Logical Pluralism and Genuine Logic

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Abstract: The paper offers a critical reflection of the logical pluralism of Beall & Restall; urging the classical Carnapian pluralism that Beall & Restall tend to sideline. Our criticism rests on two claims a) There is no language in which we can formulate argument schemata, of which we are to decide whether they are valid or not. b) The very notion of correct or genuine logic is misleading. There are, we think, no criteria of correctness of an (alleged) system of logic beyond vague criteria of usefulness.

1   Introduction

Logic is a well-established scientific discipline with deep historical roots. Since ancient times it has been seen (though surely not by everyone) as the discipline that is meant to help us "reason effectively about practical affairs, stand his or her ground amid confusion, differentiate the certain from the probable, and so forth".[2] If we conceive of logic in this way, we will probably not be tempted to insist that the answers that logic provides should be always unanimous and certain. During the last one and a half centuries, however, logic has become closely intertwined with mathematics – a discipline in which we tend to expect unique definite answers to properly formulated questions (though it may be difficult to find them). Hence, it appeared quite natural to expect something similar of logic – to every truly logical question there should be a single correct answer. Those logicians who insist that the quest for such definite answers makes sense or is even imperative for logical studies are commonly classified as *logical monists*, while those who think

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[2]This particular conception of the mission of logic is ascribed to the Greek Stoics (see Inwood, 2003, p. 229). So as not to distort the historical picture, we should note that the Stoics were perhaps more practically oriented than most philosophers and logicians of the two millennia to come after their era.

that we should not be so categorical and that it is preferable to open space for embracing more different logics are called *logical pluralists*.[3]

The debate between the monists and the pluralists wasn't very vigorous during the concluding decades of the 20th century, but it received new momentum at the beginning of the present century after Jc Beall and Greg Restall published their original defense of logical pluralism (see esp. Beall & Restall, 2000 and 2006). Their specific presentation of the issue and their original argumentation received considerable attention and the subsequent debate remains ongoing.

This paper presents a contribution to the debate. We, on the one hand, intend to uphold logical pluralism and, in this respect, we are in the same boat as Beall & Restall, but we are critical of their specific version of logical pluralism – we suggest that the framing of their project as an alternative to Carnapian pluralism is misconceived. Our critique is meant to reinforce the classical Carnapian pluralism that Beall & Restall tend to sideline. (They, for sure, don't explicitly deny classical pluralism, but what they say indicates that they view their version of pluralism as being more substantial than the plain Carnapian version.) Our main motive, however, is more general. We don't just want to defend a Carnapian stance, but additionally to promote a general picture within which logic is not (at least not principally) a kind of (meta)mathematical theory (or, for that matter, a complex of such theories) but rather a multifaceted tool that is meant to help us reason effectively about practical as well as theoretical matters and to prevent and resolve confusion.

2   Logical pluralism of Beall and Restall

As we have suggested, Beall and Restall (2000, 2006, hereafter B&R) breathed new life into the long-standing discussion about logical pluralism, in particular the debate over the question of whether there is only one correct logic, or whether there are more, equally correct, ones. It is important to stress that their variety of logical pluralism is meant to cut essentially deeper than pointing out the trivial fact that logicians study many different logical systems. B&R seem to take the obvious plurality of systems of logic as a fact which is not necessary to mention. They, however, think that there is something important concerning the plurality of logics that must be pointed out. In their eyes, it is important to contrast the specific version of pluralism

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[3]The two categories don't cover all those dealing with such issues, we may consider also different positions, such as logical nihilism (Russell, 2018).

they advocate with the Carnapian one, which is a matter of the principle of tolerance: "In logic, there are no morals. Everyone is at liberty to build his own logic, i.e. his own form of language, as he wishes. All that is required of him is that, if he wishes to discuss it, he must state his methods clearly, and give syntactical rules instead of philosophical arguments" (Carnap, 1937, p. 52). Beall and Restall (2006, p. 78-9) write: "What we want to emphasise is that Carnap's pluralism is not our kind of logical pluralism. .... For us, pluralism can arise within a language as well as between languages." They claim that there are several versions of the relation of logical consequence, all of which (i) are equally correct and (ii) are hosted by the same language.

