4th Filomena Workshop
Philosophy, Logic and Analytic Metaphysics

❧ BOOK OF ABSTRACTS ☙

Bergen Logic Group,
Universitetet i Bergen

Grupo de Estudos em Lógica "Carolina Blasio",
Universidade Federal do Rio Grande do Norte

October 15-16, 2019, UiB

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Conference location:

Department of Philosophy
Sydnesplassen 12/13
5020 Bergen, Norway

The entrance is at the side of the building (///dads.slows.outlines). The workshop will take place at the meeting room on the ground floor.

No Metaphysical Disagreement Without Logical Incompatibility

Daniel Durante

Universidade Federal do Rio Grande do Norte

The purpose of this talk is to support the logical incompatibility of the opposing views as a criterion for characterizing disagreements as genuinely metaphysical. That is, I intend to argue that a specific dispute is a metaphysical disagreement only when the conflicting views are governed by different logics. If correct, this criterion would not only help to separate merely verbal from genuine metaphysical debates, but it also would ground an argument against deflationism, guaranteeing the substantiality and relevance of metaphysics. I intend to clarify the criterion, to present its basic foundations and commitments, to give some logical and metaphysical motivations for its adoption and some examples of its application.

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Anti-Exceptionalism and Metaphysics

Michaela Mcsweeney

Boston University

Anti-exceptionalists think some combination of the following things: logic isn't special, we don't know about it a priori, inquiry into logic is continuous with inquiry into everything else (and typically: specifically with scientific inquiry), and so on. I think anti-exceptionalism is true, but in this talk I'll explore some problems with how this thesis intersects with the metaphysics of logic, and specifically, whether a kind of robust metaphysical realism about logic causes problems for the anti-exceptionalist.

Beliefs Supporting Other Beliefs: Truthmaker Semantics for Logic-neutral Inference in Hyperintensional Webs of Belief

Peter Verdée

UCLouvain

We present a new way to look at the web of beliefs of an epistemic agent (e.g. a scientist or a group of scientists). The web of belief, a notion first introduced by Quine, is the holistic and interconnected collection of all beliefs of an agent, including more fundamental beliefs, such as logical and metaphysical principles. Some beliefs in this web are more central than others, which makes them harder to revise (since this requires revising a lot of beliefs depending on it), but in principle all elements of the web can be revised. In our approach we distinguish structural and objectual beliefs. The former determine the internal structure of descendent parts of the web itself (logical, epistemological and metaphysical beliefs) while the latter rather concern the external world, including abstract objects (scientific, political and ethical beliefs). This is not a sharp distinction; some beliefs may have both functions and the transition may be gradual.

We argue that the objectual beliefs in such a web should not be seen as sentential, in the sense of entities that depend on the specific way in which they are formulated, nor as propositional, in the traditional sense of a proposition being a set of possible worlds. The most important argument against the latter is the fact that agents do not have the competence to (and should not be expected to) recognize logically equivalent beliefs. Instead one could see believing as an attitude towards hyperintensions and towards relations between hyperintensions. Hyperintensions are ways to understand meanings in a more fine-grained manner than intensions, so that, unlike in the case of intensions, logically equivalent sentences do not necessarily express the same hyperintension. We offer a semantic approach to hyperintensions. For that purpose, we use a variant of truthmaker semantics as proposed by Kit Fine, in which hyperintensions are seen as sets of possible states. States are, much like situations, incomplete and possibly inconsistent parts of (im)possible worlds.

What is radically new in our approach is that the states are defined in a logic neutral way. Because logical beliefs are themselves part of the web of belief, the web of belief does not at all require sticking to classical logic, nor does it require the believer to single out one logic as the correct logic. Different logics may be acceptable in different reasoning contexts, as long as the logical beliefs clearly determine in each context which logic should be used. We devise a way to define an L-truthmaker semantics for each propositional Tarskian formal logic L (i.e. monotonic, transitive and reflexive formal consequence relations). In L-reasoning contexts, a belief is

identified with the set of states that, according to the L-truthmaker semantics, verify a specific sentence expressing the belief.

