

First CAuLD Meeting

<http://www.loria.fr/~pogodall/cauld/>

ARC INRIA

May 14th

Outline

- 1 What is an ARC?
- 2 CAuLD: Scientific Objectives
 - Scientific Background
 - Objectives
- 3 Participants
- 4 Today's and Tomorrow's Program

ARC: INRIA support for Collaborative Research Initiative

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CAuLD's Objectives

- At the interface between grammatical formalism and linguistic theory and modelling
- Aims at developing a grammatical formalism (based on programming methods) suitable for discourse representations
- Aims at reconsidering linguistic theories and modelling through this grammatical formalism
- Hence: people from formal semantics, formal linguistics, computer science
- With a common background: logic and type theory

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Scientific Context

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John doesn't own a donkey

* It is grey

DRT and DPL

DRT [Kamp(1981), Kamp and Reyle(1993)]

- Elaborated to take the former phenomena into account
- Some weaknesses [Hinderer(2008)]:
 - It needs symbol generators
 - Compositional presentation [Muskens(1996)] does not have confluence
- Built-in theory of accessibility (different from Binding theory, SDRT, etc.)

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DPL [Groenendijk and Stokhof(1991)]

Non-standard interpretation of quantifiers

Developping a Formalism

Based on [de Groote(2006)]'s Proposal

Key features:

- Similar dynamic effects as DRT or DPL
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- What's the easy way from static semantics to dynamic semantics?
- How does this approach compare to the state of the art (DRT, variable free semantics, etc.)

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From a Representational Level to a Lexical Level

- Independence between the grammatical formalism and the linguistic theory
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- Constraints and preferences: how to adapt preferences (vs. accessibility) theory (centering, focusing, etc.)
- Presupposition: how to deal with them in this framework, since it is close to anaphora phenomena [[van der Sandt\(1992\)](#), [Geurts\(1999\)](#)] and lexically triggered. How to deal with anaphora in modal subordination [[Geurts\(1999\)](#)]?

Participants

Calligramme (LORIA, Nancy) :

- Maxime Amblard
- Philippe de Groote
- Ekaterina Lebedeva
- Sylvain Pogodalla

Logic, Interaction, Language, and Computation (LILaC, IRIT, Toulouse)

- Nichoolas Asher

Laboratoire de Linguistique Formelle (LLF, Paris)

- Pascal Amsili
- Grégoire Winterstein

SIGNES (LABRI, Bordeaux)

- Renaud Marlet
- Bruno Méry
- Christian Retoré
- Sylvain Salvati

Program of this 1st Meeting

Aim: to make people share some background and some perspectives on that project

Thursday 14th

11:15–12:15 Philippe de Groote (A Montagovian Approach to Discourse)

14:30–15:30 Nicholas Asher (Anaphora and Discourse Structure)

15:30–16:15 Sylvain Pogodalla: Examples of Accessibility Constraints Modelling

16:45–17:30 CAuLD meeting

Friday 15th

9:45–10:45 Nicholas Asher (Lexical Semantics)

11:15–12:15 Christian Retoré: Vers une modélisation logique de certains aspects de la sémantique lexicale

14:30–15:15 Maxime Amblard: Using Verb Structures for Semantic Variables Declaration



P. de Groot.

Towards a montagovian account of dynamics.

In *Proceedings of Semantics and Linguistic Theory XVI*, 2006.

[http:](http://research.nii.ac.jp/salt16/proceedings/degroote.new.pdf)

[//research.nii.ac.jp/salt16/proceedings/degroote.new.pdf](http://research.nii.ac.jp/salt16/proceedings/degroote.new.pdf).



B. Geurts.

Presuppositions and Pronouns.

Current Research in the Semantics/Pragmatics Interface. Elsevier, 1999.



J. Groenendijk and M. Stokhof.

Dynamic predicate logic.

Linguistics and Philosophy, 14(1):39–100, 1991.



S. Hinderer.

Automatisation de la construction sémantique dans TYN.

PhD thesis, Université Henri Poincaré – Nancy 1, 2008.



H. Kamp.

A theory of truth and semantic representation.

In J. A. Groenendijk, T. Janssen, and M. Stokhof, editors, *Formal Methods in the Study of Language*. Foris, Dordrecht, 1981.



H. Kamp and U. Reyle.

From Discourse to Logic.

Kluwer Academic Publishers, 1993.



R. Muskens.

Combining montague semantics and discourse representation.

Linguistics and Philosophy, 19(2), 1996.



R. van der Sandt.

Presupposition projection as anaphora resolution.

Journal of Semantics, 9(4):333–378, 1992.