B&R adopt, as the basis for their deliberations, a conception of logical consequence that, though not universally adopted, can surely be classified as the mainstream among contemporary logicians. They formulate their argumentation in terms of what they call 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. (Beall & Restall, 2006, p. 29)

(The suggested perspective on logical consequence may not be as a matter-of-course as B&R seem to suppose, but it prevails among today's logicians and we don't want to challenge it here.) An argument, according to B&R, is valid iff it preserves truth in every case; *viz.* if there is no case when its premises are true and the conclusion false. The crucial question that needs to be addressed, according to them, is *What are the cases*? We already indicated what the outcome of their deliberation is – they claim that there is no one correct answer to this question, that it can be answered in more than one way depending on how we exactly specify the concept of case. Consequently, they argue, we have several logics all of which are correct and hence we can't and needn't choose among them – we can embrace any of them.

B&R are more specific about the outcome – GTT yields us at least three respectable logics: *Classical logic* (CL) which we receive if we take the cases to be Tarskian models or possible worlds, *Intuitionistic logic* (IL) which we receive if we take the cases to be constructions, and *Relevant logic* (RL) that results from taking the cases to be situations.

Let us consider, for the sake of illustration, two simple argument schemas. The schema of double negation:

(DN) $\dfrac{\neg\neg A}{A}$

and the schema of explosion:

(EX) $\dfrac{A \quad \neg A}{B}$

The first schema is, as we know, valid from the perspectives of classical logic and relevant logic, while being invalid from the perspectives of intuitionistic logic, whereas the second one is valid in classical and intuitionistic logics, while not being valid in relevant logic.

B&R claim that as there is no way to decide which specification of the concept of case is the proper one, there is no way to adjudicate among the different logics they yield. Hence there is no one correct logic, there are more which are equally correct – which meet the requirements that we have regarding the concept of logical consequence.

3 The collapse argument

Arguments against the viability of this kind of pluralism were raised by several distinguished scholars, most notably by Stephen Read (2006) and Rosanna Keefe (2014) (hereafter R&K).[4] They claim that if an argument is sanctioned as valid by one of the "correct" logics, then it must be seen as *valid simpliciter* (no matter what status argument has from the viewpoint of alternative versions of logical validity). The point is that once we know that an argument is *valid* in some respectable logic, we know that it is guaranteed to lead us from true premises to a true conclusion; and we need not be bothered that it is not valid in other logics. (We should keep in mind that being not valid in a logic is not necessarily being *invalid* in the sense that an argument is guaranteed to lead us from some true premises to a false conclusion.)[5]

Keefe (2014, p. 1385) formulates the argument that in her view all logicians accepting B&R's principles should take into account as follows:

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[4]Read (2006) points out that the argument appears (in not so clearly articulated form) already in (Priest, 2001).

[5]Cf. (Svoboda & Peregrin, 2016).

Consider, next, a relatively ordinary context of reasoning, and suppose our subject, S, endorses Beall and Restall's pluralism. If S accepts premises Γ and is considering conclusion C, what logic should she call on to decide whether or not to accept C? I argue that she ought to endorse the argument and accept its conclusion if it is valid according to any of the acceptable relations in the plurality. Suppose "Γ therefore C" is valid on some acceptable logics and not on others: does the truth of Γ guarantee the truth of C? Yes, and no, because it depends what you mean by "guarantee", and there is no unique sense to the claim that the conclusion is guaranteed to be true. But, no sense of "guarantee" is compatible with the premises being actually true and the conclusion actually false, even if there is variation over the putative cases the truth-transmission must travel across. So, if the argument is valid in any sense, that is enough to show that the conclusion is actually true, assuming the premises are.

And as all three versions of logical validity considered by B&R are *logical* in the sense that they cannot actually lead us from true premises to a false conclusion, it follows that (for example) both (DN) and (EX) are *valid simpliciter*. B&R's pluralism thus inevitably collapses – there is always just one answer to the question whether an argument (form) is valid.

This argumentation evoked a discussion which perhaps hasn't come to an end yet (see, e.g., Caret, 2017; Kouri Kissel & Shapiro, 2020; Stei, 2020). We are not interested in its details, we just want to point out that insofar as it accepts the stage-setting of B&R, it is also liable to our criticism.

4 Which language?

The collapse argument may be seen as generally convincing,[6] but it is (or at least may be) somewhat misleading. The core of the possible problem is relatively simple. R&K tacitly accept B&R's assumption that when we consider the relation of logical consequence we may deal with *different evaluations* of (the validity of) the *same arguments*. This is by no means striking as B&R do insist that the three differing logics in question provide,

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[6]A more cautious approach would be to speak about collapse *arguments*, as individual authors differ in details which can perhaps be relevant for a proper assessment of the individual versions.

in some cases, different assessments of the very same arguments. But we have serious doubts about it.

