Restall and Beall on Logical Pluralism – A Critique

In this paper one prominent version of logical pluralism is the main target of further questions. J.C. Beall and Greg Restall have with their book *Logical Pluralism* (Beall/Restall 2006) elaborated on their previous statements on logical pluralism.[1] Their view of logical pluralism is centred on ways of understanding logical consequence. This essay therefore tries to come to grips with their doctrine of logical pluralism by highlighting some points that might be made clearer, and questioning the force of some of Beall's and Restall's central arguments. Beall and Restall claim 'that there is more than one genuine deductive consequence relation' (3). According to them there are different and incompatible ways to spell out logical consequence, none of which can be singled out as the 'true logic'. They found this claim on the supposed observation that 'the pre-theoretic notion of logical consequence is not formally defined, and it does not have sharp edges' (28), as well as on observing the existence of a multitude of formal systems. This pluralism applies as well to logics within a language (a linguistic framework), as there are 'different accounts of deductive logical consequence (for the same language)' (29). And thus they claim that 'there are at least two relation of logical consequence (in English)' (31).

[1] All page references in the main text refer to that book.

The following sections raise seven doubts to the truth of these claims – especially if applied to Logical Form in English – and argue that the approach of Beall and Restall misses are clear methodology.

§1 The Common Core Problem

Pluralism is said by Beall and Restall to be different from relativism. But there is a problem with logical pluralism similar to the difficulties of claiming relativism to be true. Logical Pluralism is put forth as a claim that is true. All those who are not immediately convinced of the claim by merely understanding it have to be convinced by arguments. These arguments have to be valid, correct and convincing in some sense. What sense is that? It supposedly has to be a sense of convincing valid argument that can be directed at any audience whatsoever. Thus it seems to use the common core of accepted argumentative standards, whatever other logical preferences the different audiences may have. Thus it seems to be the intersection of different (applied) systems of reasoning. That would be some kind of *common core* logic. There would be nothing pluralistic about this common core (on pains of sliding into logical relativism, which was to be kept apart from pluralism). So the common core arguments would be valid by any standards. Thus logical pluralism taken as the claim that there is no universal common core of logic would be violated. And if the common core is not strong enough it does not

deliver the arguments needed to convince everybody of logical pluralism. A strange dilemma for the logical pluralist, it seems.

So our first claim is: In presenting a general argument for pluralism Beall and Restall seem to presuppose the very universal core of logic the existence of which they reject.

2 The Formal Common Core Problem

Further on, logical pluralism is formulated in some language. This language has to be well-defined to make logical pluralism a well-defined, non-vague thesis. Logical pluralism has to be true (*simpliciter*). The theory language of logical pluralism used as a meta-language when talking about the different ways to spell out being logical has a logical form. Whatever else may be vague in a language, a sentence has at a given level of specification (say Categorical Grammar vs. Propositional Temporal Logic) one and only one most articulate logical form. Even in case a surface structure has more than one derivation, and thus is related to more than one logical form, the logical forms themselves do not leave the logical structure unspecified and algorithmic procedures relate a surface structure to a logical form. At the most comprehensive level (the level which takes *all* structural elements into account) there is one complex logical form. Given the possession of logical form, some particles/words may be singled out as 'logical vocabulary'. These logical

words have their respective syntactic behaviour and meaning constitutive rules (truth conditions). Thus the theory language of logical pluralism provides us with *a logic,* namely the logic that goes with its logical vocabulary. Translating the theory into some other language will not change this, since the translation has to preserve truth conditions, at least. And even if it was possible to translate this theory into another language with a *different* logic there had to be some *general* account how this kind of translation works and what logical faculties we employ here. Thus we would be back to some (universal) logical framework of possible translations.

In fact Restall and Beall seem to doubt the existence of one ultimate logical form, but that 'pluralism about logical form is at the very least a live option' (105) is not only an error for the reasons just hinted at, but furthermore because of being in conflict with our best theories of natural language (cf. §7).

So our second claim is: Once the meta-theory of logical pluralism is spelled out formally, the proponents of logical pluralism have spelled out a formalism ready to deal with any logic whatsoever, i.e. a universal framework. This again contradicts their thesis of logical pluralism.

§3 **The Superior Judge Problem**

Beall and Restall on several occasions claim 'that there is more than one relation of logical consequence' (25). And these different relations of logical consequence have – to be different – to *disagree* on some consequences. Which one them has the last word? In their version of logical pluralism standard logic is only *restricted* by the other contestants. The three candidates stand in sub/super-logic relations to each other. Is this accidental or are intuitionistic and relevant consequence nothing more than occasional restrictions of the one *true* logic? Does logical pluralism come down to more than the claim "If we consider constructions instead of worlds, some inferences do not apply."? It seems not with Beall and Restall: In at least one case of logic clash standard logic seem to have the last word (81): Priest's argument for dialetheism (i.e. using a non-standard paraconsistent logic which allows to validate some contradictions) is blocked by invoking *ex contradictione quodlibet*, but that is the very rule that Priest attacked. If the different explications of logical consequence all have their right application, as logical pluralism might be considered to guarantee, why then is standard logic given the right of way in the very heart land of paraconsistency? If different acceptable logics give different verdicts on what is valid with respect to some field of application much again depends on arguments which logic should be applied there. And which logic do these arguments use (cf. §1)? And – even worse – how can we know the nature of some field of application *independently and before* we know which logic applies here?