Within the set of objectual beliefs we distinguish restrictive beliefs from normal beliefs. Normal beliefs can be seen as (attitudes towards) sets of states, but restrictive beliefs are on top of that also (attitudes towards) relations among sets of states. They determine how the web holds the normal beliefs together. Concrete examples are the beliefs that are used as the axioms in axiomatically structured sets of beliefs, lawlike beliefs, and, more generally, general beliefs agents tend to explicitly remember instead of derive from other beliefs in concrete cases. The appropriate semantic relation for the latter is not the traditional relation of states verifying beliefs (as for normal beliefs). Rather, we define a new relation of "support" between sets of restrictive beliefs and sets of states, interpreted as follows: a set of restrictive beliefs supports a set of states iff whatever is made true by all members of the set of states can be (relevantly) L-inferred from the combination of "restrictive beliefs". A logic neutral non-transitive approach to relevant implication will be used to formally specify the relation of relevant L-inference.

The upshot of this new approach to the web of belief is that a formal method is proposed to individuate beliefs and provide the structure of the web, without imposing any specific logic that would hold for all webs of belief and that therefore would overrule or be incompatible with logical beliefs inside a web.

Logical Nihilism

Eno Agolli

University of Connecticut at Storrs

In this essay, I start by proposing a taxonomy of philosophical views of logic. According to it, we ought to distinguish, in a philosophical view, a metaphysical aspect, that is, whether and how many logical consequence relations govern natural language, and a semantic aspect, that is, whether and how many correct theoretical modellings there are of that (or those) consequence relation(s). This is a distinction that can be applied to monism, pluralism, and even nihilism, the view that there is no natural language consequence relation. I then advance three arguments in favor of metaphysical nihilism Russell (2018), as opposed to semantic nihilism (Cotnoir, 2018). The first argument is a reductio against pluralism: if, according to Beall and Restall (2006), consequence can be defined generally through the Tarski schema:

For all cases c, $p \models q$ iff if p is true in c then q must be true in c,

and different kinds of cases yield different consequence relations, then it is not unnatural to conclude that there may be no consequence relation that holds for absolutely all kinds of cases. The second argument is a slippery slope argument: if we come to favor weak logical systems, such as FDE (cf. Beall (2018)), thanks to the fact that they extend stronger systems while avoiding philosophical conundra such as the Liar or vagueness, then why not support even weaker systems? No persuasive case has been made against very weak systems (cf. Urquhart (1979)) which manage to extend classical logic, while being as topic-neutral and universal, or more, as FDE and its kin. Yet such logics border a minimalism that, in turn, borders nihilism itself. Finally, I consider purported counterexamples to logical laws so far thought immune from any reasonable doubt. One, against conjunction elimination, is due to Russell (2018). The other is mine and it is directed against disjunction introduction. Both arguments demonstrate that models sensitive to context can invalidate such laws. But then, if models can be found against any logical rule, it follows that there is no logic. Roughly, such a model can be obtained as follows:

Let $\mathcal{M} = \langle D, F \rangle$ and $F : P \times X \to \mathcal{P}(D)$, where P is the set of predicates in a first-order language, $\mathcal{P}(D)$ is the powerset of the domain, and X is some contextual feature of the predicate, e.g. its position relative to a connective.

I examine, finally, the possible reply (cf. Priest (2006); Estrada-González (2011)) that the conjunction or disjunction involved in these purported counterarguments is not the logical kind. I reply by showing that an appropriate understanding of the

standard truth-conditions for both connectives shows that they are: if we understand, say, disjunction as given by the truth conditions:

$F(\alpha \vee \beta) = 1$ iff $F(\alpha) = 1$ in all contexts c in argument a or $F(\beta) = 1$ in all contexts c in argument a.

Of course, I do not believe in nihilism. However, by rendering nihilism more palatable, I hope that this essay will help bring to light truths about the philosophical view of logic we do believe in.

