

Principles of Formal Semantics

**A CLLAM conference
A PLM supplementary event**

Stockholm University, Frescati, 27-29 September 2019

The main aims of this conference are to strengthen the interest in formal semantics among philosophers and to strengthen the interaction between formal and foundational semantics.

The conference is organized by [CLLAM](#) at the Department of Philosophy, Stockholm University. CLLAM is a member of the [PLM](#) network, devoted to furthering the philosophy of language and the philosophy of mind. PLM also promotes the interaction between formal and foundational semantics. The conference has the status as a PLM supplementary event.

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Program

Friday 27 September

Time	Room	Speaker	Title
09.30–09.40	E 371	Organizers	<i>Some opening words</i>
09.40–10.50	E 371	Maria Aloni	<i>A logic of pragmatic intrusion</i>
10.50–11.10	Coffee		
11.10–12.20	E 371	Denis Bonnay	<i>Compositionality in the light of deep learning: is it necessary after all?</i>
12.20–13.30	Lunch		
13.30–14.40	E 306	John Cantwell	<i>Indeterminacy in the post-semantics</i>
14.40–15.50	E 306	Robin Cooper	<i>The role of mental states and points of view in the semantics of Intensionality</i>
15.50–16.10	Coffee		
16.10–17.20	E 306	Dag Westerståhl	<i>Notes on model-theoretic semantics</i>

Saturday 28 September

Time	Room	Speaker	Title
09.40–10.50	E 306	Paul Egré	<i>Justified Approximation: “around” vs “between”</i>
10.50–11.10	Coffee		
11.10–12.20	E 306	Hana Kalpak	<i>Sources of meaning-driven unacceptability</i>
12.20–13.30	Lunch		
13.30–14.40	E 306	Andreas Stokke	<i>Are the person and gender features of pronouns presupposition triggers?</i>
14.40–15.30	E 306	Katharina Felka	<i>In defense of a Fregean account of that-clauses</i>
15.50–16.10	Coffee		
16.10–17.20	E 306	Una Stojnić	<i>Inquiry and Logical Form</i>
17.20–18.30	E 306	Floris Roelofsen	<i>Interacting alternatives: Referential indeterminacy and questions</i>

Sunday 29 September

Time	Room	Speaker	Title
09.40–10.50	E 306	Kathrin Glüer	<i>Switcher semantics vs. Post-Semantics</i>
10.50–11.10	Coffee		
11.10–12.20	E 306	Robert van Rooij	<i>Generic sentences and causality</i>

Abstracts

Maria Aloni

A logic of pragmatic intrusion

Recent literature has discussed several examples of inferences (notably, obligatory implicatures of marked indefinites; ignorance inference of modified numerals; phenomena of free choice) which present a challenge to the canonical Gricean divide between semantics and pragmatics. Although derivable by conversational principles they typically lack other properties of canonical pragmatic inference: they are often non-cancellable, they are sometimes embeddable and their processing time can equal that of literal interpretations. In this sense they are neither purely semantics nor purely pragmatics. In the talk I will present a state-based semantics where such inferences (and their hybrid behaviour) can be derived by allowing pragmatic principles intrude in the recursive process of meaning composition. Contrary to many existing accounts where free choice inferences are viewed as special cases of Quantity implicatures, the relevant pragmatic principle in our logic-based approach will be a version of Grice's Maxim of Quality.

Denis Bonnay

Compositionality in the light of deep learning: is it necessary after all?

Language models based on deep learning provide representations of sentences and sentence meanings that have proven successful in a variety of semantic tasks, including entailment and semantic similarity recognition. These models typically do not rely on a compositional approach to sentence meanings, casting doubts on philosophers' and linguists' take on compositionality as a necessary ingredient to language understanding. In this talk, I will argue that the situation is more complex than it might seem and, more precisely, that 1/ compositional knowledge might still be instrumental in seemingly compositionality agnostic language models, and that 2/ this might call for new explications of compositionality rather than for its abandonment. As a case in point, I will focus on BERT, Google's bidirectional encoder, which has recently achieved new state-of-the-art performance on the GLUE benchmark tasks, and present some new exploratory results regarding its ability to learn local failures of compositionality exhibited by idioms.

John Cantwell

Indeterminacy in the post-semantics

There are many domains that in one way or other can be viewed as involving *indeterminate* subject matters: matters where it can be indeterminate whether a proposition is true or false, or indeterminate what term refers to. In most of these domains it is often highly controversial whether or not they indeed involve indeterminacy, but *vagueness* and the *indeterminacy of the future* are often cited as potential candidates where we can find indeterminacy.

