logic to the next, we sometimes treated them as different sets. Let's now say instead that the logical standard restricts how sentences are to be evaluated by determining what set of cases is relevant, what counts as a truth value, and what it means to say that one case is accessible from another. In other words, the contextualist should understand V and S as context dependent semantic types – types which only give a definite range of members relative to a context. We can represent this by treating V as a function from contexts to sets of truth values, and S as a function from contexts to sets of cases. A contextualist semantics could then be built around the following semantic types:

(9)

- (a) Let V be a function from contexts to sets of truth values, s.t.:
 - (i) $V(c) = \{1, 0\}$, if c is classical or intuitionistic;
 - (ii) $V(c) = \{1, \frac{1}{2}, 0\}$, if c is K3 or LP.
- (b) Let S be a function from contexts to sets of cases, s.t.:
 - (i) $S(c) =$ the set of possible worlds, if c is classical;
 - (ii) $S(c) =$ the set of constructions, if c is intuitionistic;
 - (iii) $S(c) =$ the set of incomplete worlds, if c is K3;
 - (iv) $S(c) =$ the set of impossible worlds, if c is LP.
- (c) If α, β are types, $\alpha \Rightarrow \beta$ is the set of functions from α to β .

The next step in developing a semantic theory is to associate each member of a grammatical category with its appropriate semantic value. For the basic case, sentences are most naturally associated with functions from cases to truth values (elements in $S \Rightarrow V$). For example, if c is a classical context, $S(c) \Rightarrow V(c)$ will be the set of classical propositions. According to (9(a)), $S(c)$ will be the set of possible worlds, and according to (9(b)), $V(c)$ will be set of truth values $\{1, 0\}$. So $S(c) \Rightarrow V(c)$ will be the set of functions that maps possible worlds to truth or falsity. In other words, the set of classical propositions. Once the basic case has been decided, the assignment of semantic values to the other expressions has to follow suit in a way supported by the grammar.

As mentioned, negation belongs to the grammatical category $\langle e, e \rangle$, where the corresponding semantic type is $(S \Rightarrow V) \Rightarrow (S \Rightarrow V)$. We

could therefore say the meaning of ‘not’ is modelled by a function f of this type, such that in every context c : for all cases $s \in S(c)$ and all functions $g \in S(c) \Rightarrow V(c)$, $f(g)(s) = 1 - n$ iff $g(s') = n$, for every s' accessible $_c$ from s . In the usual way, we let the context also determine the accessibility relation, or what counts as being ‘accessible’ by the lights of the relevant logical standard. So if c is classical, the only s' accessible with s is s itself. When c is an intuitionsitic context, on the other hand, the standard accessibility relation is reflexive and transitive, and obeys the heredity constraint: for all s and all atomic ϕ , if ϕ is true in s , and s' is accessible from s , then ϕ is true in s' . In other words, if ‘there are manatees in Great Britain’ is true relative to some construction s , this sentence will also be true in all extensions of s .

Following the same line of thought, the binary connectives all fall within the grammatical category $\langle e, \langle e, e \rangle \rangle$. Since the semantic values of sentences are elements in $S \Rightarrow V$, the meaning of the binary connectives must be modelled by functions belonging to the semantic type $(S \Rightarrow V) \Rightarrow ((S \Rightarrow V) \Rightarrow (S \Rightarrow V))$. For example, the meaning of ‘and’ is most naturally modelled by a function f of this type, such that for every context c : for all $s \in S(c)$, and all $g \in S(c) \Rightarrow V(c)$, and all $h \in (S(c) \Rightarrow V(c)) \Rightarrow (S(c) \Rightarrow V(c))$, $f(h)(g)(s) = \min(h(g)(s), g(s))$. The meaning of ‘or’ can be represented by a function f' of the same type, but differs from ‘and’ in that $f'(h)(g)(s) = \max(h(g)(s), g(s))$.

