Situations et Perspectives:

Langues orales, langues signées

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Semantics

■ **Formal Semantics: what are the rules by which meaning is computed?**
(i) study natural languages with same rigor *as if* it were a formal language (Richard Montague);
(ii) but be open to the possibility that its formal properties are *very different* from those of formal systems we know.

■ **Comparative Semantics: what is the extent of language variation in the domain of meaning?**
(i) initial studies of meaning were based on English and other western languages;
(ii) contemporary studies are intrinsically *comparative*.
Goal: we will suggest that sign language can bring important new insights into the foundations of semantics.

Linguistics and Sign Language

- Sign languages have been used to **inform theories of morphology, syntax and even phonology.**
  (e.g. Sandler and Lillo-Martin 2006 for a recent survey)

- Within the study of **meaning**, the main question that has been asked concerns **the status of *iconicity*,** which plays an important role in sign languages. (e.g. Cuxac 1993 Liddell 2003)

- **Can sign language provide new evidence** about the **formal rules** by which **meaning** is computed?
  1. What is the logic of natural language?
  2. What are the ontological commitments of natural language: objects? times? worlds?
  3. How does language manipulate perspectives?

The Importance of Pronouns

■ Pronouns express **logical dependencies**
Every politician$_1$ knows someone who will betray **him$_1$**.
Chaque politicien$_1$ connaît quelqu'un qui **le$_1$** trahira.
$\forall x_1$ [politician(x_1) $\Rightarrow$ $\exists x_2$ (person(x_2) & trust(x_1, x_2) & will-betray(x_2, x_1)]
☞ What is the **logic** of natural language?

■ Pronouns are a marker of **ontological commitment**
Quine: 'To be is to be the value of a variable...'
☞ Does language have means of **reference to times/worlds?**

■ Pronouns are an indicator of **perspectival orientation**
I is an indicator of first person perspective. But in reported speech there is a conflict between the speaker's perspective and the subject's perspective (e.g. *Sam says that I am wrong*)
☞ How is the first person perspective conveyed in **reports**?$_4$

Sign Languages

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Sign Languages:
Hungarian and International Sign Language

[Image effacée pour des raisons de copyright]

Ádám Kósa, 1st Deaf member of the European Parliament. Hungarian Sign Language with simultaneous interpretation in International SL

Deaf Liberation:
Gallaudet University and its first Deaf President

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Sign vs. Spoken Language

- **Linguistics**

  Comparison between sign language and spoken languages is ongoing, and has unearthed **significant similarities** (e.g. Sandler and Lillo-Martin 2006).

- **Neuroimaging and Lesion studies**

  "Overwhelmingly, lesion and neuroimaging studies indicate that **the neural systems supporting signed and spoken language are very similar**:
  both involve a predominantly left-lateralised perisylvian network. Recent studies have also highlighted processing differences between languages in these different modalities." (MacSweeney et al. 2008)

[Image effacée pour des raisons de copyright]

(i) Regions activated by BSL sentence comprehension in deaf native signers. (ii) Regions activated by audio-visual English sentence comprehension in hearing non-signers. Both language inputs were contrasted with a low-level baseline: perception of the still model and a low-level target detection task (visual for deaf; auditory for hearing). Source: MacSweeney et al. 2008, 2002.

Creating Sign Language:
Nicaraguan Sign Language (Senghas et al. 2004)

- First generation of children created a language that 'pooled the makeshift gestures they used with their families at home'.

- Second generation of children, who acquired the language when they were four, acquired a different version of the language.

- **An example: roll down**
  => in this particular case, a more 'iconic' construction is partially replaced with a more 'grammatical' one
  (but iconicity is an important component of mature sign languages).

Rolling down

[Image effacée pour des raisons de copyright]

Spanish Speaker

Spanish speaker describing an event in which a cat, having swallowed a bowling ball, proceeds rapidly down a steep street in a wobbling, rolling manner. Here, manner (wiggling) and path (trajectory to the speaker's right) are expressed in a single movement.