So our third claim is: Despite their lip service to logical pluralism Beall and Restall occasionally treat one logic (standard logic) as the measure of appropriateness for other logics. This contradicts the equality of logics one might consider a crucial part of logical pluralism.

§4 The Problem of the Conditional

Restall and Beall define logical pluralism relative to the *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. (29)

Open for a pluralistic treatment, according to Restall and Beall, is the specification of the "cases". Why only the cases?

One might argue that (GTT) settles quite a lot by the occurrence of a bi-conditional in it. How is the "if" in (GTT) to be understood? One of the central concerns of relevant and paraconsistent logics is to understand the conditional connective in a way that does not validate *ex contradictione quodlibet* (or similar supposed consequences). In its typical reading (GTT) supports irrelevant consequence statements like *ex contradictione quodlibet*: In case the premises are not true the conclusion need not be true, and thus the argument is considered valid. Such arguments, however, are irrelevant (in the technical sense) and the very arguments to

be avoided in paraconsistent logics. So one may consider a paraconsistent definition of consequence that reads:

(#) $\Gamma \models A$ iff there **are** models such that all $B \in \Gamma$ are true at least, and in case that all $B \in \Gamma$ are true at least in a model, then A is true at least in that model.

This definition tries to pin down a reading of "if", or "in case" respectively, that explicitly excludes the irrelevant instances of a definition of "consequence".

One may argue whether this is a good or successful move to make for a logical universalist or a paraconsistent logician. One may have doubts about paraconsistency in general. Concerning logical pluralism, however, we need another argument why the "if" in (GTT) is save from this kind of controversy or pluralism. Keeping the meta-language, in which (GTT) resides, apart from some applied logic does not sit well with Beall's and Restall's mutual preferences for Relevant Logics. It also endangers logical pluralism with sliding in the inconsistent assumption of a *neutral* meta-language (cf. §§1 and 2 again).

Their additional exclusion of logics that fail to meet monotonicity or transitivity of logical consequence (91) also needs further argument. If one allowed such logics into the group of equally accepted logics of the logical pluralist, one moves down a slippery slope towards a kind of

'universal logic' in which any kind of structure on the powerset of a set of sentences counts as 'a logic'.

So our fourth claim is: Beall's and Restall's choice what can be dealt with pluralistically in logic is idiosyncratic and not principled.

§5 The Problem of an Unsettled Concept of Consequence

Restall and Beall draw an analogy to the *Church-Turing-Thesis* (CTT). The two cases do *not* have that much in common. According to the (CTT) there is exactly *one* intuitive concept of computability and Turing-computability spells it out in an exact fashion. The very point of justifying (CTT) is that the different concepts of formal computability that came up with the years (abacus machines, lambda functions...) are all equivalent. They are *not* different ways to make the intuitive concept precise, in the sense that they agree on which functions are computable and in the sense that each can be translated into the other *without* loss of computability. If these explications of computability were not equivalent that would be a reason to claim that our intuitive notion of computability is not consistent. In that case one may suppose that the intuitive notion became substituted by one of the technical notions. At least some linguists claim that this happened with our intuitive concept of grammatical 'rule': There is no coherent, unified concept of grammatical rule in the traditional sense of combining generative power with

conscious access, so the traditional concept has to be dropped in favour of the technical concept of an internalistic generative mechanism.

So, why should logical consequence be set apart in this respect? If our intuitive concept allows for several equally natural explications which *disagree* on what arguments are valid, this may show that our intuitions are inconsistent, that there is no unified intuitive concept of logical consequence. One of the explications has to take the place of our prior confusions. And if Beall and Restall claim that the different logics are not to be understood 'to be rival analyses of the one fundamental notion' (88) this may be taken either as denying the existence of such a fundamental notion or as denying that there is something *beyond* technical advantages that singles out one of them. If there is no 'unsettled' notion to stick to – and how could an unsettled notion by its very unsettledness adjudicate between the approaches – there is also no reason to consider them as equally justified. If our 'unsettled notion' of logical consequence does not do the settling of the right logic we have to turn to some other notions (maybe those of simplicity, general usability ...) to settle the matter. If these notions like general usability or simplicity have a claim to be meta-logical concepts themselves, why can't we use them to decide the matter of the proper logic?