The semantic values can be used in a semantic framework along the lines of Lewis (1980) and Kaplan (1989). In a semantic theory of this kind, we assign extensions to expressions relative to a context and an index, the latter being a sequence of parameters that for our purposes need only include a case. Where ‘ $\llbracket \phi \rrbracket^{c,s}$ ’ denotes the extension of ϕ relative to the context c and the case s , we arrive at the following clauses:

(10)

- (a) $\llbracket \text{not } \phi \rrbracket^{c,s} = 1 - n$ iff $n = \llbracket \phi \rrbracket^{c,s'}$, for all s' accessible $_c$ from s
- (b) $\llbracket \phi \text{ and } \psi \rrbracket^{c,s} = \min(\llbracket \phi \rrbracket^{c,s}, \llbracket \psi \rrbracket^{c,s})$
- (c) $\llbracket \phi \text{ or } \psi \rrbracket^{c,s} = \max(\llbracket \phi \rrbracket^{c,s}, \llbracket \psi \rrbracket^{c,s})$
- (d) $\llbracket \text{if } \phi \text{ then } \psi \rrbracket^{c,s} = \max(1 - n, \llbracket \psi \rrbracket^{c,s'})$ iff $n = \llbracket \phi \rrbracket^{c,s'}$, for all s' accessible $_c$ from s .

I think the contextualist version of pluralism has some noticeable advantages. First, we don’t have to privilege one type of case. In (5) we defined negation in terms of truth relative to a construction, and then treated

possible worlds as special kind of construction. The contextualist, on the other hand, treats all types of cases on a par. S only gets a determinate value once it is supplied with a context, ensuring that we don't need one type of 'default case' and then other 'special cases'. Second, by treating V and S as context dependent values, the contextualist is able to say how it is determined which type of case that is in play. In short, contextualism gives general clauses for the connectives, such that their behaviour is dependent on whether the logical standard in play is classical, intuitionistic, K3 or LP. Finally, the contextualist is able to ward off the meaning-variance objection. The fact that 'not' can behave both classically and intuitionistically is not due to a change in the meaning of the expression, but due to a change in the context. Since the apparent 'change in meaning' is due to a context shift, it is no longer a matter of ambiguity.

On the most straightforward interpretation, we have outlined an *indexical* account of the connectives. That is, we have shown how the contents expressed by the connectives could be dependent on a contextually variable logical standard. Another way an expression could be context dependent is that its extension is dependent on some feature(s) of the context. For example, one might think that 'is funny' expresses the same content (being funny simpliciter) in every situation of utterance, but that its extension – the set of things that count as funny – varies in accordance with a speaker's standard of humour. MacFarlane (2009) calls this kind of context dependence for *context sensitivity*.

A context sensitive treatment of the connectives leads to a more flexible kind of contextualism. If we add the logical standard as a parameter of the index, the extension of 'not' can vary across indexes. For the logics we're concerned with here, there wouldn't be a noticeable difference between an indexical and a context sensitive treatment. But there is a potential benefit to treating the connectives as context sensitive, since it makes it easier to accommodate other logics. As an example, consider the clause (10(d)) for 'if... then'. It allows for variation in the content expressed by changing the values of $S(c)$ and $V(c)$, and the properties of the accessibility relation. We defined it in such a way that we could accommodate the way the conditional is used in the four logics under discussion. What we have excluded is the way the conditional behaves in three-valued logics that employ a different truth-table than K3 or LP. When ϕ is $\frac{1}{2}$ and ψ is 0, then $\ulcorner \text{if } \phi \text{ then } \psi \urcorner$ takes the value $\frac{1}{2}$, according to (10(d)). However, in another 'ideal' paraconsistent logic IP, $\ulcorner \text{if } \phi \text{ then } \psi \urcorner$ gets the value 0 in that situation (Arieli, Avron, and Zamansky 2011). Unless we complicate the accessibility relation, this possibility is ruled out.

