# Workshop on Philosophy, Logic, and Analytical Metaphysics

Daniel Durante,
Evelyn Erickson,
João Daniel Dantas,
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Samir Gorski,
Sanderson Molick (Org.)

Book of Abstracts (3rd FILOMENA workshop)
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Department of Philosophy
UFRN, Natal - RN, Brazil

# Contents

# 3rd FILOMENA workshop: Philosophy, Logic and Analytical Metaphysics

The 3rd FILOMENA Workshop (FIlosofia, LOgica e MEtafísica aNAlítica), promoted by the Group on Logic and Formal Philosophy from UFRN, has the purpose of gathering logicians working at the intersection of Logic and Metaphysics through the application of formal methods in Philosophy. It takes place from August 21st to 23rd of 2017.

The third edition of the FILOMENA Workshop has the purpose of gathering logicians working at the intersection of Logic and Metaphysics, through the application of formal methods in Philosophy. Logic, a branch of Philosophy on its own, has outgrown its original purposes and found connections with other areas of Philosophy, such as Philosophy of Language, Philosophy of Mathematics, Philosophy of Science and Philosophy of Mind. Logic has proved to be a powerful tool for analyzing different philosophical theories, as well as their foundations and implications; moreover, the birth and development of non-classical logics has expanded its domain of application much beyond the dreams of its progenitors. **Topics of interest** for our Workshop include, but are not limited to:

- Modal metaphysics
- Reference and descriptions
- Philosophical topics in non-classical logics
- Truth-values
- Logical consequence
- Logical pluralism x logical monism
- Logic and metaphysical neutrality
- Paradoxes

Daniel Durante, Evelyn Erickson, João Daniel Dantas,
Patrick Terrematte, Samir Gorski and Sanderson Molick

# Logical Realisms

Tuomas E. Tahko

University of Helsinki
Finland

**Abstract**. Logical realism is a view about the metaphysical status of logic, but it comes in many forms. Common to most if not all the views captured by the label "logical realism" is that logical facts are mind- and language-independent. But that does not entail anything about the nature of logical facts or about our epistemic access to them. Another open question is whether logical realism entails logical monism, the view that there is one true logic, or whether it is compatible with some forms of logical pluralism. The goal of this paper is to outline and systematize the different ways that logical realism could be entertained and to examine some of the challenges that these views face.

# A semantical view of Linear Nested Systems

Elaine Pimentel

Departamento de Matemática, UFRN
Brazil

**Abstract**. Sequent systems usually do not reflect explicitly semantical properties. Hence, proving soundness and completeness of a sequent system w.r.t. its semantics can be cumbersome.

In this work we explore the connections between linear nested sequent calculi (LNS) and semantics of various logics.

Commencing with intuitionistic logic, we start by presenting Maehara's $\mathsf{LL}_{\mathbf{mLJ}}$ [Maehara 1954], a multiple conclusion intuitionistic sequent system. Then we consider an extension of the sequent framework called *nested systems* [Brünnler 2009, Fitting 2014], establishing some proof theoretical results for it. We show that the nestings in intuitionistic logic satisfies the following properties:

1. although nestings are independent and can be created in parallel, provability of only one of them is enough for proving the nested sequent;
2. all rules can be restricted so that to be applied at the last two levels of a nesting.

This allows a simplification on systems, by restricting the tree structure of nested sequents to that of a line, with rules restricted to its *end-active* version [Lellmann and Pimentel 2015].

We then show how to automatically label the linear nested systems and how to relate these systems with the usual Kripke semantics for various logics.

Finally, we move to (classical) multi-modal logics, relating (general) frames with labelled simply dependent multimodal logics.[1]

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# Bridging the Gap Between Science and Metaphysics, with some Help from Quantum Mechanics

Jonas Becker Arenhart

UFSC
Brazil

**Abstract**. One of the greatest challenges for analytic metaphysicians concerns the relation of the output of their work with contemporary science. At least for those working under the umbrella of so-called "naturalistic metaphysics", it is expected that metaphysical theories relate profitably with science. However, it is not even clear how such a relation is to be spelled out in details. We shall begin by enlightening this issue, and separating some distinct kinds of relations that metaphysics may bear with science. As we shall see, one of the greatest expectations comes from the supposed justification a metaphysical theory may derive by being somehow associated with a scientific theory; it is expected that we bridge the gap between metaphysics and epistemology (as encapsulated in science). We shall propose that under a reasonable understanding of the task of metaphysics, there is no way to avoid some metaphysical underdetermination, unless more than mere association with a scientific theory is required. Typically, it is claimed that a decision between competing metaphysical theories should be made based on their theoretical virtues: simplicity, economy in primitive notions, elegance, perhaps continuity with (part of) common sense, among others. Instead of discussing how theoretical virtues may help metaphysicians, we propose that the obtaining of metaphysical underdetermination is not as easily as it seems when we come to metaphysics associated with science. In fact, it results that it is not always so easy to advance a metaphysical theory consistent with empirical science. As a result, science may help us eliminate theories from the logical space of possibilities; that is, theories inconsistent with science should not be considered as real options for the naturalistic metaphysician, and so, unable to generate more metaphysical underdetermination. In this sense, even though metaphysical theories may not be justified, they may be ruled out by science. This is not as good as it was hoped for, but it is still a kind of improvement of our situation, and, besides, is not far from the situation in science itself. We illustrate how the thesis works with examples from the discussion about individuality in orthodox quantum mechanics.

## Speech Acts in Mathematics

Giorgio Venturi
UNICAMP - CLE
Brazil

**Abstract**. In this talk we will offer a novel picture of mathematics, where the theory of speech acts ([Searle 1969]) plays a constitutive role of mathematical reality. Our starting point consists in the analysis of the debate between mathematical realists and anti-realists; in particular the discussion whether or not mathematical objects exist, and if so in which sense. We will try to undermine the incompatibility of these two opposite positions, arguing that the goal of mathematics is not the study of abstract objects (but that they are only a useful means). Toward this end we will make use of the distinction between propositional content and forms of representation, arguing that what is commonly understood as a mathematical object is, only, part of a form of representation. The main argument for the application of a theory of speech acts to mathematics will be offered by the semantic homogeneity between mathematical and natural language (see [Benacerraf 1973]), sustained by the realists. Given this homogeneity it will therefore sufficient to show that the use of speech acts is a fundamental component of mathematical discourse. We will therefore offer a taxonomy of speech acts in mathematics ([San Mauro and Venturi 2017a], [San Mauro and Venturi 2017b]). In the end, as an application of the image of mathematics offered, we will offer a new definition of abstract object and we will outline a response to an indispensability argument *à la* Quine-Putnam, showing the ontological indeterminateness of its outcome.

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# Belief Puzzles

André Bazzoni

Post-doc student, Philosophy Department
University of São Paulo - USP, Brazil
andrebazzoni@gmail.com

**Abstract**. This tutorial presents and discusses Frege's and Kripke's puzzles about belief ascription. We shall review and compare solutions to the puzzles proposed in the literature, especially in connection with modal logic (epistemic logic in particular) and possible-world semantics, and the *de dicto*/*de re* distinction.
**Keywords**: Frege's puzzle; belief reports; substitutivity; disquotation; translation; epistemic logic; possible worlds; *de dicto*/*de re*

## 1st Day: Frege's Puzzle

In this first part of the tutorial, I will review Frege's (1982) puzzles concerning identity statements and that-clauses. We shall concentrate on the latter, specifically on one particular type of attitude ascription, namely belief ascription. These are sentences of the form:

(1) $A$ believes that $p$.

were $A$ stands for an *agent*, and $p$ for a *complement clause*.

Frege opens '*Uber Sinn und Bedeutung*' (1892) with considerations regarding identity statements and the famous issue of the *cognitive value* of a sentence, which is then applied by Frege to that-clauses to derive Frege's puzzle about belief ascription.

The puzzle enganges the *Principle of Substitutivity*, according to which coreferential expressions can be interchanged in a sentence without altering the truth-value of that sentence. If the principle is true, indeed, it seems that substituting 'Cicero' for the first occurrence of 'Tully' in (4) to yield (5) should preserve truth-value:

(4) Ralf believes that Tully is Tully.

