

What is Logical Pluralism?

Within the philosophy of logic there has been an old debate about strengths and weaknesses of so-called “deviant” logics, as compared to standard logic (i.e. First Order Logic with Identity). With the development of a multitude of many-valued and modal logical systems and the various ways they can be employed in various fields of philosophy, linguistics and computer science, former “deviant” logics have become well accepted. Nowadays we seem to have a new and almost contrary debate about whether there is any universal logic at all or only a multitude of systems: logical pluralism. But what does logical pluralism claim? In this paper one prominent version of logical pluralism is the main target of further questions.

The first paragraph provides a sketch of logical universalism. The aim here is not to advance conclusive arguments for universalism, but merely to outline a contrasting position to logical pluralism. The second and third paragraph ask first questions concerning former explorations into logical pluralism. The main part explores several angles to put JC Beall’s and Greg Restall’s pluralism to the test.

§1 **Conceptions of a Universal Logic**

One way to endorse a universalist position in logic is to see standard logic (First Order Logic with Identity) as *the* natural or intuitively given logic, as reflected in the soundness and deductive completeness of First Order Logic with Identity. These adequacy results led, for instance, to the first order expression of set theory against its beginnings in second order logic. From a philosophical point of view universalism is often taken as the outmost generality of philosophical theories of language, requiring also the usage of a semantically closed language (containing its own semantic predicates, including a truth predicate). Corresponding to the universal scope of its investigations philosophy (of this kind) needs the logical means to speak universally (making claims about knowledge or meaning *in general*). Thus philosophy needs a universal logic (i.e. a logic to speak about any topic in general, especially about the language one is just using). This logic, because of the inconsistency of semantically closed languages, has to be a paraconsistent logic of some kind (cf. Bremer 2005). The main proponents of universal logics have thus been logicians working on some form of paraconsistent logic.

Logics are *applied* in formalization to use their syntax as representational scheme and to use their inferences to draw conclusions. The logic is *non-trivially applied* if not everything expressible in its language can be derived from the assumptions in the context formalized. Temporal logics thus are applied in modelling state systems. Paraconsistent logics are applied to model non-trivially inconsistent context.

A universal logic might be universal as a paraconsistent logic, i.e. in all fields in which we need a *paraconsistent* logic (like a semantically closed language, needed to speak about meaning in complete generality) this logic can be employed and gives acceptable results. This may be called *the weak universalist program*. One may take the weak universalist program as being extremely cautious: One takes one's favoured paraconsistent logic – and sticks to it in *all* contexts (i.e. applies its inference rules in consistent as well as in inconsistent contexts). Since this paraconsistent logic can deal with contradictory contexts it is universally applicable. The problem with this extreme caution is that one loses all otherwise available inferences in consistent contexts. Therefore one may try to distinguish the type of context one is reasoning in. In praxis this means that we employ standard First Order Logic for all non-semantic or non-antinomic contexts and switch to paraconsistency only in our formalization of complete semantics or, maybe, set theory.

A *truly* universal logic can be employed everywhere, supposedly containing a way to distinguish *within itself* consistent from inconsistent contexts, without loss of proper logical power in comparison to First Order Logic. This may be called *the strong universalist program*. In case philosophy contains consistent contexts and uses arguments valid only in consistent contexts it seems to need to follow a strong universalist program. Universalism is universalistic about logical form as rendered by a formalization using universal logic.

Both the LFI-approach in paraconsistent logic (cf. Carnielli et al. 2004) and Adaptive Logics (cf. Batens 2000) follow the idea to be able to distinguish *within the system used* contexts of a stronger logic and contexts for a paraconsistent logic. The way they achieve this is completely different, however. In the LFI-approach the distinction what kind of context we have has to be given *beforehand*; only given the corresponding knowledge can we choose the appropriate formalization. In Adaptive Logics we ‘mark’ the supposition that some formula has to be consistent, a supposition that may be *revised* in the process of reasoning; no prior knowledge about the consistency behaviour of a context is required. Some rules like Disjunctive Syllogism and *ex contradictione quodlibet* have to be restricted. They are only used if the on the left hand side of their application no contradiction is involved. Without adaptivity we had to reason using some paraconsistent logic in all contexts which we suppose to contain contradictions. Given that quite a lot of standard logic is missing [including contraposition, transitivity (of identity) etc.] that is a severe restriction. We cannot capture a lot of (harmless) consequences in that field then. Adaptivity, on the other hand, makes clear that reasoning from present contradictions is rather the exception than the rule.

