# THIRD NEW COLLEGE LOGIC MEETING

22, 23 and 25 April 2012

Noel Salter Room
New College

final version

The conference is supported by the UK-Latin America and the Caribbean Link Programme of the British Academy.

## Monday 23 April

16:30-17:15 Greg Restall · Assertion, Denial and Paraconsistent Theories

17:30-18:15 Leon Horsten · Conditionals for Kripkean Theories of Truth

## Tuesday 24 April

11:00-11:45 Volker Halbach · Axiomatic and Semantic Theories of Truth

12:00-12:45 Ignacio Ojea · At risk for paradox

lunch

14:00-14:45 Graham Leigh · Capturing stable truth

15:00-15:45 Diego Tajer · Necessitation and Fitch's paradox

16:15-17:00 Lucas Rosenblatt · The Knowability Paradox and the syntactic type-theoretic approach

17:15-18:00 James Studd · The Iterative Conception of Set: A (bi-)modal axiomatisation

## Wednesday 25 April

11:00-11:45 Carlo Nicolai · Truth, Syntax, Conservativeness

12:00-12:45 Øystein Linnebo · How to prove soundness

lunch

13:45-14:30 Federico Pailos · Circularity and Paradox in Cook's proposal

14:45-15:30 Kentaro Fujimoto · Arguing for axiomatic theories of truth

15:45-16:30 Eduardo Barrio and Lavinia Picollo · The Revision Theory of Truth, FS and $\omega$-inconsistency

Greg Restall (Melbourne)
*Assertion, Denial and Paraconsistent Theories*

In this paper I urge friends of truth-value gaps and truth-value gluts – proponents of paracomplete and paraconsistent logics – to consider not only theories (sets of sentences, closed under logical consequence), but *pairs* of sets of sentences, or what I call 'bitheories.' A bitheory records not only of what is ruled *in*, but also what is ruled *out*.

In the talk, I will explain the connection between bitheories, sequents, and the speech acts of assertion and denial. I illustrate the usefulness of bitheories by showing how they make available a technique for characterising different theories while abstracting away from logical vocabulary such as connectives or quantifiers—thereby making theoretical commitments independent of the choice of this or that particular non-classical logic.

One upshot will be new forms of the paradoxes of self reference which abstract away from logical vocabulary, and which are more vicious to non-classical theories of classes and truth.

Leon Horsten (Bristol)
*Conditionals for Kripkean Theories of Truth*

Volker Halbach (Oxford)
*Axiomatic and Semantic Theories of Truth*

I'll discuss the relationships bet axiomatic and semantic approaches to truth. It is often claimed that a certain axiomatic theory 'captures' a semantic construction. For instance, the Kripke–Feferman theory is claimed to capture Kripke's fixed-point theory with Strong–Kleene logic. I'll investigate how this claims can be substantiated.

Ignacio Ojea (uba – conicet – gaf)

*At risk for paradox*

In this paper I develop a formal strategy to distinguish between sentences at risk for paradox and sentences at risk for ungroundedness; moreover, I show how to distinguish paradoxicality and ungroundedness from circularity. The formal apparatus relies on a particular elaboration of the concept of truthmaker, as a result of this, we obtain a better understanding of phenomena that have so far resisted clarification in the standard literature on paradoxes.

Graham Leigh (Oxford)

*Capturing Stable Truth*

In this talk we investigate the degree to which axiomatic theories of truth can be seen to capture the set of stable truths of the transfinite revision hierarchy.

Diego Tajer (uba – conicet – gaf)

*Necessitation and Fitch's paradox*

Generally, a proof of Fitch's paradox makes use of the Modal Necessitation rule. In this paper, I develop a modal epistemic theory in which that rule fails and the paradox can be avoided. The main rationale for that failure is that the principles of knowledge are empirical, not conceptual nor logical. That raises some questions about the relation between epistemic logic and real (i.e. non-ideal) agents. I hold that since we are giving an empirical theory of knowledge, epistemic closure should also fail. Finally, I argue that this theory represents the anti-realist epistemology correctly, by offering and defending a metaphysical reading of the knowability principle which is not tied to empirical knowers.

Lucas Rosenblatt (uba – conicet – gaf)

*The Knowability Paradox and the syntactic type-theoretic approach*

In a recent paper, Alexander Paseau has argued that the Knowability Paradox can be blocked if the Knowability Principle (the claim the every truth is knowable) is typed. Volker Halbach has replied by arguing that if knowledge and necessity (possibility) are treated as predicates, even a typed version of the Knowability Principle leads to an inconsistency. Paseau has responded that the Knowability Principle and other modal principles can be restricted in a stronger way which prevents them from generating new paradoxes. In this paper I want to argue against the type-theoretic approach to the Knowability Paradox and especially against Paseau's proposal. First, I will claim that the problem pointed out by Halbach cannot be satisfactorily dealt with by showing that an inconsistency is still derivable without the Knowability Principle. Secondly, I will argue that applying a stronger type restriction on the Knowability Principle does not work either. An inconsistency is still obtainable as long as certain assumptions are made regarding the possibility of quantifying over knowledge types. Finally, I will consider the prospect of typing the possibility and necessity predicates. I will claim that there are no non-ad hoc reasons for typing these predicates.