(5) Ralf believes that Cicero is Tully.

The trouble is that (4) is trivially true (assuming Ralf is a rational agent), whereas (5) might be false, even though Tully and Cicero are the same man as a matter of fact.

I will lay down the specific structure of the puzzle, and then discuss the different types of solution (including Frege's) offered in the literature, focusing on different semantic theories of belief reports – especially the following two:

- 'Relational theories': Theories that analyze belief ascriptions as relations. Depending on the theory the relevant relation can be binary, in which case it holds between an agent and a proposition, as in $B(a, p)$; and ternary between an agent, a proposition, and (some sort of) a 'guise'. (cf. Barwise and Perry 1981, 1983; Salmon 1983).
- 'Operator theories': Theories deriving from epistemic logics, which view 'that-verbs' such as 'believe-that' as sentential operators. I shall review in this connection Hintikka's (1962) standard treatment of epistemic logic in connection with *possible-world semantics* (cf. Kripke 1963; Lewis 1986; Divers 2002).

  After discussing these strategies, I will present and defend a novel approach in terms of *partial worlds*, based on the formal systems developed by Humberstone (1981) and applied by Holliday (2014) to belief – see also Bazzoni (2017).

2nd Day: Kripke's Puzzles

In this second part of the tutorial, I will address Kripke's two puzzles about belief reports presented in his 'A puzzle about belief' (1979) – the *London puzzle* and the *Paderewski puzzle*. As we shall see, Kripke's primary aim was to defend his *Millian* theory of proper names (cf. Kripke 1980) against the charge that is falls short of accounting for Frege's puzzle about belief ascription. Kripke intends to show that puzzle about belief in general regard our most common practices of ascribing beliefs to rational agents – in particular, they do *not* involve in any essential way matters of substitution of coreferential terms.

I will present and discuss some solutions to the Paderewski puzzle, which involves one of the mentioned types of common practices, namely the principle of *disquotation*. The puzzle is based in a well-known story involving a rational agent, Pierre, who is eventually seen to believe both that Paderewski has musical talent, and that Paderewski has no musical talent. I will argue that the puzzle is no puzzle after all, simply by showing that its premises are not consistent with the very construction of the Paderewski piece of fiction.

The London puzzle involves, in addition to disquotation, another of those common semantic practices, namely the *principle of translation*. In this new

fiction, our Pierre is eventually seen to believe both that London is pretty, and that London is not pretty. I shall lay down the structure of the puzzle (following Sosa 1996), and we will discuss two typical strategies for dealing with the puzzle:

- Blaming disquotation: According to this view, the puzzling conclusion is to be found in the use of the principle of disquotation (thus Marcus 1981, 1983).
- Blaming a hidden principle: This strategy suggests that the structure of the puzzle hides some illicit principle that is actually tacitly used in the derivation of the puzzle (thus Salmon 1983; Sosa 1996).

I shall discuss these notions solutions and propose another direction consisting in examining the role of the principle of translation in derivation of the puzzle (already suggested by Richard 2011 ). I will show how the principle can be true in general, but false as *applied to the London case*. I will finally compare this solution with Frege's solution to Frege's puzzle.

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# Relações: um problema para teorias nominalistas

Valdetonio Pereira de Alencar

Instituto Interdisciplinar Sociedade, Cultura e Artes
Universidade Federal do Cariri
valdetonio_alencar@yahoo.com.br

**Resumo**. Propriedades podem ser classificadas por aridade e por ordem. Soluções nominalistas para o problema dos universais analisam, normalmente, propriedades unárias de primeira ordem. Porém, relações levantam problemas específicos. Relações são pouco problemáticas para realistas. Essa não é a situação para os nominalistas. Para explicar relações, o Nominalismo de Classe poderá utilizar classes ordenadas. Levanto dois problemas contra a análise fornecida pelo Nominalismo de Classe: o caráter convencional da definição de par ordenado e o problema da ordem. A análise do Nominalismo de Semelhança também apresentaria problemas. Como essa espécie de nominalista precisará de pares ordenados, a crítica contra a análise do Nominalismo de Classe pode ser utilizada contra o Nominalismo de Semelhança. Analiso, na maior parte do meu trabalho, a Teoria de Tropos. A princípio, essa posição parece em melhor situação caso admita que haja tropos relacionais. Apesar de haver essa posição na literatura (Bacon e Maurin), não é uma posição unânime entre os defensores dos tropos. Campbell [Campbell 1990], por exemplo, defende uma tese polêmica sobre relações: tropos não relacionais são suficientes para solucionar o problema das propriedades. À primeira vista, é razoável postular tropos relacionais para analisar as propriedades com aridade superior a um. O teórico de tropos evita, assim, o debate em torno das relações. Tropos relacionais, contudo, podem levantar algumas objeções. São entidades particulares? Qual a localização dessas entidades? Há um problema, de dificuldade maior, em se aceitar tropos relacionais. Tomem-se os seguintes tropos: *fj* que compõe o particular concreto *João*, *fm* que compõe *Maria* e o tropo relacional *o amor de João por Maria*. O particular concreto João constitui uma soma de tropos copresentes. Surge a questão: tropos relacionais compõem particulares concretos? Não parece que *fj e o amor de João por Maria* sejam copresentes. Se esses dois tropos fossem copresentes, então *o amor de João por Maria* e *fm* também seriam copresentes. Como copresença é transitiva, então *fj* e *fm* seriam copresentes, o que é absurdo. O defensor dos tropos relacionais não poderia construir os particulares concretos a partir de tropos copresentes. Se há tropos relacionais, a postura que defende haver um substrato como elemento individuador ganha

força. Em um particular concreto, haveria inerência entre o substrato e tropos (relacionais ou não). Uma possível solução para o defensor de tropos relacionais seria utilizar as partes espaço-temporais dos tropos relacionais para construir os particulares concretos. O tropo *o amor de João por Maria* teria duas partes: *a1* e *a2*. A parte *a1* comporia o particular concreto João. Seria copresente com os outros tropos que compõem esse objeto. O tropo *a2* comporia o particular concreto *Maria*. O problema dessa análise é que tropos estariam sendo decompostos em entidades mais simples. Como conclusão, defendo que se quisermos ainda defender uma teoria de feixes de tropos, então precisaríamos eliminar as relações sem postular tropos relacionais.

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# On the Identification of Events with Material Objects

Riccardo Baratella

University of Padua
baratellariccardo@gmail.com

**Abstract**.

**Aim**

Events are generally considered as four-dimensional entities. Philosophers thought of material objects either as three-dimensional entities or four-dimensional entities. According to the three-dimensional theorist events are distinct from material objects. According to the four-dimensional theorist the question whether events should be identified with material objects is a metaphysical substantive question. In this talk I will investigate this fundamental question unconsidered in the recent years' debate.

**Background**

Let me be clear about the basic notions of this work. Firstly, I shall assume the standard definition of four-dimensionalism (or perdurantism) according to which something perdures iff it persists by having different temporal parts at different times, though none of its parts is wholly present at more than one time [Lewis 1986, p. 202]. Secondly, I shall assume a widely accepted characterization of the notion of event, according to which events are spatiotemporal particulars which can enter into causal relations, which can be observed and which can enter into before-after relations.

Moreover, I will make use of the standard notion of state, according to which: (1) "if an object has at some time some static property, $P$, then at that time that object can be said to be in the state of being $P$" [Lombard 1979, p. 436]. I take for granted that states are events.

**Argumentative strategy**

This notion of state allows us to frame an argument against the identification of events and material objects. Consider any temporal part x and two distinct static properties $P1$ and $P2$ that $x$ has at $t$. Then, there are, by (1), two distinct states an object can be said to participate in. Call this argument "against ID argument".

However, such a conclusion cannot be accepted by a perdurantist who is willing to identify events and material objects. Therefore, she has to reject at least one of the premises of the against ID argument. Three premises can be rejected: (i) the commitment to static properties implicit in (1); (ii) the premise that a material object can have two or more static properties at the

same time; (iii) the premise according to which there are necessarily two or more states $s1$, $s2$, ... corresponding to a material object $x$ which has two or more distinct static properties $P1$, $P2$, ... at the same time $t$.