Let us again consider the argument – more precisely an argument form[7] – (DN):

(DN) $\dfrac{\neg\neg A}{A}$

The question we want to press is the following: *In which language are arguments which are instances of this form formulated?* We can see several possible answers to the simple question:

(i) In a natural language (like English).

(ii) In an uninterpreted artificial language.

(iii) In an interpreted artificial language.

(iv) In a 'semi-interpreted' artificial language.

(v) In a language beyond natural and artificial languages.

Let us consider the individual answers one by one.

5   Natural language?

Could it be that schemas like (DN) or (EX) have as their instances formations of sentences of a natural language? In such a case the symbols "¬" and "∨" would have to be shortcuts for certain expressions of the natural language, let us say, English – most plausibly for "it is not the case that" and "or". Then, when we consider the (in)validity of (DN) we face questions like *Are arguments of the form*

$\dfrac{\textit{It is not the case that it is not the case that } A}{A}$

correct in English?

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[7]It is important to distinguish between *arguments* and *argument forms* or *schemata*. While this is a very clear distinction, it is often obscured, which contributes to confusions that are easy to overlook.

What knowledge do we need so that we can properly answer this question (or the questions in which a meaningful English sentence is substituted for A)? The answer is, in a sense, easy – we need to know what exactly "it is not the case that" means in English, how exactly it contributes to the meaning of the sentences in which it occurs (and which arguments its presence thus supports). This, obviously, is a question for empirical linguists, not for logicians. Such a question may be answered by empirical research among competent speakers. The research might, we contend, provide some interesting insights but it is unlikely that we would receive a clear and definite answer to our question and it would be similar (we estimate) for other natural languages. It is clear in any case that this is not a question that logicians would be competent to answer.[8]

6   An uninterpreted artificial language?

If the language of the relevant instances is not a natural one, could it be an artificial one of the kind produced by logicians? Could it be, e.g., something like the language of the first-order predicate calculus? Before we try to answer this we must disambiguate the term "language": sometimes it means just a syntactic system (a set of primitive symbols plus formation rules), in other cases it includes a semantics (be it model-theoretical or proof-theoretical, or perhaps yet another one).

In (Peregrin & Svoboda, 2017) we distinguished between *formal* languages, which consist of interpreted logical constants plus uninterpreted parameters, and *formalized* languages, which consist of interpreted (logical and extralogical) constants. Here, since what is in question is the interpretation of logical constants, both of these kinds of languages would count as interpreted, what we take here as uninterpreted languages (or *bare* languages) are languages in which nothing, not even logical constants (or, more precisely, what might become them) have as of yet fixed meanings. In the present section we will consider the first alternative, hence the possibility

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[8]Note that the same holds when (DN) is articulated in an artificial language, the purpose of which is to mirror natural language as closely as possible. The point is that in such a case the validity of (DN) will again derive from facts about the natural language, to be discovered by an empirical research. And if somebody insists that an expression of an (uninterpreted) artificial language deserves to be called negation because its intended function is to serve as a means of such a mirroring, then it is the same case again.

that the formulas featuring in the schemas (DN) and (EX) are formulas of a bare artificial language, i.e. not sentences but rather bare sentence forms.[9]

Given that the intended cases, resp. "instances", are formulas of this sort it is obvious that there is a space for assigning different meanings to the symbols that are to function as logical constants of the language – a language that is clearly not yet classical (nor intuitionistic, nor relevant ...). But this does not work for obvious reasons. Given the symbols of the language including those that are to function as logical constants are uninterpreted, it is misleading to use the standard signs indicating a certain reading of the formulas. In this way (DN) is misleading. We, in fact, face the question of the following kind: *Should we take*

(DN) $\underline{\#\#A}$
            A

as valid?

It is clear that such a question does not make much sense – there is no reason to answer it in the positive or in the negative until we are given a guidance concerning the way in which "#" contributes to the meaning of the sentences in which it occurs. But if (DN) is really articulated in a bare language we "by definition" can't expect any such guidance. So we conclude that the variant (ii) is out of consideration too.