On a context sensitive treatment of ‘if... then’ we can accommodate alternative three-valued logics relatively easily, since we are free to vary the extension of the conditional relative to an index. Whether we are in a LP or an IP context, the content of ‘if... then’ can be associated with the set of functions $(S \Rightarrow V) \Rightarrow ((S \Rightarrow V) \Rightarrow (S \Rightarrow V))$, where $V(c) = \{1, \frac{1}{2}, 0\}$ and $S(c)$ is the set of impossible worlds. However, which member of this set is being denoted by ‘if... then’ depends on the index. Relative to an index with an LP standard we pick out the function that corresponds to the LP truth table, and in an index with an IP standard we pick out the function that corresponds to the IP truth table. So if we treat the conditional as context sensitive, we can easily allow for a wider range of logics. Since my argument that contextualism can block the meaning-variance objection doesn’t depend on this flexibility, though, I am going to proceed with the simplest version.

5. Validity

So far I’ve outlined a contextualist semantics for the connectives, and argued that by adopting this strategy the pluralist can block the meaning-variance objection. In this section, I move on to the accompanying conception of validity. On the case-based version, we permitted different precisifications of ‘is valid’ dependent how we specified ‘case_x’. If we take the contextualist route instead, we must treat ‘is valid’ as context dependent along with the connectives. That is, when we say that an argument is valid, the accuracy of this claim is also relativised to a logical standard. The precise articulation of this idea depends on whether one has *local* or *global pluralism* in mind (Haack 1974).

By ‘local pluralism’ I mean the view that some domains of discourse require a different logical standard than others. So while the appropriate logical standard for mathematics might be classical, the one most suited for our moral discourse might be intuitionistic. For pluralists of this stripe, the logical standard is tied to the topic of conversation or the domain one is currently arguing about. In contextualist terms, the logical standard must therefore be determined not by some feature of the agents but by the conversational topic of the *context of use*. Whether or not an argument is valid, in the appropriate sense, will then vary dependent on the standard that was in effect at the moment in which it was originally made. If we frame the contextualist proposal in this way we allow for the possibility that there is more than one correct logic, but we also make it relative to the domain of discourse rather than the individual

agents that present or assess an argument. On this suggestion, the local pluralist considers logical expression similar to adjectives like ‘tall’ and ‘rich’ in one important respect. Whether it is accurate to say that someone is tall depends on the context, but it is not determined by the whims of the individual speakers. Rather it is settled by something like the appropriate comparison class in the situation of use.

A contextualist version of pluralism requires a new definition of validity that can replace Beall & Restall’s GTT. A well suited one for local pluralism, I suggest, is a generalised version of Kaplan’s (1989, 523) description of validity as truth-preservation across all contexts of use.

- *Generalized Kaplan Thesis (GKT)* An argument is valid_x iff in every context $_x$ in which the premises are designated, so is the conclusion.

This might need some clarification. First, on my suggestion local pluralists should treat ‘is valid’ as *use-sensitive*. So the logical standard x in ‘context $_x$ ’ and ‘ valid_x ’ is determined by the context of use, capturing the local pluralists idea that the standard is fixed the current topic of conversation. When someone says that an argument is valid, then, they are claiming that it is valid relative to the logical standard of the context they are occupying. Second, GKT talks about sentences being designated. So we need to assume that a logical standard also comes with its own set of designated values to be preserved. Just as with ‘truth value’ and ‘case’, the contextualist can think of ‘designated value’ as context dependent. Although not really a semantic type, we can treat it in the same way – as something which only takes a determinate value relative to a context. That is to say, we let D be a function from contexts to sets of truth values, such that $D(c) = \{1\}$, if c is classical, intuitionistic or K3, and $D(c) = \{1, \frac{1}{2}\}$, if c is LP. We’ll then use the term ‘ $D(c)$ ’ to pick out the set of designated values in c , and reserve the relativised predicate ‘designated in a context c ’ in GKT when talking about sentences.