In the second part of the talk I will argue that three strategies for blocking the against ID argument are more plausible than the others:
(I) The nominalist thesis concerning static properties.
(II) The thesis according to which a material object has at most one simple trope $P$ at a moment $t$, where a simple trope $P$ is a trope not built out of other distinct tropes $P1$, $P2$, ...
(III) The account according to which states are instances of static universals and instances of static universals are temporal parts of material objects.

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# Essencialismo aristotélico *versus* essencialismo modalista

Alberto Leopoldo Batista Neto

Universidade Federal do Rio Grande do Norte
Natal, Brazil
albertolbneto@yahoo.com.br

**Resumo**. Nas discussões metafísicas correntes na tradição analítica, é frequente a alegação de que o desenvolvimento da lógica modal moderna permitiu uma formulação mais precisa e adequada de teses características da tradição filosófica, que encontram seu paradigma no tratamento das essências por Aristóteles. A introdução dos conceitos da lógica modal, especialmente após o desenvolvimento da semântica kripkeana de "mundos possíveis", provocou uma espécie de "febre metafísica" na filosofia analítica, como se abrisse brecha a um violento "retorno do recalcado". Porém, o esforço de acomodação de conceitos filosóficos tradicionais como o de essência em um aparato formal construído sobre uma lógica concebida em termos fundamentalmente alheios àqueles da tradição aristotélica (e que incorpora modos específicos de conceitualização e compromissos tácitos) termina por produzir uma variante (ou antes várias delas) de especulação metafísica alheia àquela efetivamente levada a cabo na tradição anterior, que deu forma e sentido aos temas e noções invocados, de modo que, no empenho de atingir um "disciplinamento lógico" da discussão, na verdade altera o contexto lógico e ontológico em que esta se processa, arriscando-se a cair, senão em uma forma direta de equivocação, pelo menos numa grave deformação das teses originais de que se busca proporcionar uma nova e mais adequada representação. São diversos os autores que, pondo-se do lado de uma perspectiva aristotélica, criticam o uso das modalidades modernas e da semântica de mundos possíveis como irrelevante ou prejudicial à inteligibilidade das discussões metafísicas, tais como James Ross, Gerard Hughes, Gyula Klima e David Oderberg ([Ross 1989], [Hughes 2002], [Klima 2002] e [Oderberg 2007]). Pretende-se apresentar alguns de seus argumentos principais contra as versões modernas, modalistas, do essencialismo e propor um resgate da compreensão propriamente aristotélica do assunto.

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# Fixing the Reference of Fictional Names

Iago M. Batistela

M.A. Student, Department of Philosophy
Federal University of Santa Catarina (UFSC), Brazil
iagobatistella@gmail.com

**Abstract**. The main topic discussed here is the reference of fictional names. More precisely we will talk about how and what we talk about when we use a name of a fictional character. The expression 'Sherlock Holmes' denotes the fictional character described by Conan Doyle in the novels written between late XIX and early XX centuries. The works of literature created by Conan Doyle are a guide for us to settle the truth-value of sentences like 'Sherlock Holmes lives in 221B, Baker Street', but do they help us in settling the truth-value of sentences like 'Sherlock Holmes is more famous than any other detective'? We will look at the role of the fictional name in sentences of both types.

A common way to treat fictional reference is called *fictionalism*. Our presentation will be guided by [Walton 1990]. The fictionalist assumes that fictional names have no referents, thus sentences containing fictional names are false. The meaning of sentences about fictional characters are generated by means of pretenses and games of make-believe. The truth-value of sentences about those characters are actually truth-in-a-fiction. So, when we say 'Sherlock Holmes lives in 221B, Baker Street' what we really mean is that '**in Conan Doyle stories**: Sherlock Holmes lives in 221B, Baker Street'. Truths about Holmes are thus generated by the props, the books, that function as an auxiliar device for our imagination. Problems on Walton's position will arise when analyzing sentences of the second type. We will then analyze what are those problems, following [Crimmins 1999], [Kroon 1994], [Kroon 2004], and [Zalta 2000].

The solution proposed will follow a half way between abstract object theory, proposed by Zalta 1983, and the fictionalist approach. The notions of props, games of make-believe, and pretense are then organized in the formal framework proposed. The presentation will follow [Zalta 2000], [Zalta 2003]. Those notions will help us understand how the author, in writing the novel, is making an extended act of baptism, fixing the reference of the fictional name to the fictional character. The first use of the fictional name as a proper name is then made after the novel is completed. Then the causal chain of use can

be traced back to when the author fished the writing.

**Keywords**: names; fictional names; empty names; fictionalism; abstract object theory;

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# Ontological Dependence on Causally Related Entities

Valdenor Monteiro Brito Júnior

PhD student, Department of Philosophy
Federal University of Santa Catarina, Brazil
valdenormb@hotmail.com

**Abstract**. The notion of ontological dependence and its different kinds has received much attention in the contemporary literature on analytic ontology and metaontology ([Correa 2008], [Koliscki 2013], [Tahko and Lowe 2015] and [Tahko 2015]). This sense of "dependence" between entities has a metaphysically distinctive character, different from causal uses of the term, because ontological dependence is dependence in relation to existence or to identity [Tahko and Lowe 2015]. If there is ontological dependence between two entities, then there is not a causal dependence between them, given the same dimension of analysis. That is because causal dependence demands two separate entities, where one is a cause of the other, whereas in ontological dependence one entity is either individualized in terms of the other, or it has its existence entailed by the existence of the other.

Given this premise of a distinction between ontological and causal dependence, someone might ask: might a concrete entity Z (the dependent entity) ontologically depend on, at the same time, two other concrete entities, X and Y (the 'supporting' entities), which are causally related, so that Y is the cause of X? That is: 1) Z is ontologically dependent on X; 2) Z is ontologically dependent of Y; 3) X is causally dependent on Y. In this scenario, if Y causes X, then Z is ontologically constituted by X and Y.

Apparently, this possibility does not violate the premise of distinction, because there are no two entities related both by ontological and causal dependence at same time. In this paper, I shall argue that this initial impression is false: the scenario describe does involve a violation of the premise. The argument (my original contribution in this paper) begins with the assertion that ontological dependence is not only a transitive relation (if A ontologically depends on B, and B ontologically depends on C, then A ontologically depends on C), but also involves an inheritance of causal dependence. That is, if A ontologically depends on B, and B causally depends on C, then A causally depends on C.

The argument follows with the demonstration that the acceptance of both the inheritance of causal dependence and the possibility of an entity depending on two other causally related entities leads to a violation of the premise

of a distinction between ontological and causal dependence. In schematic form: if Z ontologically depends on both X and Y, and X is causally dependent upon Y, then Z inherits X's causal dependence on Y and, therefore, in this scenario Z is both ontologically and causally dependent on Y at the same time.

The argument ends with an evaluation of what premises should be rejected. I argue that the principle of inheritance of causal dependence on ontological dependence makes sense for standard cases of ontological dependence between concrete entities, and furthermore that it leads to a strong case in relation to this principle for these entities, surpassing the plausibility of ontological dependence on causally related entities.

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# Contextualism and The Liar Paradoxes

Guilherme Araújo Cardoso
CEFET/MG
Belo Horizonte, Brasil
CLE – Unicamp
Campinas, Brazil
guilhermeprimeiro@gmail.com

**Abstract**. As a consequence of Tarski's Indefinability Theorem, we cannot have a consistent and classical theory that has its very own truth predicate. The bad news delivered by such result is that because of it, we can not formulate a consistent and classical theory that mirrors the ordinary concept of truth. The concept of truth plays important roles inside Logic, Science and Philosophy. At the same time, the concept of Truth is surrounded by puzzles and paradoxes, like those of the Liar's family .