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Metaphysical Grounding in Scientific Weak Structuralism (WS): a Non-Foundationalist Perspective

Silvia Bianchi

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The present paper starts from different alternatives to Metaphysical Foundationalism (MF) as recently discussed in Bliss & Priest (2018). My main objective is to introduce Weak Structuralism (WS) a further non-foundationalist option, with reference to the structuralist debate on the individuality of quantum particles. WS can be articulated in terms of a non-standard notion of grounding which, in accordance with Thompson (in Bliss & Priest (2018)), is strictly connected with (or just is) metaphysical explanation. On that view, I will delineate WS as a middle-ground approach which combines the explanatory advantages of non-foundationalism with some foundationalist intuitions.

According to MF, reality is hierarchically arranged with chains of entities ordered by anti-symmetric (AS), transitive (T) and anti-reflexive (AR) relations of ground/dependence terminating in something fundamental – the extendability assumption (everything depends upon everything else) is rejected (¬E). Bliss & Priest (2018) significantly reconsider MF through a variety of counter-examples: among them, the most significant positions are Coherentism (¬AS, T, ¬AR, E), according to which everything depends upon everything else, and Infinitism (AS, T, AR, E), which states that there are no foundational elements.

My intention is to introduce WS as form of Coherentism which corresponds to ¬AS, T, AR, E, where both ¬AS and E are weakly interpreted and AR can be accepted. While Coherentism accounts for the (symmetrical) interdependence among objects of the same structure, WS addresses the relation between objects and the structures they belong to in terms of a mutual (not exactly symmetric) grounding relation, in which two different grounding claims hold at the same time:

Objects Identity: physical objects are partially grounded for their identity (not for their existence) in the relevant structures. This allows understanding quantum particles as thin objects e.g. entities whose identity is entirely structural, but whose existence (that results in both structural and non-structural properties) is necessary to posit relations.

Structure Existence: physical structures are fully grounded for their existence (not for their identity) in individual objects, because structures require relata to stand in the relations. Each claim is asymmetrical on its own (weak ¬AS) and does not lead back to the starting point, so that there is not something that has to be

self-grounded (AR). A third grounding claim defines identity criteria for physical structures and clarifies WS's conception of E:

Structure Identity: physical structures are fully grounded for their identity in the correspondent mathematical structures which, in line with Wigglesworth (in Bliss & Priest (2018)), are individuated by their isomorphism classes.

The individuation of mathematical structures provides a bound from below for the notion of grounding: in WS, the identity of mathematical structures serves as a full ground for the identity of both physical structures and individual objects. This conception is consistent with WS's notion of extendability: the mutuality of the global picture ensures that objects and structures are not finitely grounded. However, the idea of a lower bound expresses a non-standard interpretation of the well- foundedness of grounding – one in which there is not a finite number of steps between a fact and what grounds it – thus making E definitely weaker than in Coherentism.

In a nutshell, on the one hand, WS favours a broader, non-foundationalist approach to explanation, where objects and structures are on a par. On the other hand, a foundationalist background can be preserved, so as to evade worrisome circularity objections that may affect other non-foundationalist views.

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Metaphysical Assumptions in Russell's Paradox

Ludovica Conti

Northwestern Philosophy Consortium, University of Pavia

In this talk I propose an argument in support of the thesis that classical first-order logic has an existential commitment in a non-empty domain of individual entities. This argument consists of an explanation of Russell's paradox, in Fregean context, as a consequence of the metaphysical import of classical first-order quantification and identity theory.

In the debate about this paradox, two main proposals can be identified: the *Cantorian* explanation[1] and the *Predicativist* one[2], which respectively blame the inconsistency on the impredicative specification of the second-order domain and on the cardinality of it.

My first aim consists in clarifying a third possible explanation - which we will call *Platonist* explanation - that blames the inconsistency on the implicit metaphysical assumptions of classical first-order logic: such existential import, harmless in the development of purely logical theories, become very insidious in abstractionist projects that combine a logical theory with some other extensionalist principles (like BLV). More in particular, this explanation identifies, as problematic condition of the paradox, a logical theorem (PLATO[3]: $\forall X \exists x (x = \epsilon X)$) that follows from the quantification and identity first-order theory[4] and asserts that the function denoted by symbol ϵ is total.