Alongside the definition of ‘is valid_x ’, we need a bridge that connects GKT with the semantics outlined in the previous section. That means we have to recover the notion of being designated relative to a context of use from the technical resources introduced. A plausible formulation suited for GKT goes as follows:

- (11) ϕ is designated at a context of use c_x iff $\llbracket \phi \rrbracket^{c_x, s_{c_x}} \in D(c_x)$, where $s_{c_x} \in S(c_x)$ is the case determined by c_x .

It is through this notion that the semantic theory gets to have pragmatic import. The definition above can actually play two roles in this respect. First, we could let (11) be relevant when we assess the accuracy of statements. This would be natural if what we are interested in is whether a statement is designated at the context in which it was uttered. The second role, which is more important right now, is that ‘designated at a context of use’ is the central term in GKT. When supplemented to the semantic theory, (11) is used to connect the context dependent clauses with our practice of evaluating arguments.

By ‘global pluralism’ I mean the view that there is more than one all-purpose logic, which happens to be the view favoured by Beall & Restall. Here the thought is that the appropriate validity relation is not settled by whatever domain one is reasoning within, but by a logical standard that holds across all domains. Unlike local pluralism, then, a logical standard for the global pluralist is not fixed by the conversational topic at the moment in which the argument is made. Rather, the global pluralist wants to allow for the possibility that even though two people are both talking about mathematics, for instance, they can appeal to different logical standards when assessing an argument. In other words, the logical standard is no longer fixed in the situation in which an argument is made but by a standard adopted by an agent who makes the evaluation. Since we also want to describe global pluralism in contextualist terms, we can no longer appeal to GKT. Because if we did the logical standard would be fixed once and for all by conversational topic and we would no longer allow for it to vary from one agent to another. Instead, the global pluralist can be interpreted as claiming that the logical standard is determined by a *context of assessment*. When someone makes an argument, according to this idea, the context of use doesn’t fix which logical standard is the appropriate one. This is left to the agent that assesses the argument, and it can vary from one agent to another.

Global pluralism needs a different definition of validity than the local pluralist’s GKT. My proposal is that a generalisation of MacFarlane’s (2014, 68) description of validity for assessment-sensitive discourse fits the demands that the logical standard can vary from one evaluating agent to another.

- *Generalized MacFarlane Thesis (GMT)* An argument is valid_y iff for all contexts c_x and c_y , if the premises are designated as used at c_x and assessed from c_y , so is the conclusion.

The important difference between local and global pluralism is that the latter should treat ‘is valid’ as *assessment-sensitive*. So y in GMT is the logical standard of the context from which one is making the assessment about whether an argument is valid (not the standard from where it was made, unless the context of use and context of assessment overlap). From a technical point of view, a context of assessment is no different than a context use. They are both described as a series of the same parameters. What differentiates them is their respective pragmatic roles: whereas the context of use represents a possible situation in which a statement is made, the context of assessment represents a possible situation in which a statement is being assessed. Just as before, we have to supplement the semantic theory with a description of the central predicate in the analysis of validity:

- (12) ϕ is designated at a context of use c_x and a context of assessment c_y
 iff $\llbracket \phi \rrbracket^{c_y, s_{c_y}} \in D(c_y)$, where $s_{c_y} \in S(c_y)$ is the case determined by c_y .

GKT and GMT will be practically indistinguishable in many situations. The main difference comes down to how validity is tracked as we move from one context to another. When we say ‘ ϕ is valid $_x$ ’ the x is filled in by the logical standard of a particular context – the context of use for GKT and the context of assessment for GMT. According to GKT, then, ‘is valid’ is anchored to the situation of utterance, so our evaluation should not change as we change our logical standard. This is plausible for local pluralism, since the logic is supposed to be held fixed relative to particular domains. We shouldn’t change our evaluation of an argument in mathematics, just because we’ve started talking about ethics which introduces a new logical standard. In GMT the appropriate logical standard is dependent on the context of assessment. So here we must change our evaluation depending on the context we happen to be in at the time of evaluation. This makes sense for global pluralism, since the validity of an argument isn’t supposed to be domain dependent.

