

BW7

Paradoxes of Truth and Denotation

Seventh Barcelona Workshop on Issues in the Theory of Reference

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Invited Speakers

Anil Gupta (U. Pittsburgh)

Conditionals in Theories of Truth.

I will compare the treatment of conditionals in two accounts of truth, revision theory and Hartry Field's recent proposal.

Hartry Field (New York U.)

A Problem for Naive Truth Theories.

By a naive truth theory I mean a theory that takes "True(<A>)" to be intersubstitutable with A (salve assertability) in all non-opaque contexts. Such theories come in two varieties, paraconsistent dialethic and paracomplete. For both there is a largely-neglected problem: finding an adequate treatment of restricted quantification. I'll discuss the problem and explain why I think there's more prospect for adequate treatment in paracomplete versions of naive truth than in paraconsistent dialethic versions.

Graham Priest (U. Melbourne/CUNY/St. Andrews)

Read on Bradwardine on the Liar.

In the last few years, Stephen Read has published a series of influential papers resurrecting, articulating, and defending, a solution to the Liar paradox first proposed by Thomas Bradwardine in the 14th Century. In this paper I will look at some problems which arise when one tries to apply such a solution to other paradoxes in the same family; notably, the paradoxes of denotation.

Michael Glanzberg (U. California, Davis)

Complexity and Hierarchy in Truth Predicates.

Many approaches to the paradoxes wind up endorsing highly complex truth predicates. Such predicates are often complex by recursion-theoretic measures, and in some cases, also involve stratification of truth into distinct levels in a hierarchy. This paper explores the role of such complexity in our understanding of the nature of truth, its expressive role, and its role in semantics. The paper defends both complexity and stratification as fundamental aspects of truth (and some related notions). Along the way, it also argues that such complex truth predicates fare well compared to simpler truth predicates paired with alternative notions like determinateness.

Accepted Contributions

Julien Murzi (U. Munich) & **J. C. Beall** (U. Connecticut).

Two flavors of Curry paradox

In this paper, we distinguish two versions of curry paradox: *c-curry*, the standard *conditional*-curry paradox, and *v-curry*, a *validity*-involving version of curry paradox that isn't automatically solved by solving *c-curry*. A unified treatment of curry paradox thus calls for a unified treatment of both *c-curry* and *v-curry*. If, as is often thought, *c-curry* paradox is to be solved via non-classical logic, then *v-curry* may require a lesson about the structure—indeed, the *substructure*—of the validity relation itself.

Rafal Urbaniak (U. Ghent/U. Gdansk).

A semantical approach to Yablo sentences.

Leitgeb ('What is a self-referential sentence? critical remarks on the alleged (non-)circularity of Yablo's paradox', *Logique & Analyse*, 177-178, 2002, 3– 14) objects against the clarity of the debate about the alleged (non-)circularity of Yablo's paradox, arguing that there actually are at least two notions of self-reference and circularity at play. One, on which Yablo's paradox is not circular, is defined via the reference of the constituents of a sentence, and another, on which the paradox is circular, is defined via syntactic mappings and fixed points. More importantly, Leitgeb argues that both definitions aren't satisfactory and that before we can undertake a serious debate about the circularity of Yablo's paradox we first need to clarify the notions involved. I will focus on Leitgeb's criticism of the first definition and will argue that the problems arise not as much on the level of our definition of circularity as on the level of our definition of reference of sentences (aboutness). Leitgeb's main worry is the failure of a requirement called 'Equivalence Condition', which says that if a formula is self-referential, any formula logically equivalent to it should also be self-referential. I will argue that preservation under logical equivalence is unreasonable with respect to self-reference, but is indeed needed with respect to aboutness. Since Leitgeb's own tentative notion of aboutness doesn't satisfy the requirement, I will suggest another approach which fixes this problem. I also explain why the intuitions that circularity should satisfy the equivalence condition are misled. Next, I argue that the new notion of aboutness is not susceptible to slingshot arguments. Finally, I compare it with Goodman's notion of absolute aboutness, emphasizing those features of Goodman's approach that make his notion inapplicable in the present discussion.

Pablo Cobreros (U. Navarra); **Paul Egré** (I. Jean-Nicod); **David Ripley** (I. Jean-Nicod/U. Melbourne) & **Robert van Rooij** (U. Amsterdam).

Sorites and the Liar: towards a superclassical solution

Classical logic is often taken as a default assumption. This default assumption, however, seems to be revoked in the case of paradoxes such as the sorites and the liar. A common strategy to solve these paradoxes is to weaken classical logic in one or another form, as in the case of paracomplete and paraconsistent logics. In a standard paracomplete solution to the sorites, the least number principle is not generally valid; in the case of the liar, excluded middle is not

valid. In a standard paraconsistent solution to the sorites, on the other hand, *modus ponens* is not valid; in the case of the liar, the solution restricts the applicability of *ex contradictione quodlibet*. Our strategy, by contrast, consists in a strengthening of classical logic. In our proposal we make use of a logic that is at least as strong as classical logic: it coincides with classical logic for the classical vocabulary but is stronger for a suitably expanded language. In this sense, our approach can be appropriately called ‘superclassical’.