My second aim consists in exploring a class of solutions of the paradox that, closely following from the *Platonist* explanation, restrict the correlation between concepts and extensions and provide a zig zag theory[5]. This goal is obtained by substituting classical logic with a negative free logic and by moving the restrictions, traditionally imposed on the comprehension axiom schema, on the right-hand side of BLV.

I briefly compare three *free zig-zag* Fregean theories which share the axioms of non-inclusive negative free logic with identity[6] and differentiate from one other by imposing different restrictions on the right-hand side of BLV:

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[1]Cfr. Boolos (1987), Uzquiano (forthcoming)

[2]Cfr. Dummett (1991)

[3]Cfr. Cocchiarella (1992)

[4]PLATO: 1. $\forall x (x = x)$ [SOL$^=$]; 2. $\epsilon X = \epsilon X$ [1, SOL$^=$: $\forall x \phi(x) \to \phi(t/x)$]; 3. $\exists x (x = \epsilon X)$ [2, IE]; 4. $\forall X \exists x (x = \epsilon X)$ [3, IU]).

[5]Cfr. Boccuni (2010), Ferreira (2018).

[6]The language L_F of all these theories involves two sort of first-order quantifiers - a universal "non-restricted" quantifier (Π) and "restricted" one ($\forall$).

1. E-BLV: $\forall F \forall G(ext(F) = ext(G) \leftrightarrow \Pi x(Fx \leftrightarrow Gx) \wedge (E!ext(F) \wedge E!ext(G)))$;

2. P-BLV: $\forall F \forall G(ext(F) = ext(G) \leftrightarrow \Pi x(Fx \leftrightarrow Gx) \wedge (\phi(F) \wedge \phi(G))$ - where ϕ means "predicative";

3. T-BLV: $\forall F \forall G(ext(F) = ext(G) \leftrightarrow \Pi x(Fx \leftrightarrow Gx) \wedge (\phi(F) \wedge \phi(G))$ - where ϕ means "positive" (it is specified by a formula that contains second-order variables only in the scope of an even number of negation symbols).

The first theory (E-FL) only allows us to define the vocabulary of *Frege Arithmetic*; the second theory (P-FL) is not able to define the vocabulary of *Frege Arithmetic* but is strong enough to derive Peano Arithmetic[7]; the last theory (T-FL) allows us to define the vocabulary of *Frege Arithmetic* and is strong enough to derive a free version of *Frege's Theorem*.

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[7]Cfr. Boccuni (2010).

Could the Geach-Kaplan Sentence be Expressed in a First-Order Language?

João Daniel Dantas

UFRN

George Boolos (Boolos, 1984) argued that the so called Geach-Kaplan sentence, usually stated as "some critics admire only each other", could not be formalized in first-order logic, but only in second-order logic. Later he was criticised by Charles Parsons (Parsons, 1990) who argued that second-order logic is ontologically committed to the existence of properties (besides just individuals), and sentences like the Geach-Kaplan sentence did not necessarily implied quantifying over properties. This talk explores the possibility of expressing the Geach-Kaplan sentence in a first-order language. To support our argument we use the theory of generalized quantifiers as presented by Peters and Westertåhl (Peters & Westerståhl, 2006) and use the distinction between a first-order language and first-order logic. A first-order language is one in which the quantifiers range only over individual variables. In this sense, first-order logic is just one case of a logic with a first-order language, but one could add other quantifiers than the universal and existential to the first-order logic and still preserve a logic with a first-order language. We argue that, if we are correct and could interpret the Geach-Kaplan sentence in a logic with a generalized quantifier and a first-order language, then this could avoid Parsons's criticism.

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Logic as a Research Program

Evelyn Erickson

UFRN and UiB

Following the trend of anti-exceptionalism about logic, which proposes to treat logical theories akin to scientific theories, this paper elaborates how logic can be said to constitute a research program (or even more than one program), following the view of Lakatos (1978). This paper contributes to the current debate of whether logic is exceptional (in relation to the sciences) or not, and to what degree. If positive, this view provides the anti-exceptionalist project of equating logic and science much needed support.