Let me give two examples for why the global pluralist should treat ‘is valid’ as assessment-sensitive. The first is an example of faultless disagreement about validity, which the global pluralist has to consider common place (Restall 2002, 426). Imagine that Bill has accepted a classical standard, while Ted has endorsed an intuitionistic one. Suppose further that classical and intuitionistic logic are both equally correct all-purpose logics. Bill, talking from his classical context c_b , says:

(13) $\lceil \phi \text{ ornot } \phi \rceil$ is valid.

Bill's assertion is accurate, as (13) is true relative to c_b . The logical standard of c_b is classical, and $\lceil \phi \text{ ornot } \phi \rceil$ is true in all classical contexts. Ted, on the other, will rightly deny (13). Neither Bill nor Ted are making an objective mistake, according to global pluralism – it is an instance of faultless disagreement.

Since Ted has committed himself to an intuitionistic standard, he should nevertheless maintain that Bill is wrong. This is also what one would expect if 'is valid' is assessment-sensitive: when evaluating Bill's claim (13), Ted does so from his own context of assessment c_t , and (13) is not true relative to c_t . According to GKT, on the other hand, Ted should make the judgement that although $\lceil \phi \text{ ornot } \phi \rceil$ is not valid, Bill's claim (13) is still correct. Because if 'is valid' is use-sensitive, then Ted must evaluate Bill's claim relative to Bill's context of use c_b . Notice that this commitment is not the weak one of accepting that 'according to Bill's view, (13)', but the stronger one that Bill's *claim* that (13) is correct. The first would be an unproblematic kind of concession, something we do all the time without difficulty. It is the second, more liberal, attitude which is hard to accept. It seems to trivialise the sense in which Ted has endorsed a logical standard, because he would no longer be disagreeing with Bill's claim. In order to make room for faultless disagreements about validity, then, the global pluralist is better off with GMT.

The second reason for why the global pluralist should treat 'is valid' as assessment-sensitive has to do with retrospective judgements. Suppose Kaidan has long been a devotee of classical logic, and so happily claims (13). He makes this judgement from his context of use c_{t_1} , which is a classical context. Later on in life, Kaidan comes to adopt a standard that underpins intuitionistic logic instead. From his current intuitionistic context c_{t_2} , Kaidan looks back at his previous claim that (13). How should he evaluate the accuracy of his foregone judgement? It seems to me that the appropriate response for Kaidan is to retract his old claim. Since (13) is not true relative to c_{t_2} , Kaidan ought to denounce his previously held opinion. This is indeed what GMT predicts, as it says that the accuracy of his claim that (13), made in c_{t_1} , must be evaluated from his current context of assessment c_{t_2} . According to the use-sensitive approach in GKT, on the other hand, Kaidan should not retract his previous assertion. Because on this analysis, he must evaluate the old claim that (13) relative to the original context c_{t_1} , which was a classical

context. So Kaidan is expected to concede that what he said previously was actually right. This is somewhat counterintuitive. Of course, GKT does not entail that Kaidan should accept both (13) and not-(13). Rather, it is that although Kaidan should now deny (13), he must still accept that his previous *claim* that (13) was correct.

There are many types of claims for which such a combination of attitudes is not unnatural. Suppose, for instance, that Kaidan used to love vanilla ice cream, but as his taste evolved he came to find it overly saccharine. Although Kaidan no longer thinks that vanilla ice cream is good, he doesn't seem to be under any compulsion to retract his previous judgement. It is perfectly fine for Kaidan to say that he used to find the ice cream tasty, so the claims he made at that time was correct. For other types of claims, such as moral ones, adopting this attitude would be more puzzling. Let's say that at some point in time Kaidan thought the top marginal tax rate was too high, but that he now thinks the right thing to do is to increase it. When asked, I gather, Kaidan would say that his previous assertion about the tax rate was mistaken – not that although he now thinks the tax rate should increase, his previous claim 'the top marginal tax rate should be decreased' was also correct. So, if challenged, Kaidan would be expected to retract the statement which expressed his earlier beliefs about taxation. According to GMT, Kaidan's evaluation of his old claim that (13) is more akin to the moral example than the one about vanilla ice cream. Once Kaidan has changed his logical standard, he should view his previous logical beliefs by the light of the standard he now endorses. If this is indeed the right attitude for Kaidan to adopt, GMT is in line with global pluralism when it comes to retrospective judgements.