Our proposal to solve the liar paradox is inspired in our previous work on vagueness (henceforth ‘TCS’. Cobreros, P. Egré, P., Ripley, D. and Rooij, R. van, ‘Tolerant, Classical, Strict’, *Journal of Philosophical Logic*, forthcoming). In TCS we develop a semantics for a first-order language in which the interpretation of vague predicates is sensitive to indifference relations associated to those predicates. The semantics allows for three distinct notions of satisfaction: tolerant, classical and strict. In that paper we investigate (among other things) the consequence relations that we might define making use of these three notions of satisfaction. Crucially, we allow for *mixed* forms of logical consequence, in which the premises and conclusions of an argument might be subject to different standards of satisfaction. It turns out that our preferred solution to the sorites makes use of one of these notions of mixed consequence, which is superclassical in the sense pointed out above. In this talk we will review in the first place our solution to the sorites and then discuss how the same framework can be used to provide a solution to the liar.

Christopher Gauker (U. Cincinnati).

Why we cannot talk about the context we are in.

Sentence truth, it is commonly agreed, is relative to context. For example, the truth of a quantified sentence is relative to a contextually determined domain of discourse. Similarly, the truth of a sentence that quantifies over contexts (such as “The sentence *S* is true in every context”) is relative to a context that contains a domain of contexts. A given utterance of a sentence is true if and only if the sentence uttered is true relative to the context that pertains to that utterance. But it is reasonable to assume that contexts that pertain to actual utterances are well-founded. Consequently, we cannot suppose that the domain of contexts for the context that pertains to an utterance includes that very context. In other words, we cannot talk about the context we are in. This has important consequences in the study of semantic paradoxes, because it means that sentences such as $b = “b$ is not true in any context” do not imply contradictions in the usual paradoxical way.

Riccardo Bruni (Scuola Normale Superiore).

Analytic calculi for circular concepts by finite revision.

In their book on the Revision Theory of Truth, A. Gupta and N. Belnap present calculi which are sound and complete with respect to a revision--theoretic semantics where no transfinite iteration is considered. I introduce Hilbert--style, as well as Gentzen--style calculi corresponding to Gupta and Belnap's formal systems. Moreover, the sequent calculi are shown to be analytic by means of a syntactic argument of cut--elimination. As a consequence, they are consistent. The value of my contribution is then evaluated in the light of perspective goals and potential applications.

Bradey Armour-Garb (U. Albany) & **James A. Woodbridge** (U. Nevada).

Semantic Defectiveness and the Liar.

In this talk, we do two things. First, we provide some support for a version of the *meaningless strategy* approach to the Liar Paradox and, second, we go on to provide, albeit tentatively, a novel solution to that paradox, a *semantic*, rather than a *logical*, solution.

Shawn Standefer (U. Pittsburgh).

On Field's Logic for Truth.

In *Saving Truth from Paradox*, Field introduces a novel conditional to augment strong Kleene logic. The resulting theory of truth is one that has both a transparent truth predicate and asserts all the T-sentences.

The conditional is central to Field's approach to truth and his deflationary project. Additionally, he proposes that strong Kleene logic augmented with his conditional can serve as a general, all-purpose logic. We cannot evaluate this claim without a firmer grasp of what the logic of the conditional is.

The conditional is introduced via a revision operator. I investigate properties of revision sequences and present some work on axiomatizing different aspects of these sequences. I close by indicating some of the difficulties for axiomatizing and possible philosophical consequences.

David Liggins (U. Manchester).

Deflationism, alethic nihilism, and semantic paradox.

In this paper I introduce a new account of truth, called 'alethic nihilism', and argue that it offers a better resolution of the Liar paradox, and other semantic paradoxes, than deflationism.

I begin by defining 'deflationism' and reviewing the options for a deflationist response to the Liar. I then introduce alethic nihilism, and then show that alethic nihilism offers an attractive classical resolution of the Liar. In particular, it offers a principled reason for denying the relevant T-biconditional. I note that nihilism entails similarly attractive responses to other semantic paradoxes that rely on T-biconditionals (e.g. Curry's paradox and the propositional version of Yablo's paradox). And I point out that alethic nihilism can also explain why the Liar, and other semantic paradoxes, seem paradoxical—that is, why we find the paradoxical reasoning attractive.

Elia Zardini (U. Aberdeen).