Anti-exceptionalism about logic proposes that:

> Logic isn't special. Its theories are continuous with science; its method continuous with scientific method. Logic isn't a priori, nor are its truths analytic truths. Logical theories are revisable, and if they are revised, they are revised on the same grounds as scientific theories. (Hjortland, 2017, p.1)

While by now the above quote by Hjortland has received mostly very literal interpretations, it is possible to more charitably understand it in terms of claims about logic being analogous with science in the sense that both these areas are constituted by progressing research programs (Lakatos, 1978). Such a new reading might be something like this:

> Logic isn't special. Its research programs are as progressive as scientific research programs; its methodology is continuous with the methodology of research programs. (...) Logical theories are revisable, and if they are revised, they are revised based on the positive heuristic of the program they are a part of.

This reading is both plausible and if it stands up to scrutiny, provides the anti-exceptionalists support in their claim about the approximation of logic and science.

Without getting into que question of how to demarcate science (since this is a question that Lakatos himself thought beside the point, what is important instead is demarcating mature and immature science), the aim of the current paper is to evaluate whether logic fits the bill for a research program or not, and whether it constitutes mature science by Lakato's standards.

Lakatos proposes that a research program is constituted by a hard core of basic assumptions and an outer belt of auxiliary hypothesis, along with a heuristic which indicated which paths to further pursue and which to avoid. This paper will run through different ways that logic can cash out its claims and relies on the general account of the epistemology of logic given by Martin and Hjortland (2019).

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Beyond Logical Revision: Logical Fixed Points, Theoretical Indispensability and Explanatory Value

Christos Kyriacou

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Taking the cue from Frege's (1893) account of classical 'logical laws', the plan is to develop (vis-à-vis moral and epistemic fixed points) a Fregean account of some basic logical 'fixed points' such as the following:

- Logical Necessity: There is some rule of inference M such that there is no supposition r such that, if it were the case that r, M would not preserve truth. (cf. McFetridge (1990, 153); Leech (2015)).
- Minimal Principle of Contradiction: Not every statement is true (cf. Putnam (1978); Thompson (1981), Leech (2015, 13)).
- Not every statement is false.

In this paper, such logical laws are shown to be *theoretically indispensable* fixed points that are *constitutive* and *regulative* of rational logical thought. In this sense, they are framework-constitutive of logical thought and discourse and delimit what is logical and illogical.

To this effect, a reductio argument is given in order to show that denying such logical fixed points incurs very counterintuitive implications (self-defeat, universal skepticism et cetera) and, therefore, it is explanatorily fruitful to posit these logical fixed points as theoretically indispensable fixed points for rational logical discourse and practice (for work to this direction see Putnam (1978), Thompson (1981), McFetridge (1990), Hale (2002), Leech (2015, 13).

Postulating logical fixed points, just like moral and epistemic fixed points (cf. Cuneo and Shafer-Landau (2014), Audi (2015), Kyriacou (2017a, 2018, forthcoming)), would seem to be explanatorily fruitful.

In particular, it would help address various challenges against logical monism/realism (e.g. from remarkable coincidence) and also show why logical antirealism runs into serious problems, such as a version of the self-debunking problem (see Kyriacou (2016, 2017b, 2019a,b)). It would also help us offer a plausible answer to the skeptical 'why be logical?' question (vis-à-vis our answer to the parallel 'why be moral?' question, see Kyriacou (forthcoming)), which is constitutive of the broader skeptical 'why be rational?' question (cf. Kolodny (2005), Lord (2017)).

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Much Ado About the Many

Jonathan Mai

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English distinguishes between singular quantifiers like *a donkey* and plural quantifiers like *some donkeys*. Pluralists hold that plural quantifiers range in an unusual, irreducibly plural, way over common objects, namely individuals from first-order domains and not over set-like objects (sets, classes, sums). The favoured framework of pluralism is plural first-order logic, PFO, a formal theory formulated in a first-order language that is capable of expressing plural quantification. Pluralists argue for their position by claiming that PFO is both ontologically neutral and really logic. These properties are supposed to yield many important applications concerning second-order logic and set theory that alternative theories supposedly cannot deliver. In my talk I will show that there are serious reasons for rejecting at least the claim of ontological innocence. Doubt about innocence arises on account of the fact that, when properly spelled out, the PFO semantics for plural quantifiers is committed to set-like objects. The correctness of my worries presupposes the principle that for every plurality there is a coextensive set. Pluralists might reply that this principle leads straight to paradox and propose a limitation-of-size conception of sets instead. But I will argue that this notion of set draws arbitrary cardinal boundaries for sethood where there are none. The true culprit of the paradox is the assumption that every definite condition determines a plurality.