6. Conclusion

I have argued that contextualism about logical expressions provides a more stable foundation for logical pluralism than Beall & Restall's popular case-based approach. I first aimed to show that the meaning-variance argument is persuasive when used against their formulation. After that I moved on to outline an alternative contextualist semantics which blocks the objection. We ended up with two accounts of 'is valid', one suitable for local pluralism and one suitable for global pluralism. My proposal was that local pluralism should treat 'is valid' as use-sensitive, while global pluralism should treat it as assessment-sensitive. The difference between the two analyses was illustrated by considering which context

we should pick out as relevant for evaluating claims about validity advances by others and those made by ourselves in the past.

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References

- Arieli, O., A. Avron, and A. Zamansky. 2011. "Ideal Paraconsistent Logics." *Studia Logica* 99 (1–3): 31–60.
- Beall, J. C., and G. Restall. 2000. "Logical Pluralism." *Australasian Journal of Philosophy* 78 (4): 475–493.
- Beall, J. C., and G. Restall. 2001. "Defending Logical Pluralism. Logical Consequence: Rival Approaches." In *Proceedings of the 1999 Conference of the Society of Exact Philosophy*, 1–22. Hermes.
- Beall, J. C., and G. Restall. 2006. *Logical Pluralism*. Oxford: Oxford UP.
- Berto, F. 2015. "A Modality Called 'negation'." *Mind* 124 (495): 761–793.
- Caret, C. R. 2017. "The Collapse of Logical Pluralism Has Been Greatly Exaggerated." *Erkenntnis* 82 (4): 739–760.
- Griffiths, O. 2013. "Problems for Logical Pluralism." *History and Philosophy of Logic* 34 (2): 170–182.
- Haack, S. 1974. *Deviant Logic: Some Philosophical Issues*. London: Cambridge UP.
- Hjortland, O. T. 2013. "Logical Pluralism, Meaning-Variance, and Verbaldisputes." *Australasian Journal of Philosophy* 91 (2): 355–373.
- Kaplan, D. 1989. "Demonstratives." In *Themes from Kaplan*, edited by J. Almog, J. Perry, and H. Wettstein, 481–566. Oxford: Oxford UP.
- Kratzer, A. 2012. *Modals and Conditionals: New and Revised Perspectives*. Vol. 36. Oxford: Oxford UP.
- Lewis, D. 1980. "Index, Context, and Content." In *Philosophy and Grammar*, 79–100. Dordrecht: Springer.
- MacFarlane, J. 2009. "Nonindexical Contextualism." *Synthese* 166 (2): 231–250.
- MacFarlane, J. 2014. *Assessment Sensitivity: Relative Truth and Its Applications*. Oxford: Oxford UP.
- Priest, G. 2006. *Doubt Truth to Be a Liar*. Oxford: Oxford UP.
- Priest, G. 2011. "Logic: One or Many?" In *Proceedings of the 1999 Conference of the Society of Exact Philosophy*, 1–22. Hermes.
- Restall, G. 1999. "Negation in Relevant Logics (How I Stopped Worrying and Learned to Love the Routley Star)." In *What is Negation?*, 53–76. Dordrecht: Springer.
- Restall, G. 2002. "Carnap's Tolerance, Meaning, and Logical Pluralism." *The Journal of Philosophy* 99 (8): 426–443.
- Shapiro, S. 2014. *Varieties of Logic*. Oxford: Oxford UP.
- Zwicky, A. M., and J. M. Sadock. 1975. "Ambiguity Tests and How to Fail Them." In *Syntax and Semantics Volume 4*, 1–36. New York: Academic Press.