There is a common view on these paradoxes that basically denies the idea that the ordinary concept of truth is a classical one. For example, we could use paraconsistent and paracomplete logics to frame theories that have their own truth predicates. In these theories, however, truth is taken to be inconsistent or partial. Good examples of theses ideas can be found, respectively, in Priest ([Priest 2006]) and Kripke ([Kripke 1975]). The attempted solutions based on such ideas are faced with some very strong objections. We shall outline some of these main objections.

An alternative view that has been proposed (inside very different frameworks) to deal with the liars in a classical, consistent and non-partial way is Contextualism. Roughly speaking, the general idea is that truth predicates can not be ascribed to sentences outside contexts. Hence, for each ascription of the truth predicate to a given sentence $A$, there might be two different contexts, $s_1$ and $s_2$, such that, $A$ is true according to $s_1$, but $A$ is not true according to $s_2$. In this way, contradictions like those advanced by the liars could be broken into two different (but consistent) truth ascriptions. We could solve paradoxes then by just showing ambiguities that justify that. We can see this general idea of Contextualism behind the works of Barwise and Etchemendy ([Barwise and Etchemendy 1987]), Simmons ([Simmons 2007]) and Glanzberg ([Glanzberg 2004]), for instance. However, they offer very different frameworks with very different consequences.

An important and general objection that has been advanced to Contextualism is concerned with expressive power. The argument runs like this: Contextualism needs to deny the existence of universal contexts or there would

be a universal liar that could not be solved in this setting. Universal contexts are necessary to preserve the expressive power of ordinary concept of truth. Therefore, Contextualism cannot preserve the expressive power of ordinary concept of truth.

In this talk, we intend to present and defend Contextualism as a good view concerning the ordinary concept of truth and the Liars. We are going to show some different frameworks for this view and their main problems. Last, we shall advance some ideas concerning universal contexts and the aforementioned argument.

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# A Type-logical Approach to Resumptive Pronouns

Ma. Inés Corbalán
Institute of Philosophy and Human Sciences – State University of Campinas
Campinas, Brazil
inescorbalan@hotmail.com

**Abstract**. In [Jäeger 2005] Jaeger establishes the **LLC** calculus to deal with anaphors and anaphoric pronouns in a Type-Logical framework. **LLC** extends the Lambek **L** calculus [Lambek 1958] by adding the anaphoric type constructor |, the rules of which encode a restricted version of the structural rule of Contraction, and thus allow for multiple-binding (see Fig. 0.1).[2]

$$\frac{X, x : A, Z, y : B, W \Rightarrow M : C}{X, x : A, Z, (yx) : B|A, W \Rightarrow M : C}|\mathrm{L} \qquad \frac{X, x : B, Y \Rightarrow M : C}{X, y : B|A, Y \Rightarrow \lambda z.M[(yz)/x] : C|A}|\mathrm{R}$$

Figure 0.1: Simplified Left and Right rules for |

In applying **LLC** to a sentence like (1), the system may adequately recognize the double —bound or free— reading of a personal pronoun. Indeed, by using |L, the pronoun *he* —of syntactic type $n|n$ with the semantic $\lambda x.x$— is bound by the nominal *John*; thus, the sentence may be assigned the saturated type $s$. In addition, by using |R, the clause receives the unsaturated functional type $s|n$, which expresses the fact that a free pronoun occurs within it.

1. John$_1$ said he$_{1/2}$ runs.

Resumptive pronouns (RPs) are pronominal expressions occurring in a resumptive relative clause, like those in (2a)-(3a). RPs in a resumptive relative clause occupy the same base position than traces *t* (left by the *wh*-movement) in a canonical relative clause (contrast (2-3)a with (2-3)b respectively).

2. a. the car$_1$ such that I bought **it**$_1$
   b. the car which I bought *t*.
   c. *the car that/which I bought it

3. a. o menino$_1$ que eu falei com **ele**$_1$
   'the boy that I talked with **him**'
   b. o menino com quem eu falei *t*
   'the boy with whom I talked'

[2] **L** lacks all the structural rules of the Classical sequent calculus **SK**.

In this talk we discuss two two major challenges posed by RPs for the **LLC** approach to anaphoric pronouns, as they are necessarily free within the relative clause, although they are necessarily bound in the entire nominal phrase. Thus, the rules for pronouns have to ensure, on the one hand that RPs are not bound by a local antecedent occurring in the relative clause, and on the other, that they are bound by the head of the relative clause. Consequently, resumptive relative clauses, unlike sentences containing a pronoun, should only receive a *saturated* syntactic (nominal $n$) type even though the relative *such that/que* selects an unsatured type $s|n$ as its argument.

In addition, we discuss two ways to overcome these difficulties. First, we adopt a lexical-semantic route to binding by assigning the type $(cn\backslash cn)/(s|n)$ with the semantic $\lambda A.\lambda B.\lambda C.((AB) \wedge (BC))$ to the relative *que* into the lexicon, such as suggested for *such that* in English [Morrill 2017]. After arguing that this first solution seems a little *ad-hoc* from a type-logical perspective, we move toward a syntactic route. Then, in the remaining part of the talk we offer an alternative proposal for modifying the sequent **LLC** rules for the pronominal type-constructor $|$. We suggest that dealing with RPs seems to require an explicit use of (a restricted version of) the structural rule of Contraction.

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# Towards Multiple Denotation Semantics for a Modest Plural Logic

João Daniel Dantas

PPGFil - UFRN
Natal, Brazil
dantas.joaodaniel@gmail.com

**Abstract**. The aim of this talk is to explore the possibility of providing a multiple denotation semantics for a modest logic of plurals. Multiple denotation semantics were developed by Graham Priest ([Priest 1995] and [Priest 2005]) and in this semantics the denotational function in the model is extended to a relation. Plural logics are logics that intend to model in the object language the phenomena of plurals of the natural language. In these logics it is possible to translate sentences such as "all mornings are beautiful" and "some critics admire only one another", for example, which are sentences involving plurals and that (arguably) have no translation in first-order classical logic. It is important to notice that in principle, Priest's motivations for creating his multiple denotation semantic are distinct from the motivations for developing a plural logic. Priest's work was concerned with solving specific paradoxes and the plural logicians are concerned with a problem in natural language. However, the bridging point between multiple denotation semantics and plural logics is that a term may denote several objects (in the case of plural logics a distinguished plural term). This talk focuses on the modest plural logic presented by Alex Oliver and Timothy Smiley [Oliver and Smiley 2006] and attempts to provide a multiple denotation semantic for it. Initially a plural logic without identity is presented and later an extension of this logic with the identity predicate is explored.

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# Contra o Pluralismo Lógico

Daniel Durante

PPGFil - UFRN
Natal, Brazil
durante@ufrnet.br

**Resumo**. Convencionou-se denominar de pluralismo lógico à tese de que há mais de uma lógica correta. Evidentemente tanto esta tese quanto seu contrário, o monismo lógico, que defende que há apenas uma lógica aceitável, dependem fundamentalmente de uma concepção sobre o que é lógica. Pretendo argumentar contra o pluralismo lógico em dois passos. Primeiro pretendo defender uma concepção de lógica na qual muitos dos inúmeros sistemas que usualmente chamamos de lógica, deixam de ser assim considerados e passam a ser entendidos como teorias de alguma lógica específica. Um exemplo aqui é a lógica modal. De acordo com a concepção que pretendo defender, não haveria lógicas modais, mas teorias da modalidade. No segundo passo, pretendo argumentar que seria irracional um mesmo agente aceitar mais de um dos sistemas que, segundo a concepção que proponho, merecem o rótulo de lógica. Aqueles sistemas que não interpreto como teorias, mas como lógicas, eles exigem exclusividade. Não podem coexistir como opções conjuntamente aceitáveis a um único agente racional. Pretendo utilizar três ideias presentes na literatura, mas não diretamente conectadas com o problema do pluralismo lógico, para argumentar em favor de desta posição. São elas o princípio da tolerância de Carnap, a defesa de uma teoria da modalidade em lugar de uma lógica modal de Harman e a interpretação epistêmica da paraconsistência de Carnielli e Rodrigues.