Logical Revision from an Anti-exceptionalist Point of View

Sanderson Molick

UFRN and RUB

Abductive models for logical theory choice are based on the idea of comparing logical theories by weighing theoretical virtues such as adequacy to the data, simplicity, strength, among others. Although these features are useful for the normative comparison of logical theories, they neglect other descriptive factors that play a role in the methodology of scientific theories, such as the underdetermination of theory by evidence and the adequate methodology for exploring the data at hand.

The purpose of the present contribution is to discuss the role of the underdetermination of the data within the process of revision of a logical theory. For this, I shall understand the concept of a logical theory not in the usual way as the set of inferences relative to an underlying notion of logical consequence, but rather as a broad structure that contains inferential and representational devices guided by a methodology for exploring the data at hand. I shall argue that from this conception of logical theory one is able to articulate inferential and representational aspects of a logical theory within the process of explaining a certain kind of data.

Based on the proposed notion of a logical theory, I explore a descriptive approach of the debate between defenders of classical logic and their paraconsistentist contenders. The purpose is to illustrate how the underdetermination of the evidence in this case leads to different methodologies for paraconsistent theories. The debate around paraconsistency is then understood as resulting from the question of what kind of data contradictions are. Moreover, if logical data are allowed to be explored through different guiding methodologies, then novel questions arise related to whether conjunctive or disjunctive kinds of explanation are produced by these theories.

Logical Realism and Logical Reliability

Brett Topey

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A Benacerraf–Field challenge is an argument intended to show that realist theories of a given domain of inquiry are untenable, on the grounds that those theories make it impossible to explain our reliability in that domain — this impossibility, so the argument goes, is undermining, in the sense that, insofar as a theory makes our reliability in some domain inexplicable, we must either reject that theory or give up our beliefs in that domain. And versions of this challenge have been taken to be pressing in a wide variety of domains, including logic — as Joshua Schechter (2013) has suggested, for instance, the fact that the logical facts are (given realism) objective facts not learned via perception is enough to get a logical version of the challenge going. Field (2005), though, doesn't agree: he takes the mathematical version of the challenge to arise from the fact that, according to platonism, our mathematical beliefs would be the same even if the mathematical facts were different, and he suggests that we can't evaluate claims about what's the case in the nearest worlds where the logical facts are different, since doing so would require reasoning in an altered logic. And if that's right, the challenge cannot arise for logic at all.

I show here that Field's claim isn't correct: it's possible, by using resources that Field requires for independent reasons, to evaluate claims about what's the case in the nearest worlds where the logical facts are different, and to do so without reasoning in an altered logic. Note first that, insofar as the challenge arises for mathematical platonism, as Field thinks it does, we're at least able to evaluate claims about what would be the case were the mathematical facts different, and so we must have a semantics on which counterpossibles are nonvacuous — i.e., a semantics that includes impossible worlds. And on the most natural approach to impossible worlds — something broadly similar to the modest approach advocated by Daniel Nolan (1997) — they're entities of just the same sort as possible worlds except that the set of propositions true at a given impossible world is not subject to consistency constraints. But on such an approach, no reasoning in an altered logic is needed to determine what's the case in a given world where the logical facts are different—what's needed is only to examine the set of propositions true at at that world.

Determining which worlds where the logical facts are different are most similar to the actual world is, of course, going to be tricky. But I provide reason to believe that we have enough of a grasp of the relevant sort of similarity to determine that it's nonvacuously true that our logical beliefs would be the same even if the logical

facts were different, in which case the Benacerraf–Field challenge is just as pressing for logical realism as it is for mathematical platonism.