7 An interpreted artificial language?

Let us proceed and consider the possibility that (DN) consists of formulas of an *interpreted* artificial language. (As we are interested in logical constants only, what makes a language interpreted for us is the interpretation of the constants. Both our formal and formalized languages are of this kind.) This alternative, however, straightforwardly leads to an uninteresting outcome: as the constants of such a language are interpreted, we have nothing like a "language of propositional logic", but only of *classical* (or *intuitionistic* or *relevant* or ...) propositional logic. But once we deal with such a specific language, the correctness of the relevant arguments which are instances of the

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[9]As the formulas of a bare language are not sentences, but rather uninterpreted formulas, here the instances of forms are again forms. But let's neglect this problem, as we often swallow conventions when we theorize that are even less plausible. After all, we don't have to insist on an intuitively plausible notion of instance – we can admit that we use the term technically.

schema can hardly be seen as an open issue. In fact, here we face questions of the kind of *Should we take*

(DN) $\dfrac{\neg\neg A}{A}$

(*where the negation is classical*) *as valid*?

And it is clear that this question is answered once we specify the interpreted language in question – if it is that of classical logic, for example, then the schema is valid; if it that of intuitionistic logic, it is not. An interpreted artificial language is thus out of consideration too.

8   A semi-interpreted artificial language?

Given that neither an uninterpreted, nor an interpreted, language is what can play the role of the language suitable for articulation of (the instances of) (DN), we might perhaps try a kind of a middle way. Maybe we can have a language with some partial interpretation, a language interpreted enough to make the symbol "¬" into a negation, but not yet the *classical* (or *intuitionistic* or *relevant* or ...) negation (and similarly for other logical operators). In fact, what B&R say indicates that this is what they are after: "The case is starker, of course, when it comes to classical, relevant, and intuitionistic logic, where arguments in *the one formal language (the language of conjunction, disjunction and negation,* for example) yield different verdicts of validity." (Beall & Restall, 2006, p. 79; our emphasis)

Do B&R presuppose that along with the well-known formal languages of classical, intuitionist and relevant logics, we should also consider "the formal language of conjunction, disjunction and negation"? Is this supposed to be a language that is somehow partially interpreted so that one of its constants is a negation, but not yet a negation of one of the specific logical systems? Should we see it as a language of "generic" propositional logic?

Be it as it may, we do not see any language of this kind and B&R don't provide any useful guidance. Thus we cannot but speculate. One option seems to be that what B&R have in mind when they speak about the common formal language is a logical language that employs some "minimal" connectives stripped off all the characteristics that determine whether the connective in question is one that fits into classical, intuitionist or other

logical theory. It is, however, hard to believe that they would be after such connectives and yet they wouldn't try to be more specific.[10]

It may seem that we (at least we logicians) do use terms like "negation" to refer to expressions (or concepts) that need not be any specific kinds of negations, yet are already negations. Hence, it may seem that there is something as a negation *per se*, a generic negation that is not yet classical or intuitionistic, etc., there *must* be something like this, for it is what the term – in the professional jargon of logicians – refers to. But in our view, this is futile.

In fact, we use such terms as "negation" in a rather promiscuous way: sometimes to refer to a specific, e.g., classical, negation, sometimes to some expression that we intend to treat as a negation (a means of denying), sometimes perhaps to a word or a construction that, in a natural language, functions as a paraphrase or a translation of English "not" (which, for the speakers of English, is the ultimate prototypical means of negation) and perhaps in other ways. Nevertheless, as far as we can see, none of the common uses of the term "negation" individually substantiates the conviction that the term also denotes a "generic" negation belonging to a generic logical language. Someone might suggest that all the uses taken together delineate the required generic notion of negation but it is, we suggest, an illusion which is due to our unconscious tendency to suppose that if we (seem to) understand each other when we use a certain term, there must be something that the term denotes.

9 A language beyond or behind natural and artificial languages?

Now we have reached the last of the alternatives we can think of – the alternative that schemas like (DN) or (EX) (or their instances), i.e. schemas that are suited to come out as valid from the perspective of one logical theory and as invalid from that of another one, belong neither to a natural nor to an artificial language. So is there any other language to which they can belong?

There is of course a long tradition of considering languages that are not produced by us, fallible humans, but which are, as it were, bestowed

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[10]To avoid misunderstanding: we do not claim that such a semi-interpreted language is impossible, and even not that it does not exist (cf. Punčochář, 2019, §3). We just claim that to assess whether it provides a satisfactory account of the connectives, it would have to be discussed in detail.

on us by a god, by nature itself, etc. Hence, the idea is that there is a language independent of us, one which we may only try to approximate by our imperfect languages. What kind of language might this be – where is it to be sought?