# Logical Pluralism and Language Games in Wittgenstein's *Philosophical Investigations*

Evelyn Erickson
PPGFil – Universidade Federal do Rio Grande do Norte
Natal, Brazil
eerickson@ufrn.edu.br

**Abstract**. Wittgenstein argued in his *Philosophical Investigations* against the project of an ideal language, claiming that ordinary language is in order as it is. He also argued that the meaning of a word is determined by its use in a language game. From both these positions, it seems that Wittgenstein rejects a monist view of logic (that there is only one correct logic). In opposition to logical monism, there are the views of logical relativism and logical pluralism. The first view amounts to taking logical consequence to be correct relative to some parameter, while the second one amounts to accepting more than one notion of consequence as correct for the same parameter. While it seems straightforward that Wittgenstein would accept the view of logical relativism, it does not seem clear whether he would also accept logical pluralism. By exploring Wittgenstein's views on logic, language, meaning and vagueness, this contribution seeks to explore to what extent it could be claimed that he would be willing to endorse logical pluralism, and what form this pluralism would take.

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# Topics on Philosophy of Information

Samir Gorsky

Universidade Federal do Rio Grande do Norte
Natal, Brazil

**Abstract**. The concept of information is directly related to various content of philosophical character. In [Capurro and Hjorland 2003] there is a study on etymology and different conceptions of information throughout history. These studies indicate that this concept has a very important philosophical role. In [Floridi 2011] a philosophy of information is presented. This philosohy is based on the various areas that have the notion information as central (information science, information technology, computer science, etc.). However, there is not yet a more systematic and broad organization of the possibilities of philosophical analysis of the term in order to show how to identify and situate metaphysical, logical, political, ethical, aesthetic, etc. issues (about information). The purpose of this communication is to discuss some topics on the philosophy of Information and present a proposal to classify possible studies in this area.
**Keywords**: Phylosophy, Information.

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# Modality and Quasi-Truth: A Possible-World Semantics for Quasi-Truth Theory

Kherian Gracher

Postgraduate Program of Philosophy
Federal University of Santa Catarina (UFSC)
Research Group on Logic and Foundations of Science (CNPq)
Florianópolis, Brazil
kherian@gmail.com

**Abstract**. There are at least three important aspects that a scientific theory comprises, and a philosophical analysis should take them into account: (1) partiality of scientific knowledge; (2) the *pragmatical* use of truth; and (3) the use of modal statements. With respect to (1), given a scientific theory $\mathfrak{T}$ and its domain of applicability, $\Delta$, the theory will study the relations over the objects of the domain. However, there are some sentences about the objects of $\Delta$ which $\mathfrak{T}$, with no further investigation, cannot say whether they are true or not. Concerning (2), it is arguable that scientific theories use the notion of quasi-truth. Even if we can say that Quantum Mechanics is true (and so that) Newtonian Mechanics is false, however, we still use the latter in our everyday life. That is, Newtonian Mechanics is quasi-true when one restrains its domain of application as well as the pragmatic use of it. These two first aspects were formally treated by Quasi-Truth Theory.[3] And finally, with respect to (3), a scientific theory needs to be able to treat the so-called "modal notions", including counterfactual statements. That is, what does it mean to say that something is *possible* or *necessary* in a scientific theory? How can we use a scientific theory in a counterfactual context? The modal notions receive a formal treatment in the literature through the development of modal logic and possible-world semantics.[4] In the present work we develop a possible-world semantics for Quasi-Truth Theory, preserving the interpretation of partiality of scientific knowledge and the notion of quasi-truth, and on such formalism, we develop a semantics that allows interpreting modal operators and counterfactual sentences.

First, we present the formal approach of Quasi-Truth Theory. Let $\mathfrak{T}$ be a scientific theory formalized in a first-order language $\mathfrak{L}$. Through this formulation we have a set of axioms of $\mathfrak{L}$ (as the axioms of the underlying logic)

[3] *See* [Mikenberg et al. 1986], [Bueno 2016], [Da Costa and French 2003], [Krause 2009], [Da Costa et al. 1998] and [Bueno and de Souza 1996]

[4] *See* [Fitting and Mendelsohn 2012]; [Garson 2016]; [Kment 2012] and [Menzel 2016].

and the specific axioms of $\mathfrak{T}$. We will present the notions of "*Partial Structures*'' and "*Simple Pragmatic Structures*''; however, we make a relevant change in the latter, defining it in a different notion of "*Modal Pragmatic Structure*''. We proceed to the definition of *Total Structures* and *Normal Structures*, which are structures that extend the corresponding *Modal Pragmatic Structures*.

After presenting this modified Quasi-Truth Theory, we extend the language of $\mathfrak{T}$ to $\mathfrak{T}_m$ language, introducing the modal operators of necessity and possibility (defined as usual). We offer then a *Kripke-style* semantics, capable of interpreting $\mathfrak{T}_m$, defining the notion of "*Frames*''. In these *Frames*, the *Normal Structures* are understood as *possible worlds*; the *Modal Pragmatic Structures*, however, are not *worlds* properly (since they are *Partial Structures*), but are conceived as initial *knots* of the *Frames*. Through the resulting formalism, we present a definition of the notion of *Quasi-Truth*, obtaining a semantics that is capable of interpreting the notions of *necessity* and *possibility* in $\mathfrak{T}_m$. Finally, we briefly discuss the relevant philosophical and formal consequences that one can get with this theory; we also point to some topics for further discussion.

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# Fictional Objects and Modal Metaphysics

Francisco A. N. Lages

PPGFIL – UFMG
Belo Horizonte, Brazil
fanlages@gmail.com

**Abstract**. In recent years, fiction and fictional objects seem to have become an established field of philosophical interest due to its relevance in the Philosophy of Fiction, Language, Science and Mind. An approach commonly used in these studies follows Thomasson's (1999) suggestion to ask oneself two questions about these objects: 'what kind of thing fictional objects are?' and 'are there fictional objects?'. In this sense, the first question raises from a metaphysical concern about the characterization of the type of thing – if any – fictional objects are. The other question – the ontological one – is directed to the existence of such objects. Our aim is to discuss the metaphysical question from the perspective put out by Kripke (1973/2013) and Thomasson (1999). For that, we will use an artefactual approach to fiction and as we delineate our ground theory, we will try to show how fictional objects behave in a modal metaphysics scenario. Therefore, we must admit that artefactual entities exhibit a type of de re modality regarding its properties and its existence. Once we establish the boundaries of the intended analysis, we pretend to briefly consider how important is the discussion of modal metaphysics through a fictional perspective. Finally, we will pose a few remarks that could work as an important motivation to further studies on the field connecting different philosophical areas, such as Science and Mind.

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# A implementação de modelos computacionais para o Realismo Estrutural Informacional

Danilo Carlos Gouveia de Lucena

Centro de Informática – Universidade Federal de Pernambuco
Recife, Brazil
danilocglucena@gmail.com

**Resumo**. Tradicionalmente, a lógica é analisada a partir de uma visão metodológica derivada da lógica matemática. Porém, algumas extensões da Lógica contemporânea migraram para campos em que a análise dos problemas é subjetiva e menos dependente de um formalismo estrito. Essa divergência gera uma problemática em nível metafísico.

O objetivo do presente trabalho foi analisar os tópicos do Realismo por um viés metafísico em conjunto com o Realismo Estrutural. A hipótese levantada foi de que é possível ampliar o conceito de Realismo Estrutural para um Realismo Estrutural Informacional. Em virtude disto, realizou-se uma revisão de literatura acerca do Realismo [Miller 2016], Realismo Estrutural [Ladyman 2014] e Realismo Estrutural Informacional [Floridi 2008], uma vez que houve uma progressão e um aprofundamento nos conceitos investigados nestas três vertentes. Somado a isto, tornam-se possíveis diversos debates interligando áreas como a metafísica, a filosofia da física e a filosofia da matemática.

O Realismo Estrutural é considerado entre os Realistas e os anti-Realistas como uma vertente para defesa do Realismo Científico. Tomadas as considerações feitas por James Ladyman ([Ladyman 2014]) em seu artigo "Structural Realism", é possível afirmar que há várias formas do Realismo Estrutural bem como uma vasta literatura de apoio.