James Studd (Oxford)

*The Iterative Conception of Set: A (bi-)modal axiomatisation*

The use of tensed language and the metaphor of set 'formation' found in informal descriptions of the iterative conception of set are seldom taken at all seriously. Both are eliminated in the nonmodal stage theories that formalise this account. To avoid the paradoxes, such accounts deny the maximality thesis, the compelling thesis that any sets can form a set. This paper seeks to save the maximality thesis by taking the tense more seriously than has been customary (although not literally). A modal stage theory, MST, is developed in a bimodal language, governed by a tenselike logic. Such

a language permits a very natural axiomatisation of the iterative conception, which upholds the maximality thesis. It is shown that MST interprets a natural extension of Zermelo set theory less the axiom of infinity and, when extended with a further axiom concerning the extent of the hierarchy, interprets Zermelo-Fraenkel set theory.

Carlo Nicolai (Oxford)

*Truth, Syntax, Conservativeness*

Deflationism holds that truth is a metaphysically weak notion. Horsten, Shapiro and Ketland pointed out that the non conservativeness of the full compositional theory of truth CT over Peano Arithmetic clashes with this alleged weakness. Field's vindication of deflationism was based on the attribution of the increased mathematical power to the arithmetical nature of the extended induction axioms of CT rather than to the truth-theoretic character of compositional principles governing the behaviour of the truth predicate. This line of defense seems to face several problems. In the present work we discuss a possible rescue strategy for Field's acceptance of the conservativeness requirement. We resort to an unconventional approach to the construction of theories of truth, already present in Tarski's seminal work on truth and recently revived by Richard Heck. We offer examples of compositional (typed) theories of truth in which the theory of truth-bearers (syntax) is disjoint from the respective set theoretic or arithmetical object theory. The resulting theories of truth are still conservative over the mathematical object theories, although new syntactic consequences can be obtained.

Øystein Linnebo (Birkbeck)

*How to prove soundness*

Hartry Field has recently challenged the significance of the familiar soundness theorem for classical first-order logic and related systems. Properly understood, soundness requires that every theorem of the relevant logic be true on all interpretations of the language, not just on interpretations corresponding to set-sized models. And thus understood, Field contends, soundness is unprovable. This paper is an attempt to answer Field's challenge. An acceptable formulation of soundness is provided and proved. The proof bypasses the problem identified by Field by distinguishing sharply between the soundness claim proper and the question of what interpretations there are.

Federico Pailos (uba – conicet – gaf)

*Circularity and Paradox in Cook's proposal*

There are versions of Yablo's paradox that are truly paradoxical and genuinely non- circular, and Cook's version of Yablo's paradox is one of them. On the one hand, in order for Cook's version to be paradoxical, the principles that lead to contradiction, or to the impossibility to give it a stable assignment of truth values, must be acceptable. I will explore two ways to argue that they are not. I will conclude that these attempts lead to a very narrow conception of a theory of truth, or to deny that a paradigmatic case of paradox, such as the 'Old-Fashioned Liar', is truly paradoxical. On the other hand, I will present three plausible ways to specify the circular character of a set of statements: the fixed-point criteria (Cook's proposal), the structural collapse approach, and the self- referentiality approach. And Cook's version of Yablo's list is not circular in neither of them.

Kentaro Fujimoto (Oxford)

*Arguing for axiomatic theories of truth*

Visser once described formal theory of truth as 'vast but scattered, repetitive, and disconnected' two decades ago. The subject has developed rapidly since then, but the situation still more or less remains as Visser described it. In this talk, I will try to give a general and comprehensive discussion about how formal theory of truth should be formulated in certain special settings, and then argue for the sake of the axiomatic approach against the other approaches.

Eduardo Barrio & Lavinia Picollo (uba – conicet – gaf)

*The Revision Theory of Truth, FS and ω-inconsistency*

In this paper we show that it is not a good idea to have a consistent but omega- inconsistent theory of truth. In order to bring out this point, we consider the most important cases of theories of arithmetical truth that are $\omega$-inconsistent: the revision system of nearly stable truth T♯ and the classical symmetric theory FS. Theories of truth that are $\omega$-inconsistent do not have standard model. Briefly, we exhibit some conceptual problems that arise as a consequence of this deficiency and show some technical results that support our position.