The proponents of the corresponding camps within paraconsistency (like Diderik Batens) are, however, outspoken logical particularists, i.e. they propose that one chooses a logic given a particular task or topic at hand. An advanced proposal for a universal logic made by a supporter of logical universalism is (Brady 2006). Universalism in logic thus has become an

explicit topic. Some philosophical arguments for universalism may be found in (Bremer 2008).

Logical Pluralism has rather been a way of procedure than an explicitly stated position. This has changed in recent years. At least some authors have addressed themselves at setting out what logical pluralism is.

§2 **What about Pluralism in Logic?**

Whether universal logic as understood in §1 is incompatible with logical pluralism depends, of course, on what logical pluralism is taken to assert.

- If pluralism just means that there are several logical systems, and one may use some specific system for some specific purpose this is compatible with the claim that there is the logic of universal discourse. Many logics may be used where appropriate, and their mere existence has no deeper philosophical impact than the observation that given a specific purpose at hand one may abstract from a lot of things (as in treating the acceleration of a falling object we are not interested what materials make up its weight).
- If pluralism means, for example, that there are different ‘negations’, it is confused about meaning. Some so called ‘deviant logic’ should not be understood as showing that what, for example, negation is is up for grasp, or that there is no ‘real’ negation. We are free to invent new symbols for new negation related functions, and, if careless, may even take established symbols for our now used negation related function. But by this we neither bring a new negation into the world nor abolish standard negation.

There just *is* a set of truth functional options in the vicinity of standard negation. One may even take negation to be not truth functional. Deciding to call one of these functions “negation” and using “ \neg ” to represent it, does not change negation, it, at most, changes the meaning of a symbol. There is no ‘truth by convention’ in the sense that merely stipulating some axioms makes the involved symbols true of the world; badly chosen axioms these may not be true of the world, or at least not in the intended sense. So one cannot change negation by *fiat*. What negation really is, on the other hand, may be a tough question. Maybe one of the non-standard connectives comes closer to negation. The whole discussion about negation, however, presupposes that there is some central function these different logics try to pin down. Rejecting the Quinean objection against ‘deviant logics’ as just ‘changing the topic’ therefore works not in favour of logical pluralism.

- If pluralism means that there cannot be a *unique* system of universal logic, this – apart from needing argument – seems to be a version of relativism (and fares no better than relativism fares with respect to any other scientific field). One understanding of Carnap’s slogan ‘to plan languages’ and his ‘principle of tolerance’ may see Carnap as advocating complete instrumentalism and relativism with respect to linguistic frameworks (cf. Carnap 1933). Extreme conventionalism, however, fails in fixing the set of (proper) logical truths: If a semantic idealist (claiming that truth can be generated by convention) believes that any convention can do, he is subject to the famous “tonk”-counterexample of absurd rules

for introducing and eliminating logical connectives. An “or”-like introduction rule with an “and”-like elimination-rule yields “ $A \wedge \neg A$ ” even for consistent statements A . Non-logical truth – at least in part related to the idea of correspondence – is not generated by convention either. Extreme conventionalism or extreme logical pluralism as a version of semantic idealism is incompatible with even mild versions of realism.

§3 **Comments on some Proposals of Pluralism**

The arguments for logical pluralism rejected in §2 are very weak. They serve merely as dummies. The real world proponents of logical pluralism have a stronger position in mind.

J.C. Beall, Greg Restall (2000, 2002), Gert-Jan Lokhorst (1998) and Achille Varzi (2002) have defended their version(s) of logical pluralism.