De acordo com [Stein 1989], a ciência pode chegar perto da compreensão do real (i.e. do mundo), mas não pode chegar em seu nível substancial, o que contrapõe ao posicionamento adotado pelo Realismo Estrutural tradicional. O Realismo Estrutural Epistêmico estabelece que tudo o que é possível conhecer são as estruturas das relações entre as "coisas" e não as "coisas" em si mesmas. O Realismo Estrutural Ôntico afirma que não existem as "coisas" e que a estrutura é tudo o que existe (também nomeado como Estruturalismo Radical) e argumenta que tudo o que foi apreendido da física contemporânea é que a natureza do espaço-tempo e da matéria não são compatíveis com as concepções metafísicas do relacionamento ontológico entre indivíduos, suas propriedades intrínsecas e suas relações.

Uma vertente contemporânea é o Realismo Estrutural Informacional, utilizada no contexto da fundamentação das ciências da computação e que é defendida por Floridi em [Floridi 2008]. No Realismo Estrutural Informacional, "uma versão do Realismo Estrutural Ôntico que considera o mundo como uma totalidade de objetos informacionais que interagem dinamicamente uns com os outros" [Floridi 2008].

Ao questionar quais as considerações poderiam ter sido feitas acerca dos novos desenvolvimentos do Realismo, constatou-se (com resultados preliminares e ainda em desenvolvimento) que é possível realizar uma implementação do Realismo Estrutural Informacional, permitindo a aplicação de modelos computacionais na área da Inteligência Artificial.

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# Anti-exceptionalism and the Revisability of Logic

Sanderson Molick

Graduate Program in Philosophy – PPGFil
Federal University of Rio Grande do Norte
smolicks@gmail.com

**Abstract**. According to anti-exceptionalism logic is no exception among other sciences, its methods are *a posteriori* and therefore continuous with the methods of science. Anti-exceptionalism may be characterized by two main theses: 1) the methods of science and the methods of logic are *a posteriori*; 2) science and logic provides synthetic truths and logical principles are as revisable as scientific ones. Anti-exceptionalist positions emerged only after Quine, however the term was coined by T. Williamson to refer to a non-apriorist methodology in Philosophy. Later on, many philosophers such as [Priest 2014], [Williamson 2014] and [Hjortland 2016] defended anti-exceptionalist positions from different standpoints regarding the adequate methodology for logic. Moreover, from anti-exceptionalist grounds these authors have reached opposite conclusions, such as the defense of classical logic as the adequate methodology for logic in T. Williamson, and the defense of non-classical logics in G. Priest and O. Hjortland. The purpose of the present talk is to survey some of these positions and to discuss in which sense the methodology of science is similar to the methodology of logic. To assess the metaphysical assumptions behind each position, we depart from non-traditional notions of a prioricity to discuss the revisable character of logical principles. We argue that anti-exceptionalist positions are grounded on different views about the relations between the a priori and the a posteriori. At last, we present a form of anti-exceptionalism based on defeasible reasoning tools presented in [Batens 2014].

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# Algebraic semantics for Nelson's logic $\mathcal{S}$

Thiago Nascimento, Umberto Rivieccio
Departamento de Informática e matemática aplicada - UFRN
Natal, Brazil
thiagnascsilva@gmail.com, urivieccio@dimap.ufrn.br

**Abstract**. Besides the better-known Nelson logic (N3) and paraconsistent Nelson logic (N4), in *Negation and separation of concepts in constructive systems* (1959) David Nelson introduced a logic that he called $\mathcal{S}$, with motivations of arithmetic and constructibility. The logic was defined by means of a calculus (crucially lacking the contraction rule) having infinitely many rule schemata, and no semantics was provided for it.

We look in the present dissertation at the propositional fragment of $\mathcal{S}$, showing that it is algebraizable (in fact, implicative) in the sense of Blok and Pigozzi with respect to a class of involutive residuated lattices. We thus provide the first known algebraic semantics for $\mathcal{S}$ as well as a finite Hilbert-style calculus equivalent to Nelson's presentation. We also compare $\mathcal{S}$ with other logics of the Nelson family, to know, N3 and N4.

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# Da lógica ilocucionária: A noção de Força Ilocucionária Primitiva e a Hipótese da Construtibilidade

Martina dos Santos Nobre

Mestranda em Filosofia na Universidade Federal da Paraíba
martinasnobre@gmail.com

**Resumo**. A noção de força ilocucionária tem um papel basilar na teoria dos atos de discursos e contribui para pensarmos a *significação* em áreas como a filosofia, a lógica, a pragmática, a semântica, entre outras. Em linhas gerais, uma força ilocucionária é uma noção complexa que serve para identificar qual tipo de ato de pensamento o agente tenta realizar em um determinado contexto de enunciação. Possui uma estrutura lógica e sua natureza é mental, está ligada à intencionalidade e à consciência dos agentes humanos, proporcionando uma intersecção entre a filosofia da linguagem e da mente. Este trabalho está dividido em três partes: (i) Uma introdução aos fundamentos filosóficos da noção de força ilocucionária no âmbito da teoria dos atos de discurso a partir da abordagem da filosofia analítica da linguagem natural; (ii) A formalização de uma força ilocucionária, bem como seus componentes e as condições de satisfação e sucesso, propostas por Searle e Vanderveken no *Foundations os Illocutionary Logic*; (iii) As cinco forças ilocucionárias primitivas e a hipótese da construtibilidade, na qual Searle e Vanderveken defendem que as operações formais da lógica ilocucionária permitem a geração de forças ilocucionárias mais complexas a partir de forças ilocucionárias primitivas. Por fim, utilizaremos, ainda nesta última seção, as árvores semânticas para exemplificação da hipótese da construtibilidade.

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# O expressivismo lógico de Aristóteles segundo Lucas Angioni: um breve e introdutório quadro teórico

Aislan Fernandes Pereira

Departamento de Filosofia
Universidade Federal da Paraíba, Brazil
aislanfp@gmail.com

**Resumo**. Este resumo apresenta um breve e introdutório quadro teórico, de uma parte importante, de uma pesquisa em andamento. Essa pesquisa envolve algumas interseções entre o papel da lógica na demonstração científica aristotélica e em certas filosofias contemporâneas, das quais especialmente o pragmatismo analítico faz parte. Essa parte é o expressivismo lógico, presente numa teoria da explanação científica em Aristóteles, segundo Lucas Angioni. A retomada da teoria do silogismo, no século XX, tem seu início na obra de [Łukasiewicz 1957], o qual reinterpreta os modos válidos do silogismo, dizendo tratar-se de formas condicionais. Como uma superação, e não mais uma oposição, dessa interpretação, surge o paradigma Corcoran-Smiley [Corcoran 2015], que "domina" o meio acadêmico, nas últimas quatro décadas, utilizando-se de ferramentas de dedução natural [Gentzen 1969], apesar de outras posições que surgiram em décadas recentes. A "escola de Campinas" [Angioni 2014a, p. 9-10], grupo de pesquisadores aristotélicos da Unicamp, o qual tem Lucas Angioni como seu principal mentor, é uma dessas posições, em que o silogismo é escolhido como instrumento da demonstração científica, não por sua habilidade formal, como um método dedutivo, mas como um método explanatório, por "sua aptidão em exprimir relações causais ou explanatórias" [Angioni 2014b, p. 61]. Em relação à demonstração científica, o formalismo e outras caraterísticas são subordinadas ao expressivismo, o qual não tem a preocupação central em certificar a verdade, a expansão ou a justificação de um conhecimento [Angioni 2014b, p. 71-73], pois o valor de verdade das sentenças é conhecido antes da demonstração, com a observação e a experiência [Angioni 2014b, p. 74]. Aqui, então, coloca-se a distinção entre predicações básicas e explicações [Angioni 2014b, p. 77], de modo a questionar não qual o predicado mais verdadeiro, porém qual a explicação mais apropriada entre predicados igualmente verdadeiros. Dessa forma, quando se busca uma explicação apropriada, não cabe avaliar em termos de verdade (verdadeiro ou falso), validade (válido ou inválido), correção (correto ou incorreto), ordem ou prescrição [Angioni 2014b, p. 83]. A noção de causa como explicação surge quando Aristóteles introduz a forma triádica