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Cognitive Phenomenology and the Epistemology of Logic

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Proponents of *cognitive phenomenology* (Strawson (2011), Siewert (1998), Horgan and Tienson (2002), Pitt (2004); for intro, see Bayne and Montague (2011)) submit that cognitive states exhibit a *sui generis* phenomenal character that is proprietary and individuative of their content, and that is irreducible to, and independent of, sensory phenomenology. Smithies (2013, 774) claims that paradigmatic examples of CP include "recognizing that the conclusion of an argument follows from its premises". More recently Chudnoff (2011, 2013, 2015, 2019) has argued that the phenomenal character of basic logical beliefs plays a role in their epistemic justification. Here I claim that CP cannot have this epistemological significance; I then sketch how CP might contribute to the epistemology of logic.

Chudnoff's *phenomenal dogmatism* is the view that *(i)* if it intuitively seems to you that p, then you have a *prima facie* justification for believing that p, and *(ii)* intuitions justify us in believing their contents in virtue of their phenomenal character (cp. (Chudnoff, 2011, 313-5)). I will briefly consider the *pro*s and *con*s of adopting dogmatism in the philosophy of logic. The cost of adopting dogmatism is that it is committed to CP, and, more precisely, to the claim that logical beliefs exhibit a distinctive phenomenological character. Even if CP is controversial (Carruthers and Veillet, 2011; Prinz, 2011; Tye, 2011), invoking cognitive phenomenology in order to explain logical knowledge is not *ad hoc*. At the same time, logical laws cannot be *deductively* justified, since any such justification would involve those logical principles themselves, and it would therefore be circular (Carroll, 1895; Wright, 2004, 195). However, the logical dogmatists might argue that CP *immediately* justifies basic logical beliefs, similarly to what dogmatists claim with respect to sensory experience (cp. (Pryor, 2000)). More precisely, the content of the logical beliefs that exhibit the relevant phenomenology might involve *(i)* logical *rules*, e.g. *modus ponens*, *(ii)* *schematic principles* corresponding to those rules, or *(iii)* *instances* thereof. I will argue that empirical evidence support *(c)*. The dogmatists might therefore claim that *(1)* particular instances of general logical laws are justified by intuition, and *(2)* logical laws themselves are justified *inductively* on the basis of those instances.

A more threatening version of the circularity objection requires that the dogmatists should argue that CP is also *cognitive impenetrable*, that is, viz. that it is (at least nomologically) impossible that it intuitively seems to you that p *because* you have the belief that p (for a parallelism with sensory phenomenology, cp. (Fodor, 1975) and (Pylyshyn, 1999)). Suppose indeed that *modus ponens* intuitively seems

valid to S, but that the reason why *modus ponens* seems valid to S is that S believes that *modus ponens* is valid, and, at the same time, that S believes that *MPP* is valid because *MPP* intuitively seems valid to her. S's justification would be circular, even though the intuition that *MPP* is valid does not *deductively* justifies S's belief that *MPP* is valid (for a parallelism with sensory phenomenology, cp. (Siegel, 2012)). I will argue that the *persistence of logical fallacies* speaks however in favour of the cognitive impenetrability of cognitive phenomenology.

I will finally sketch how CP might contribute to the epistemology of logic. Priest (2016, 354-5) submits that a logical theory must systematize and account for our intuitions about validity. However, Priest makes this remark in the spirit of a form of *anti-exceptionalism about logic* (cf. (Hjortland, 2017)). According to anti-exceptionalists (Finn, 2019; Hjortland, 2017; Priest, 2016; Read, 2019; Russell, 2015; Williamson, 2017), the choice between rival logical theories should be carried out by means of an *abductive* methodology, and, more precisely, on the basis of a set of familiar criteria in the philosophy of science, e.g. simplicity, strength, adequacy to the data, explanatory power, etc. In this respect, "logic isn't special. Its theories are continuous with science; its method continuous with scientific method" (Hjortland, 2017, 631). In particular, intuitions about validity might be overridden by other theoretical virtues. Therefore, anti-exceptionalists can accept that (1) the content of basic logical beliefs exhibits a peculiar phenomenal character, and also that (2) logical phenomenology has an epistemic significance, while they deny the dogmatist's claim that (3) logical phenomenology provides a *sui generis* and "special" kind of (*a priori*) logical evidence.

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