Beall and Restall (2000) define being a pluralist about logical consequences as ‘you need only hold that there is more than “one true logic”’. Pluralism in this sense is clearly compatible with universalism and having logics for specific fields or tasks. Saying that there are ‘equally good logics’ amounts to no more than saying that there are equally good tools, but a hammer and a spade being both good tools, does not make the hammer fit for digging. Their second definition of pluralism says ‘you can hold that two different logics L and L' are *both* accurate and systematic accounts of (different specialisations of) the one notion of logical consequence’. Is this pluralism in a relevant sense? Of course there may be partial representations of x both focussing on some specific

aspect, but this does not make them incompatible as long as one does not take a partial description for a complete one. (This is true also in the case of empirical descriptions: Even if there are more comprehensive [scientific] descriptions available it is – at that level of description – not wrong to say that the cat is on the mat.) This does not rule out that there is one and only one accurate comprehensive description, and with respect to logic it does not rule out that there is one and only one best representation of logical consequence *in general*. As logics are used to reconstruct arguments the principle of *shallow analysis* demands that we bring to light no more logical structure than is needed to give the argument a form in which it is valid (i.e. in case of a successful reconstruction of a correct argument). Since not every time an argument is valid its validity depends on its form in modal logic we may abstract from modal logical form in these cases, but this does not make the option to give a more complete formalization into a case of logical pluralism in any interesting sense. An interesting case of logical pluralism would only be given if with respect to the same concepts (like quantification or modalities) different proposals are presented for the logic of such a given specific concept.

Beall and Restall seem even to acknowledge this in case of the many modal logics, about which they say that ‘once you are specific about what your logic is meant to do, there is scope for genuine disagreement’. That is true if the two systems are proposed as comprehensive renderings of the area of logic in question. The disagreement may not be so easy to resolve in general logic as it is in some highly constrained area of applied

logic, but as there may be only one true comprehensive description of the world, there may be only one comprehensive universal logic. However our logical faculties work and how difficult it turns out to capture them in a formal specification, they are 'just there', and one (universal) logical system is the way of representing them, whether we get to know it or not. Later Restall (2002) went beyond this claiming that with respect to the partial explications of logical consequence 'there is *no further fact of the matter*' whether some argument is valid or not; this may be the road down to relativism. The examples chosen (arguments classically valid, but not valid in some paraconsistent logics) are unconvincing, since the universal logic in store may be an adaptive logic that can *incorporate* both perspectives. What is right about the examples is that only those examples matter in which *one and the same* pattern is once considered valid and once not; the mere fact that *an argument* (i.e. a piece of text to be formalized) turns out to be correct only relative to one logic and not relative to the other is irrelevant, since the correctness of an argument is typically taken to be established by the fact that there is *one* sound pattern of reasoning in which it can be transformed by formalization, there has not to be a pattern for any arbitrary argument in every logic whatsoever.

Varzi tries to defend relativism in a more extreme Carnapian sense by pointing out that the distinction between logical constants (drawn in standard logic and semantics) and extra-logical terms 'is ultimately ungrounded'. That is true. Conceding this, however, does not mean that all ways of carving up the logical and the extra-logical are equally good.

Lokhorst tries to revive the thesis that people from different cultures reason with different logics. If this is meant in the strong sense that there is not a shared frame which is able to put the two natural language reasoning systems into correspondence it is refuted by being a version of the incommensurability thesis. If this just meant that some people may use a system that corresponds to a subsystem of the system that some other people use, this is again no interesting case for pluralism just as incomplete knowledge is no argument for (epistemic) relativism. That one may construct strange formal systems that are incompatible with some basic tautologies (like $A \supset A$) shows no more than that one may construct strange theories about the world that are incompatible with some basic assumptions about our universe (e.g. that the universe is extended). To claim that some people (i.e. people like humans we know living on a planet like ours) may use such a logic is not really conceivable, just as no engineer can work on the premise that the universe is not extended in space.

So it seems that logical pluralism of these kinds is either a version of relativistic semantic idealism or it is only an appeal to the fruitfulness of a division of labour in logic research. The latter is a helpful attitude to stop useless controversies, but it has little epistemological impact beyond what we already know about partial descriptions in other fields of inquiry.

§4 **Beall's and Restall's New Exposition of Logical Pluralism**

J.C. Beall and Greg Restall have with their recent book *Logical Pluralism* (Beall/Restall 2006) elaborated on their previous statements on logical pluralism. Their more recent view of logical pluralism as centred on ways of understanding logical consequence may also be criticised along the lines just explored, but foremost it seems not at all clear what exactly the doctrine of logical pluralism as opposed to logical universalism is supposed to be. Further on one may question the central arguments given for this supposed logical pluralism. The main part of 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. I speak as a defender of some kind of logical universalism, but that very kind may be compatible with many things Beall and Restall say.