"B é causa de A para C", de modo a articular predicativamente, no contexto científico, um dado fato que é o caso a ser explicado [Angioni 2014b, p.70;83]. Assim, não perdendo de vista que a verdade das sentenças já é conhecida, a busca científica pela causa apropriada não se encerra com sucesso, por meio de uma observação empírica de todos os fatos verdadeiros, porém quando se consegue explicar pela essência, isto é, pelas "propriedades que captam o que algo é em seu modo mais característico" [Angioni 2014b, p. 109;114-155]. O silogismo consegue captar ou expressar a estrutura triádica da causa, porque apresenta uma estrutura triádica [Angioni 2014b, p. 89], diferente de outras interpretações, que enxergam a silogística como um sistema de dedução natural [Corcoran 1972, Corcoran 1974, Corcoran 2015], uma teoria axiomática baseada numa lógica proposicional [Łukasiewicz 1957], uma teoria baseada em sistemas algébricos [Costa Santos and Alves 1990], numa perspectiva de Leibniz [Sotirov 1999], ligada a uma lógica paraconsistente [Gomes and D'ottaviano 2010] ou a uma lógica relevante [Steinkrüger 2015], ou até uma ferramenta científica inadequada, na interpretação de Barnes [Barnes 1981].

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# The special composition question and natural fusion

Renato Mendes Rocha

Interdisciplinary Institute of Society, Culture and Arts (IISCA)
Federal University of Cariri (UFCA)
Juazeiro do Norte, Ceará, Brazil
renato.rocha@ufca.edu.br

**Abstract**. In this paper, I intend to assess answers provided by advocates of universalist and the restrictivist theories of composition to the special composition question (SCQ) as formulated by [Inwagen 1990]. In order to maintain the ontological innocence of universalist theory and the folk intuition of restrictivist, I introduce a new mereological operation, labelled as *natural fusion*. The purpose of this operation is to falsify one of the premisses of the vagueness argument, which is argued by universalists against restrictivists and nihilistic responses to the SCQ. An important premise of this argument relies on the vagueness of mereological (or fusion) composition constraints. Natural fusion promises to reduce vagueness of determining whether the occurrence or not occurrence of composition than the available criteria. Natural fusion largely relies on the notion of natural property, which will also be discussed in this article.

The vagueness argument as formulated by [Lewis 1986, pp. 211-213] and [Sider 2001, Sider 1997] might be formulated as:

P1: If restricted composition is true, then the occurrence (or not occurrence) of composition might be vague.

P2: The occurrence (or not occurrence) of composition might be vague.

C1: Therefore, restricitvism is false.

If natural fusion operation is successful, it can make this argument unsound by falsifying the consequent of the first premisse. That is, natural fusion might provide a tool that allow us to restrict composition in a less vague manner, and so, achieve the intuitive desiderata of restrictivists. Natural fusion strongly relies on my definition [Rocha 2017] of natural properties, that is widely inspired by the work of [Lewis 1983] and [Quinton 1957, p. 36].

A natural property might be defined as this:

**Natural property** $=_{df}$ a property is natural, if, and only if, each element of the class defined by the property is sufficiently similar to the other elements

of this class and each element of the class is representative of the others elements of the class.

Assuming that fusion might be defined as:

$x\ Fu\ S$ **(x is a fusion of the elements of** $S$**)** $=_{df}$ each member of $S$ is part of $x$ and each part of $x$ overlaps any member of $S$.

By conjoining the definitions of natural property and fusion, I propose the a new mereological operation, the *natural fusion* that might be defined as this:

$x\ Fu^{nat}\ S$ **(x is a natural fusion of the elements of S)** $=_{df}$ if, and only if, members of S share at least one natural property, each member of *S* is a part *x* and the class of *x*' also share constitute a natural property.

So, a restrictivist might benefit from natural fusion and reformulate the initial vagueness argument premisses, by adopting natural fusion, we have:

$P1^{nat}$ If composition is restricted, then composition occurs when it is a result of a natural fusion.

Henceforth, if restricted composition might obey a definite constrain, then P2 is false and vagueness argument against restrictivist becomes unsound.

**Key-words**: Special composition question. Restrictivism. Natural fusion.

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# 'Quine's Warning' as Necessary Condition to Distinguish Logical Pluralism from Relativism

Vita Saitta

MA student, faculty of philosophy
Catholic University of Sacred Heart of Milan, Italy
vita.saitta@gmail.com

**Abstract**. In the past century, many logical systems have been developed to answer the need of a rigorous analysis of the several fields of inferential reasoning. As the number of logics increases, so does the importance of answering this question: among all of these alternative logics, is there a correct one, and which one is it?

A monist would claim that there is only one legitimate logic, while a pluralist would hold that there are more. This debate has gained more attention, mostly after J.C. Beall and G. Restall have proposed a new form of pluralism about logical consequence (see their Logical pluralism, [Beall and Restall 2007]). This fundamental work has inspired many new forms of pluralisms. However, due to the heterogeneity of these new proposals, it has become more and more difficult to understand what pluralism is. In light of this, the aim of this paper is to go deeper into the question of what the proper conditions are that define which positions count as "pluralistic".

In order to carry out this analysis, I will focus on the relation between "relativism" and "pluralism". In fact, although these concepts are central, in the current debate, there is the little to no consensus even on whether or not relativism entails pluralism or, conversely, pluralism entails relativism. With respect to this, we are going to explore the different views of authors such as [Shapiro 2014], [Wright 2008] and [Cook 2010].

This path will lead us to the main point of our purpose: a necessary condition to distinguish pluralism from relativism is that the former but not the latter must respect Quine's warning: ≪here, evidently, is the deviant logician's predicament: when he tries to deny the doctrine he only changes the subject≫ [Quine 1986]. Even if Quine intends to reject all logics contradicting the classic one with this statement, I will show that this is a fruitful starting point for the pluralism concept itself. Therefore, if a pluralist would argue that there are at least two alternative correct logics, these logics must indeed share a "core notion", i.e. they need to compete in the same regard, in order to avoid a "change of subject".

Applying this approach to the pluralistic thesis of [Berto 2015] and [Field 2009], the result will be that only the former satisfies our condition, while the latter should just be considered a relativism.

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# Logicamente simples como inserção em práticas: (des)Pensando objetos lógicos numa abordagem pragmatista

Luiz Henrique da Silva Santos

Graduando em Filosofia pela Universidade Federal de Alagoas
Bolsista de Iniciação Científica pelo CNPQ

**Resumo**. A abordagem fregeana para conceitos assume a existência de entidades chamadas logicamente simples. Para tais entes não pode haver uma definição própria; sendo simples, não podem ser decompostos. A pergunta que circunda essa investigação é: como entendemos o logicamente simples, já que não há uma definição para tais entidades? Os simples também são assumidos no atomismo lógico do *Tractatus* (1921) de Wittgenstein, e seu significado é explicado por meio de elucidações (*Erläuterungen*). Carentes de definição, os logicamente simples devem ser entendidos, segundo Frege (1892), por meio de dicas ou indícios (*Winke*). Tal tratamento é aqui considerado obscuro, e um escrutínio sobre essas noções apresenta uma abordagem teórica diversa à admissão dessas entidades. A proposta pretende tratar os indícios para o entendimento de logicamente simples num panorama pragmático: em vez de aceitar que dicas e elucidações esclarecem objetos lógicos, tratamos delas como inserção de indivíduos em uma prática específica. Essa inserção tem um caráter de regra e não nos compromete com a existência de quaisquer entidades simples. A reflexão sobre simples e seguimento de regra em Wittgenstein (1953) é utilizada como norte teórico. Desse modo busca-se proporcionar novos olhares sobre o debate ontológico, trazendo reflexões sobre o papel das práticas nesse âmbito.
**Palavras-chave**: Filosofia da Linguagem. Frege. Wittgenstein. Logicamente Simples. Pragmatismo.