So our fifth claim is: Beall's and Restall's comparison of logical pluralism with the Church-Turing-Thesis works to their disadvantage. The Church-Turing-Thesis provides a model where different formalisms

capture the same universal notion (of effective computability) – why should logic be different from effective computability?

§6 The Methodological Problem

Is logical pluralism an *a priori* or an empirical claim?

If logical pluralism is an *a priori* claim what is its justification beyond the supposed fact that (GTT) allows for more than one way to fill in the details? We seem to need an argument why there is nothing *beyond* (GTT) to pin down logical consequence. Why may one not argue – in a similar *a priori* fashion – that there have to be further conditions beyond (GTT), since logical consequence has to be a fixed concept? If logical pluralism is an empirical claim one has to consider questions whether some logic (some way to settle logical consequence) is appropriate in capturing our informal and not formalized ways of argument/reasoning. With respect to our intuitive concept of reasoning and logical consequence one can ask whether some logic is (i) *correct w.r.t. intuitive reasoning* (i.e. does not yield consequences by its definition of logical consequence which are not acceptable by our intuitive standards, and (ii) *complete w.r.t. intuitive reasoning* (i.e. does capture all intuitively valid consequences within its formal derivability relation) (cf. Blau 1978, pp.1-21). One has to ask what is the proper formalization of a sentence and

whether the system thus employed in formalizing ordinary language arguments is adequate (cf. also Åqvist 1987, pp. 24-41). Given the criteria (i) and (ii) of correctness and completeness no two *distinct* logics can be both adequate. Or, two distinct logics can only be both adequate if our ordinary concept of logical consequence is undecided on the matters involved. This, however, as an empirical claim has to be established empirically. As in other fields of logical reconstruction in the cognitive sciences where one aims for a wide reflective equilibrium between our intuitive judgements, rule systems to reconstruct our intuitive reasoning, and further knowledge about our cognitive architecture (cf. Stein 1996) one would have to sample a lot of evaluations of different supposed arguments and ways of reasoning. Do normal speakers reason according to, say, *ex contradictione quodlibet*, and/or can this be brought into wide reflective equilibrium with whatever else we know about our logical faculties and their employment? Studies of this kind are missing in Beall's and Restall's presentation of logical pluralism.

So our sixth claim is: Beall and Restall are not explicit about their methodology.

§7 The General Logical Form Problem

Further on, how can it be that there are parts of logic or our concept of argument which are 'not settled' (29)? Is there a real plurality in the

mind? One may wonder what (evolutionary) explanation might be given for this. Linguists of the transformational camp (and some others as well) claim that we have a highly specified innately fixed module for language acquisition, which comes with principles the parameters of which are the only elements left to be settled by regional languages (cf. Chomsky 2005). Apart from sentences too long to parse there are possibly only some very contrived complex sentences beyond the fixed apparatus of our language (faculty). With respect to our ordinary talking and thinking there is no unsettled part of our grammatical assessment of sentences. Why should logic have come apart from language? This is even more questionable since language employs a 'level' or 'phase' of logical form in processing mental representations and at the interfaces to other mental modules. This level or phase of logical form (LF) is highly constrained by both internal constraints of syntax (like *Government*) and external constraints of semantics (like providing the structure for employing the quantificational truth conditions).

> [LF] structure must be articulated so that both logical structure – that needed to explicate the direct role of the syncategoremic logical terms – and compositional structure – that needed to explicate the indirect role of the categoremic non-logical terms – is represented. (May 1993, p. 336).

There is overwhelming empirical evidence for this level of structured descriptions (cf. Chomsky 1995).

Of course, the theory of LF has been criticized and some have claimed that there isn't a level LF *as understood* by the Extended Standard Theory or the *Principles and Parameters* approach. In these theories, however, there is some other determinate level or class of structural representations doing the same work. Recent developments in the 'minimalist program' (cf. Hornstein/Nunes/Grohmann 2006) that substitute the single level of LF by partial phases of LF-construction rather support the assumption of species wide logical representation at the interface between syntax and conceptual system.

So our seventh claim is: Aggravating the problem of methodology raised in §6, Beall's and Restall's logical pluralism seems to stand in conflict with a well-established tradition of treating logical form in linguistics and cognitive science. Logical Pluralism seems to be empirically wrong.

Conclusion

The aim of this paper has been to put forth questions to the logical pluralists. The seven claims directed as criticism at Beall and Restall may find some (partial) answers by them (or their allies). So it may be too early to rush to a conclusion. On the other hand, it seems that the case for logical pluralism is far from clear. This pertains especially to the methodology of the logical pluralists. It is even unclear what exactly

logical pluralism is and where is stops. It is even unclear if logical pluralism could be stated as it is if it was true. So far universalism seems to be the better position to take.

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