Formal semantics offers various tools for modelling the semantics of expressions with indeterminate semantic value (reference/truth value). Among the most popular is *supervaluationism* in which an additional semantic parameter is introduced in order to resolve the indeterminacy, giving expressions a precise semantic value relative to that parameter. Indeterminacy is then modelled as involving a set of admissible values for the parameter. This mode of analysis has a number of virtues but the introduction of an additional parameter presents a problem when it comes to applying the semantics to the truth-values of actual utterances (or the proposition expressed by the utterances). For then the parameter required by the model must somehow be extracted from the context of the utterance. This is the *post-semantics*. It is argued that the post semantics itself is best viewed as involving indeterminacy, in that there is an indeterminate relation between the context of use and the parameter required by the model. That is, to the extent that a supervaluationist model is appropriate in a semantic analysis, it will imply that propositions can have indeterminate truth values, and that terms can have indeterminate reference.

Robin Cooper

The role of mental states and points of view

I will argue that record types can be used to model mental states. For example, a type modelling a belief state is a type of the way the world would be if our beliefs were true and a type modelling our desires is a type of the way the world would be if our desires were fulfilled. A sentence like

Sam thinks that Kim left

is true just in case the type which is the content of "Kim left" matches the type modelling Sam's belief state in a way that we will discuss. Similarly, a sentence like

Sam wants to leave

is true just in case the type which is the content of "Sam leaves" matches the type modelling Sam's desires.

We will also develop a notion of point of view which enables us to superimpose a type on another type (using the notion of asymmetric merge, similar to priority unification in feature based systems).

This facilitates a semantic treatment of readings for sentences like those above in which the speaker's point of view is superimposed on the type corresponding to the mental state of the person whose attitude is being reported. We will discuss how this relates to classical problems involving proper names as well as some cases of intentional identity and a puzzle originally introduced by Janet Fodor concerning sentences like:

Charley wants to buy a coat like Bill's

on an interpretation where Charley does not have a specific coat in mind and where his desire is to buy a coat with big pockets and a fur collar and it is the speaker's contribution that this is a coat like Bill's. (Charley may never have even heard of Bill.)

Dag Westerståhl (joint work with Larry Moss)

Notes on Model-theoretic semantics

The aim of this talk is to say something about what one should expect, and what one should not expect, from applying the technology of model theory to natural language semantics. We start from an extremely simple diagram for models, scenarios, and languages. It seems to us that adherence to this picture could several dispel current misunderstandings about the role of models in semantics. Also, it lays to rest certain old but still common misgivings about MTS due to the abstract mathematical nature of its tools. Illustrations from Montague semantics, generalized quantifiers, and epistemic logic are given.

Paul Egré (joint work with A. Mortier, B. Spector and S. Verheyen)

Justified Approximation: "around" vs "between"

Why is our language vague? One plausible explanation is that in contexts in which a cooperative speaker is not perfectly informed about the world, the use of vague expressions offers an optimal tradeoff between the constraints of truthfulness (Gricean Quality) and informativeness (Gricean Quantity) (Egré & Icard 2018). In situations of speaker uncertainty, vagueness offers a "safeguard against error" (Channell 1994, van Deemter 2009, Frazee and Beaver 2010). In this paper, this hypothesis is fleshed out by examining the meaning of the numerical

approximator “around”. We compare the use of “around” with the expression of precise intervals involving “between”, and explain, using a Bayesian model of interpretation, how “around” allows a rational hearer to infer a better probabilistic representation of the uncertain distribution the speaker has in mind, but also permits a rational speaker to better communicate the uncertain information they have in mind. Some preliminary data will be presented purporting to test the model.

Hana Kalpak

Sources of meaning-driven unacceptability

Within formal semantics, it is increasingly common to assume that constructions having systematically trivial semantic content (typically in the sense of Gajewski, 2002; 2009) are in virtue of this perceived as ungrammatical, on a par with syntactically ill-formed constructions. In this talk, I explore to the extent to which such systematic semantic triviality can explain various types of weak (a.k.a. selective) islands, in particular factive islands (Szabolcsi & Zwarts, 1993) and referential islands (Simonenko, 2016). Schwarz and Simonenko (2018) argue that (i) factive and referential island effects resist explanation in terms of systematic semantic triviality, and (ii) these effects instead give evidence that systematic pragmatic infelicity is a source of perceived ungrammaticality. I will argue against both claims, by showing that constructions with violations of factive or referential island constraints do in fact exhibit systematic semantic triviality. Systematic infelicity, on the other hand, seems to both under- and over-generate unacceptable constructions, and thereby fail to be explanatory wrt. weak islands. I conclude by noting a puzzle that seems to trouble all theories of factive islands currently on the market.

Andreas Stokke

Are the Person and Gender Features of Pronouns Presupposition Triggers?

A long tradition has seen the person and gender features of pronouns as triggering semantic presuppositions. This view is motivated by, on the one hand, the role of the features in reference determination, and on the other hand, the projection behavior of person and gender information. This paper argues that, while this view is well motivated for gender features, the person features of pronouns are not presupposition triggers. The reason is that, as I argue, the gender and person features differ both in their roles in reference determination and in their projection behavior. In particular, while gender information shares the projection behavior of standard presuppositions, person information shares the pro-

jection behavior of conventional implicatures. I end by offering some remarks on a potential view of person features as triggering conventional implicatures.