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# Metaphysical Haecceitism and the Individuals Assumption

Maria Scarpati

University of Neuchâtel
maria.scarpati@unine.ch

**Abstract**. There is a long-standing controversy as to whether reality is at rock-bottom purely qualitative – the thought being that, if it is not, there are fundamental facts concerning *which* entities are involved in given situations. Recent literature has it that such an issue – the issue of *metaphysical Haecceitism* – boils down to the question whether there are fundamental individuals. More precisely, we tend to assume that anti-Haecceitism – the view that reality is fundamentally qualitative – is incompatible with there being fundamental individuals, and naturally comes with a fundamental ontology of sole universals. I argue that this attitude is misguided. In particular, I suggest that the aforementioned confusion arises from a twofold idea – to the effect that, first, excluding a certain category of entities from the fundamental reality is part of a good strategy for excluding Haecceitism, and, second, that such a category is that of individuals. While conceding the first point, I take stance against the second, which I show to be an aspect of what I call "the Individuals Assumption" (IA).

IA has it that when it comes to Haecceitism something special hinges on those entities that qualify as *individuals*, in at least two ways. i. Only individuals are taken to be relevant as the scope of (anti-)Haecceitism, so that defending or rejecting Haecceitism is to take stance as to whether the identity of such things alone is qualitatively determined. ii. Such things alone may give rise to what I call cases of *primitive identity*: cases in which there is fact of the matter as concerns which entities are involved in some situation, and such a fact of the matter does not rest on any qualitative feature of reality. And it is such cases that the anti-Haecceitist should get rid of.

Several historical reasons lie behind IA. By looking at them, it will be appreciated that, once a series of idiosyncrasies are removed, we should doubt that solid theoretical reasons support IA. In particular, following [Adams 1979], we commonly define the *(non-)qualitative* by appeal to *individuality* – more precisely, in terms that make it so that only *individuals* may be involved in non-qualitative facts. Hence, it turns out that only individuals may be involved in non-qualitative facts that are not settled by the qualitative – i.e., in cases of primitive identity. Yet Adams's choice in that sense was motivated by his own purposes: he was interested in whether the identity of

*individuals* alone was determined by the qualitative. However, our interests in approaching (anti-)Haecceitism may be broader than Adams's. Accepting the qualitative distinction so as he defines it, and the consequence that only individuals may give rise to cases of primitive identity, may be to put the cart before the horse. Even more so given that *individuality* is as often invoked as seldom defined in the debate about Haecceitism.

In the light of this, I will argue that any approach that defines the notion of the non-qualitative in terms that appeal to that of individuality is, if not utterly misleading, at least theoretically suspicious.

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# A New Perspective on the Simplicity of Truth

Giulia Terzian

Department of Philosophy – UNICAMP
giulia.terzian@gmail.com

**Abstract**. In the logico-philosophical literature, it has sometimes been claimed that truth is simple.[5] It is then natural to expect that the (alleged) simplicity of truth be somehow reflected in our formal theories of truth. Certainly this seems like a justified expectation if we think of the latter as being designed to capture our pre-theoretic intuitions about truth on the one hand, and to explicate the same on the other. Surprisingly little has been done to understand the notion of simplicity more precisely on either a philosophical or a formal level, however. Yet the questions of (i) whether truth is simple, and (ii) what this implies for one's truth theory, are arguably important ones. This paper is part of a broader project that aims to make some initial progress towards answering them.

Accordingly I will begin by examining the (scarce) arguments found in the literature that purportedly address (i) and (ii) above. Suppose that $T$ is our candidate formal theory of truth. One suggestion – arguably the most promising in the extant literature – is that the simplicity of truth (according to $T$) is measured by computational complexity of the extension of the truth predicate (again, according to $T$), where the latter is defined model-theoretically in the familiar way. After a brief overview of this and one other proposal, it will be argued that – whilst not without certain merits – ultimately neither does justice to the intuition that truth is a simple concept. Moreover, this negative conclusion will further strengthen the case for seeking a robust account of the simplicity of truth.

In its more constructive part, the paper outlines an alternative proposal for how to understand and interpret the notion of simplicity in the truth-theoretic context. The suggestion is to look to a different area of philosophy where simplicity is known to play an important normative role: namely, the debate on theoretical virtues in philosophy of science. For, while there is still disagreement about exactly how the simplicity of a scientific theory ought to be interpreted, much more progress has been made in this than in the truth-theoretic context. Discussions of simplicity in philosophy of science can be seen to revolve around three key questions:

[5] See for instance [Halbach and Horsten 2005], [Martin 1997], [Sheard 2002].

1. How should simplicity be *defined* (and then *measured*)?
2. What is the *justification* for regarding simplicity to be a virtue?
3. How is simplicity to be *traded-off*?

In the remaining part of the paper I apply each of these questions in turn to the case of truth, and discuss some of the (seemingly) more plausible answers to the same. Finally, I draw some reasonably optimistic conclusions from this exercise.

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# Completeness in Quantified Modal Logic and the Interpretation of the Quantifiers

Luis A. Urtubey

Escuela de Filosofía – Universidad Nacional de Córdoba
Argentina
urtubey@ffyh.unc.edu.ar

**Abstract**. James Garson [Garson 2013] remarks a nice feature of propositional modal logics, which consists in the modularity of their completeness results. In their classic book Hughes and Cresswell [Hughes and Cresswell 1996] have also paid attention to the failure of this feature for some systems of propositional modal logic that give rise to incompleteness results. What characterizes modularity is the fact that for the most part of systems of propositional modal logic, when the completeness of a logic S has been proved with respect to a property of frames $\| F \|$ and the completeness of a logic S' with respect to frame property F', then the completeness for the system S+S'(following the notation used in [Braürner and Ghilardi 2007], where + just means 'together with') with respect to the conjunction of F and F' can be given by 'pasting together' the reasoning of the original pair of completeness proofs. For example, from the proof that S4 (which is K +(T) + (4)) is complete for reflexive transitive frames, and the proof that B (which is K + (T) + (B)) is complete for reflexive symmetric frames, one may obtain a proof that S4+B=S5 is complete for reflexive, transitive, and symmetric frames. This kind of modularity may fail for quantified modal logic. Let us use an example borrowed from Garson to illustrate this fact. Classical quantificational logic QL is complete for the substitution and objectual interpretations of the quantifiers, and S4 is complete for reflexive transitive frames, but when the semantical conditions for the two systems are combined in the obvious way, the resulting semantics $\| \mathsf{QL} + \mathsf{S4} \|$ validates the Barcan formula (BF): $\forall x \Box A \rightarrow \Box \forall x A$, which is not provable in $\mathsf{QL} + \mathsf{S4}$. As Garson also remarks, the situation is oddly asymmetrical, because the converse Barcan formula CBF: $\Box \forall x A \rightarrow \forall x \Box A$, is provable in $\mathsf{QL} + \mathsf{S4}$. Modularity may fail even in systems that restore symmetry by adopting BF. Cresswell [Cresswell 1995] has showed that the propositional modal logic S4.1 is complete, but QL+BF+S4.1 is no longer complete.

In the last years some relational semantics for quantified modal logic have appealed to alternative interpretations of the quantifiers in order to fix this kind of incompleteness. Garson [Garson 2013] has introduced a 'sentential' interpretation that is based on a weak reading of the quantifiers. R. Goldblatt

[Goldblatt 2011] has also developed a new general semantics that makes use of an algebraic interpretation.

The aim of this paper is to reflect on the curious incidence that these alternative readings of the quantifiers have on the problem of the completeness for normal systems of quantified modal logic in the setting of relational semantics for modalities deriving from the work of Kripke. Some of these interpretations and their philosophical implications will be considered.

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# Index

# 3rd FILOMENA workshop

From **August 21st to 23rd 2017**, the 3rd FILOMENA Workshop (FIlosofia, LOgica eMEtafísica aNAlítica), promoted by the Group on Logic and Formal Philosophy from UFRN, has the purpose of gathering logicians working at the intersection of Logic and Metaphysics through the application of formal methods in Philosophy.