There are two prominent possibilities where such a language can reside. According to the first one, the language should be sought in human mind – not in an individual one, but as a kind of universal structure determining proper thought. Probably the most popular way of elaborating this idea leads us to consider the "language of thought" (LOT) – a specific kind of a structure that governs individual thought but transcends individual minds in the way the Husserlian *transcendental ego* does.

The idea of such a language is in many respects appealing – it seems quite plausible that when we talk to each other we convey thoughts of which we can think as of sentences of a (or the) LOT. But despite decades of philosophers musing about it,[11] it is not clear how to get hold of it, not only to learn about its properties, but even to see that it really exists. So we don't find any plausible substantiation for adoption of the idea that the relevant (instances of the) schemas like (DN) and (EX) should be seen as composed of items belonging to a LOT.

The other possibility is to situate the language in which (DN) and (EX) are articulated in a kind of Platonist heaven. This picture, unsurprisingly, does not satisfy us either. If we want to see mathematical objects and structures as residing in such a heaven, that is fair enough. However, such a heaven harbors all kinds of structures that can be seen as languages (or at least "languages") along with an immense number of structures that cannot be seen even as "languages" in scare quotes. How can we identify the language which hosts (DN) – the one to be used to express arguments and to be studied by logic?

In general, we are not convinced that we are justified in assuming the existence of a language beyond our natural languages and the artificial languages we have put together. Moreover, we don't believe that to elucidate the nature of our logic we *need* any such assumption.[12]

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[11] See especially (Fodor, 1975, 2008).
[12] See (Peregrin & Svoboda, 2021) for a thorough discussion.

10   No language, no logic

Let us briefly recapitulate how we reached what looks like a dead end regarding our considerations about what B&R have in mind when talking about negation (or conjunction, disjunction, implication, ...) belonging to a language common for CPL, IL, RL (and perhaps also for other logics). We have considered five different answers to the question that asks in what kind of "generic" language the schemas (DN) and (EX) might be articulated. We eliminated the first three of them as evidently implausible. The other two are different – they both seem to open some room for speculation, but B&R do not seem to give us any clear direction towards a plausible answer to our simple question, and this is frustrating.

What is left? Perhaps we overlooked some answer to our question. The other possibility is that our question cannot be (for some reason which escapes us) answered at all. We are, in fact, afraid that the last possibility is quite likely, as not one of the witty commentators on B&R's version of pluralism – to our knowledge – challenged their assumption that there is a common formal language which the different logics share. But we will not be satisfied until it is clear what kind of language it is[13].

We think it is good to keep things as simple and perspicuous as possible. This leads us to suggest that there are no good reasons to suppose that there are languages beyond our natural languages and the artificial languages we have created by our definitions and conventions. We thus propose to forget about them. And as there is no logic without a language, we assume that there is no logic beyond those embodied in our natural languages and in our artificial languages. As we have seen, we have good reasons to conclude that no such language is suited to harbor a single "genuine" logic and no one is suited to harbor a "generic" logic. We thus dare conclude that there are no such logics.

We do not want to claim that logicians don't face dilemmas which involve choice among versions of logical connectives. There are different kinds of situations in which a logician can vacillate whether certain types of arguments that appear to have the structure of, to stick to our examples, (DN) or (EX) should be classified as valid, i.e. whether, say, classical logic with its negation is the right choice or whether intuitionist logic (with its negation) is preferable

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[13]Recall the principle of tolerance: Everyone is at liberty to build his own form of language, all that is required is that "if he wishes to discuss it, he must state his methods clearly, and give syntactical rules instead of philosophical arguments". What we miss are syntactical rules specifying the (alleged) language in question.

in the given context. This is, we are convinced, the process of calibrating artificial languages *vis-à-vis* the natural one in order for the former to be usable for the purposes of regimentation and analysis of the latter.

B&R are open to accepting several mutually incompatible logical theories as true logics – logics that are guaranteed to be correct and among which we are free to choose. Others, who share their intuition that it is reasonable (or even necessary) to hypothesize "the formal language of conjunction, disjunction and negation" in which schemas like those on which we have focused are formulated, will have an urge to find out whether they are really valid or not. We, similarly as B&R, deny that there is a way to find out whether (DN) "really" holds or not.[14] However, what *we* deny is that there is (DN) as such (and that there is a formal language to which this (DN) as such belongs) – the only legitimately formed versions of (DN) are those belonging to a certain language, to a natural language or to a language of logic, be it that of classical logic, or intuitionistic logic, or some other kind of logic.