§4.1 **The Common Core Problem**

Pluralism is said to be different from relativism. So one may not apply the standard reply "What about the truth of the claim of relativism?", but there is a similar problem with logical pluralism. 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 (is understood by) 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 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.

§4.2 **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 (the language 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. §4.7).

§4.3 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 then 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 one case of logic clash (discussing Priest’s slippery slope towards dialetheism) standard logic seem to have the last word (81). The slippery slope towards dialetheism is blocked by invoking *ex contradictione quodlibet*, but that is the very rule that the paraconsistent logician 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. §4.1)? And – even worse – how can we know the nature of some field of application *independently and before* we know which logic applies here?

§4.4 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:

(UL) $\Gamma \models A$ 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. §§4.1, 4.2).

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’.

§4.5 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. Eliminativism is here the way of logic as a science, as well. 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 – what Beall and Restall do not have in mind – 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, except we do *not* look at their other advantages! 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?

§4.6 **The Methodological Problem**

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

If it 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.

§4.7 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. There is neither logical nihilism nor pluralism present. 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.

§4.8 The Problem of Semantic Unity

Beyond logical pluralism Beall and Restall hint at the possibility of being a ‘semantic pluralist’ (74). This seems even more unnatural than logical pluralism. How could it be that someone without being confused in applying words can consider several theories (of meaning of his language) to be ‘equally illuminating and acceptable (but different)’ (74)? The spectre of relativism raises its head again here. To avoid relativism Beall and Restall have to accept some form of complementarism. If Beall and Restall claim that the two semantic understandings of negation can be ‘*equally* accurate ... in virtue of being *incomplete* claims’ (98) about our world (or negation) that can only mean that by being incomplete and not antagonistic they can be *united*. And if our world is of a nature that allows for the unification of several incomplete accounts of, say, negation that very world rather looks pretty more non-standard than classical. (Beall and Restall can save their day by considering only logics that have standard logic as their limit.)

§5 Conclusion

The main aim of this paper has been to put forth questions to the logical pluralists. 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. It is even unclear what exactly logical pluralism is and where it 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.

References

Åqvist, Lennart (1987). *Introduction to Deontic Logic and the Theory of Normative Systems*. Neapels.

Batens, Diderik (2000), "A Survey of Inconsistency-Adaptive Logics", in: Batens, Diderik et. al. (Eds.) *Frontiers of Paraconsistent Logic*. Baldock.

Beall, J.C./Restall, Greg (2000). "Logical Pluralism", *Australasian Journal of Philosophy*, 78, pp.475-93
- (2006). *Logical Pluralism*. Oxford.

Blau, Ulrich (1978). *Die dreiwertige Logik der Sprache*. Berlin et al.

Brady, Ross (2006). *Universal Logic*. Stanford.

Bremer, Manuel (2005). *An Introduction to Paraconsistent Logics*. Bern et al.

- (2008). "Transcendental Logic Redefined", *Review of Contemporary Philosophy*.

Carnap, Rudolf (1933). *Die logische Syntax der Sprache*. Berlin.

Carnielli, Walter/Coniglio, Marcelo/Marcos, Joao (2004). "Logics of Formal Inconsistency", in: Gabbay, D./Guenther, F. (Eds.) *Handbook of Philosophical Logic*, 2nd Ed., Vol. 12.

Chomsky, Noam (1995). *The Minimalist Program*. Cambridge/MA.

- (2005). *New Horizons in the Study of Language and Mind*. Cambridge, 6th Ed.

Hornstein, Norbert/Nunes, Jairo/Grohmann, Kleanthes (2006). *Understanding Minimalism*. Cambridge

Lokhorst, Gert-Jan (1998). "The Logic of Logical Relativism", *Logique et Analyse*, 41, pp.57-65.

May, Robert (1993). "Syntax, Semantics, and Logical Form", in: Kasher, Asa (Ed.) *The Chomskyan Turn*. Oxford, pp.334-59.

Restall, Greg (2002). "Carnap's Tolerance, Language Change and Logical Pluralism", *The Journal of Philosophy*, 99, pp.426-43.

Stein, Edward (1996). *Without Good Reason*. The Rationality Debate in Philosophy and Cognitive Science. Oxford.

Varzi, Achille (2002). "On Logical Relativity", *Philosophical Issues*, 10, pp.197-219.