Naive Truth and Naive Logical Properties.

A unified answer is offered to two distinct fundamental questions: whether a nonclassical solution to the semantic paradoxes can be extended to the paradoxes of logical properties and whether a non-classical logic should be expressed in a nonclassical metalanguage. The paper starts by reviewing a budget of paradoxes involving the logical properties of validity, inconsistency and consistency. The author's favoured substructural approach to naive truth is

then presented and it is explained how that approach can be extended in a very natural way so as to accommodate for the intuitions driving a certain paradox of validity. However, two individually decisive reasons are later provided for thinking that no approach adopting a classical metalanguage can really accommodate for all the intuitions driving the paradoxes of logical properties. Consequently, the paper undertakes the task to do better, and, building on the system already developed, introduces a theory in a non-classical metalanguage that expresses an adequate logic of naive truth and of some naive logical properties.

Graham Leach-Krouse (U. Notre Dame).

Solovay's Theorem and the Unexpected Examination.

I discuss two versions of the “unexpected examination paradox”, and display mathematically rich formalizations of the paradoxes in the setting of Peano arithmetic. I contend that the fruitful way that the informal reasoning behind the unexpected examination can be projected into a formal setting furnishes us with a new counterexample to Ramsey's thesis, Frank Ramsey's claim that a. there is a fundamental distinction between logical paradoxes, on the one hand, and linguistic and epistemic paradoxes, on the other, and b. while the former are mathematically interesting, the latter are due to “faulty ideas concerning thought and language”, and therefore mathematically inert. I argue, additionally that this new counterexample also shows us how to diagnose Ramsey's oversight.

I begin, in the first section, with the classical paradox, and show how a straightforward formalization of the paradoxical reasoning leads naturally to a proof of Gödel's second incompleteness theorem. In the second section, I introduce a generalization of the classical paradox which abstracts away from the restriction to a linear ordering of the dates. I go on to show how the corresponding formalization of the more general paradox gives rise to a system of interrelated extensions of Peano arithmetic. In the third section, I argue for the mathematical interest of these extensions by using them to prove Solovay's arithmetical completeness theorem in provability logic.

I conclude that, in addition to its inherent interest and novelty, this particular counterexample to Ramsey's thesis shows why Ramsey was wrong to think that linguistic and epistemic paradoxes are mathematically inert. Faulty concepts are not the issue. Instead, it is the rich inferential articulation of our epistemic concepts that gives them both their mathematical interest and their occasionally paradoxical character, as our applications show.

Alexis Burgess (U. Stanford).

Coping with Contradiction.

Following John Barker, I'll use the phrase 'the inconsistency theory of truth', for the Tarskian view that the paradoxes arise and exhumed themselves to exact their revenge because our ordinary concept of truth is inconsistent, in the sense that some unrestricted version of the T scheme is somehow semantically "built into" natural-language truth predicates. Some inconsistency theorists (e.g., Scharp) recommend that we revise or replace our incoherent notion of truth for theoretical purposes. Others (e.g., Patterson) think we needn't. Matti Eklund, who deserves much of the credit for putting the inconsistency theory back on the menu of respectable responses to the paradoxes, has said he would like to remain neutral on the revision issue; he's much more interested in how the extensions of inconsistent expressions get settled. But the notion of extension is just as paradoxical as the notion of truth. The answer to the question of interest to Eklund may therefore depend on whether

these alethic notions ought to be replaced. To complicate matters further, Eklund's own answer to the question of interest is designed to secure non-trivial extensions for inconsistent expressions, which would seem to obviate the need for revision or replacement. On the basis of these observations, I argue that Eklund is implicitly committed to retaining our ordinary, incoherent notion of truth, and that the best justification for retention he can offer the revisionist is circular.

Colin Johnston (U. Stirling).

Conflicting rules and paradox.

This paper seeks to explain various paradoxes as cases of conflicting rules. In particular, the ambition is to outline a new perspective on and response to the Liar – though it will take us a while to get that far. We begin in section one with an account of simple rule confliction. Section two then brings this account to bear on a paradox – the Secretary Liberation Paradox – which is readily seen to involve conflicting rules. Finally in section three I suggest that the Liar can also be seen as a case of rule confliction, and outline how that perspective provides for Liar arguments to be blocked.

Alexandre Billon (U. Lille III).

A relativist solutions to the semantic paradoxes

I develop a new solution to the semantic paradoxes. This solution is relativist. It claims that the truth of the problematic sentence uses is relative to the context in which they are assessed. This solution has many advantages over its rivals. It is conservative in that it saves the equivalence schema and, roughly, classical logic. It is very natural. It is immune to revenge problems and it can very well, and very simply, account for close cousins of the classical paradoxical statements like the Truth-Teller or the Open-Pair.