The point of logical studies is, we can say very crudely, *constructing* languages that allow us to formulate different meaningful versions of the pre-theoretical (DN) which English speakers identify as that which is common to the arguments like

(DNEng1)   *It is not the case that John is not smart*
John is smart

(DNEng2)   *It is not true that Trump is not egoistic*
Trump is egoistic

(DNEng3)   *It is not the case that mammals don't fly*
Mammals fly

(DNEng4)   *It is false that 224 is not divisible by 7*
224 is divisible by 7

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[14]Here we have focused on (DN) to keep things simple. A wide variety of illustrative examples arises in connection with the connective (or rather bunch of connectives) identified as *implication*. It is this connective which was at the center of the ancient Stoic debates that anticipated the modern disputes concerning (the potential) plurality of logics, as it turned out that the meaning of the phrase that characterizes the most common conditionals can be explicated in different ways, e.g., in the way favored by Chrisippus or the way favored by Philo (cf. Kneale & Kneale, 1962, Chapter 3).

Apparently, all these arguments have something in common. What they have in common is, we can say, their logical form. We try to materialize this abstract *e pluribus unum* as a formula. We may, from the beginning, want to restrict ourselves to the means of a specific logical system (like classical propositional logic), which suggests to us a concrete version of negation (while we can use more complex analyses to account for more complex kinds of negation – like Russell's celebrated analysis of "The king of France is not bald".)

Another possibility is that we do not restrict ourselves to one logic and, along with seeking the most suitable formula to materialize the logical form, we also seek the logic from which the formula can come. In this case we have, already at the beginning, more versions of negations to choose from.

11   Conclusion

What B&R claim is that there is no single, correct logic; there are, in fact, at least three. R&K oppose this by saying that if there are three, there is only one. We argue that this way of framing the pluralism/monism debate may be misleading. What we object to in B&R (and also in R&K, insofar as they adopt B&R's framework) is that:

a) There is no language in which we can formulate schemata like (DN) or (EX), of which we are to decide whether they are valid or not. (What we can do is to set out to explicate, e.g., English negation and decide whether it is classical, intuitionistic or whatever negation that is up to the task – but the pluralism presupposed by this enterprise is of the Carnapian variety.)

b) The very notion of correct or genuine logic is misleading (independently of whether one insists that there is only one or there are more). There are, we think, no criteria of correctness of an (alleged) system of logic beyond vague criteria of usefulness.[15]

We are convinced that attempts at pinpointing the correct logic (or for that matter more corrects logics) are futile. There is nothing like "genuine" logical constants and nothing like a "genuine" logical consequence. (In fact, B&R themselves come close to this standpoint when stating: "Logic, whatever it is, must be a tool useful for the analysis of the inferential relationships between premises and conclusions expressed in arguments we actually employ", Beall & Restall, 2006, p. 8.)

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[15]See (Peregrin & Svoboda, 2022) for a thorough discussion.

We see the project of B&R as opening an interesting vista on the problem of logical pluralism but in the end as somewhat misconceived. And we, for the same reasons, suggest that the debate on the collapse argument is misconceived too (though it also raises interesting issues). Both B&R's project and the debate are based on the idea that we can put aside the Carnapian pluralism and identify a true pluralism which is more authentic. The idea is, in our view, a seductive but potentially misleading illusion. In our view, we can form a Carnapian multitude of artificial languages that are meant to help us overcome (to some extent) the ambiguity and indistinctness of natural languages. There is, however, no artificial language that we could pick up and say: *"This is the language where the serious business of logic should be done. Let us find out whether it harbors only one logic, or more."*

What is closest to a "genuine" logic for a person is the logic implicit to the natural language that she uses to argue and reason. But this is a mere "protologic", which

i) is not articulate enough to act itself as logic in the sense adopted in contemporary philosophy; and

ii) may slightly vary among different natural languages (i.e. persons with different mother tongues can have slightly different negations, etc.).

Therefore, we must create our artificial languages as a means of its commonly acceptable regimentation in a process of zooming in on a reflective equilibrium: of turning the "protologic" into a (certain) logic proper. There are various ways of doing this, so here there is enough space for the Carnapian pluralism but not for a kind of "more genuine" pluralism.

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