Katharina Felka (joint work with Alex Steinberg)

In defense of Fregean that-clause semantics

Gottlob Frege famously held the view that expressions within natural language that-clauses that occur as parts of propositional attitude ascriptions and speech act reports do not have their standard denotations (what Frege called their *gerade Bedeutung*). Instead, Frege thought, they denote what is in other contexts the concept (*Sinn*) they express. In our paper we defend this Fregean reference shift thesis against an objection that Pautz (2008) and Schiffer (2003) raise and develop a more elaborate version of a Fregean semantics for that-clauses.

Una Stojnić

Inquiry and Logical Form

Joint inquiry—interlocutors’ ability to work out agreed answers to questions through talk—is central to language. A major strand of research in the philosophy of language, notably Stalnaker [1978], aims to develop abstractions that help us think more clearly about it.

One essential ingredient in joint inquiry is the exchange of information. One party sometimes asserts that things are a certain way. The news is accepted, and as the conversation moves forward, interlocutors take this information for granted. Information exchange in this sense is the focus of Stalnaker [1978]; in many cases when we encounter philosophically problematic cases of information exchange, Stalnaker’s model lets us reason about the issues in concise and elegant ways. That reasoning can even be formalized and operationalized in computer models, as in Stone [2000] for example.

At the same time, information exchange is not the only philosophically problematic aspect of joint inquiry. In its pursuit, it can be just as important to ask the right questions as to find answers. A wide range of research in linguistics and the philosophy of language, notably including examples as Ginzburg [1994], Roberts [2012], Ciardelli et al. [2019], offers alternatives to Stalnaker’s model that track the questions that interlocutors contribute as well as the answers they offer.

In fact, the most problematic aspect of joint inquiry sometimes comes merely in establishing the terms of debate. One reflection of this has been the proliferation of philosophical accounts of meaning negotiation [Plunkett and Sundell, 2013, Ludlow, 2014] as further alternatives to the Stalnakerian model.

This paper also takes up a broad approach to inquiry that embraces the way

interlocutors frame the terms of their inquiry, ask questions, and contribute answers. We add yet an additional dimension: the way that interlocutors ground their inquiry in their collaborative engagement with situations around them. There is increasing recognition of the practical importance and theoretical significance of situated language [Hunter et al., 2018]. In joint inquiry, situations can be crucial to highlight important entities and relationships, motivate key questions, and offer decisive evidence to resolve them.

Formalizing situated inquiry turns out to offer very different tools for modeling and reasoning about the content of contributions to discourse. It invites us to approach discourse in terms of the information available in the world, not merely in terms of the changing mental states of interlocutors, and to ground inferences not just in model-theoretic structures but in concrete formal representations. This makes it possible for the formalism not only to advance our understanding of new questions specifically around situated language, but to offer simple and perspicuous formal insights into classic philosophical issues in joint inquiry.

Floris Roelofsen

Interacting alternatives: Referential indeterminacy and questions

One of the major challenges involved in developing semantic theories is that many constructions in natural language give rise to alternatives. Different sources of alternatives have been identified—e.g., questions, indeterminacy, focus, scalarity—and have been investigated in quite some depth. Less attention, however, has been given so far to the question how these different kinds of alternatives interact. I will focus in this talk on one such interaction, namely between referential indeterminacy and questions. Several formal semantic frameworks have been developed to capture referential indeterminacy (dynamic semantics, alternative semantics) and the content of questions (e.g., alternative semantics, structured meanings, partition semantics, inquisitive semantics). I will report on joint, ongoing work with Jakub Dotlacil, which aims to merge dynamic and inquisitive semantics in a principled way. I will present a basic system and suggest some potential applications.

Kathrin Glüer (joint work with Peter Pagin)

Switcher Semantics vs. Post-Semantics

The assertoric content/ingredient sense distinction is having a renaissance. There is a growing tendency to distinguish the so-called compositional semantic values of expressions from their assertoric contents in order to keep semantics compo-

sitional while dealing with phenomena such as the behavior of proper names under modal operators, indexicals under temporal operators, or quantification. But preserving compositionality comes at a price: on standard ways of drawing this distinction, semantics no longer assigns propositions to sentences (in context), and accounting for successful linguistic communication is relegated to the so-called post-semantics. In this talk, we explore a different way of using the assertoric content/ingredient sense distinction to account for the phenomena in question – switcher semantics – and compare its treatment of assertoric content to the post-semantic account.

Robert van Rooij (joint work with Katrin Schulz)

Generic sentences and causality

In this talk we discuss the merits of a causal power analysis of conditional and generic sentences. We show that such an analysis is more general than, but can still motivate a probabilistic analysis of conditionals and generics. We suggest that a similar analysis is appropriate as well for biscuit conditionals and disposition ascriptions.