NSL Signer, learned after 1993

and before the age of 6. Manner and path ex-pressed sequentially. Here, manner (circling) and path (trajectory to signer's right) are expressed in two separate signs, assembled into a sequence. 11

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Pronouns

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Formal Properties of Pronouns: Spoken Language

■ **Ambiguities without ellipsis**
Sarkozy$_1$ told Obama$_2$ that he$_{1? / 2?}$ would be elected.

■ **Ambiguities with ellipsis**
Peter$_1$ loves his$_1$ wife. John$_2$ does too __.
Meaning 1: … loves Peter's wife.
Meaning 2: … loves John's wife.

■ **'Condition B'**
a. *John$_1$ likes him$_1$
b. John$_1$ likes himself

■ **Other Properties**
Weak Crossover, Strong Crossover...

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The Signer's Space

[Image effacée pour des raisons de copyright]

Sign Language Pronouns as Indices
(Lillo-Martin and Klima 1990)

■ **English**

    a. Sarkozy$_1$ told Obama$_2$ that he$_{1? / 2?}$'d win the election.

    b. A deputy$_1$ told a senator$_2$ that he$_{1? / 2?}$'d win the election.

■ **LSF** (Informant F, 4, 235)

SARKOZY$_a$ OBAMA$_b$ a b a-TELL-b IX-b WIN ELECT^N

SARKOZY$_a$ OBAMA$_b$ a b a-TELL-b IX-a WIN ELECT^N

[Sign Language Pronouns as Indices]
(Lillo-Martin and Klima 1990)

■ **English**

    a. Sarkozy$_1$ told Obama$_2$ that he$_{1? / 2?}$'d win the election.

    b. A deputy$_1$ told a senator$_2$ that he$_{1? / 2?}$'d win the election.

■ **LSF** (Informant F, 4, 233)

DEPUTY$_a$ SENATOR$_b$ a b a-TELL-b IX-b WIN ELECT^N

DEPUTY$_a$ SENATOR$_b$ a b a-TELL-b IX-a WIN ELECT^N

[Sign Language Pronouns as Indices]
(Lillo-Martin and Klima 1990)

■ **English**

I have two tickets. If I give them to $John_1$ and $Bill_2$, $they_{1+2}$ will be happy.

■ **ASL** (Informant 1, 2, 180)

IX-1 HAVE TWO TICKET.

IF 1-GIVE $JOHN_a$ BILL, THE-TWO-a,b HAPPY.

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Present Elicitation Method

■ Work with **native signers** of ASL and LS

■ All examples are videotaped.

■ **Playback method**

Stage 1: One signer **signs** sentences of interest.

Stage 2: One or several signers **assess** these sentences for acceptability (usually by comparing several sentences).

■ Often, **ratings on a 7-point scale**.

Formal Properties of Pronouns: Spoken Language

	English	Sign Languages
Ambiguity w/o ellipsis	Sarkozy$_1$ told Obama$_2$ that he$_{1/2}$ would win.	ASL: overt indices
		LSF: overt indices
Ambiguity in ellipsis	Peter$_1$ loves his$_1$ wife. John$_2$ does too.	ASL: Yes
		LSF: Yes
Condition B	*John$_1$ admires him$_1$ John$_1$ admires himself$_1$	ASL: Yes (but…)
		LSF: Yes (but…)
Weak/Strong Crossover	??Who$_1$ do his$_1$ students like?	ASL: Yes (but...)
		LSF: ?

[Spoken vs. Sign Languages]

☞ Suppose we find an apparent difference between a Sign Language and English. What can we conclude from this?

- **Possibility 1:** Real difference that could be replicated among spoken languages, and is not due to modality.

- **Possibility 2:** Real difference that is due to the difference in modality.

- **Possibility 3:** Superficial difference: the difference in modality only makes visible in one case structures that are abstract in the other.

A Difference: Locative Agreement

- When several geographical locations are associated to a single individual, the *locations'* loci can serve to refer to the individual.

- **Locative Agreement in ASL**

JOHN$_b$ $_a$[WORK IX-a $_a$ FRENCH CITY] SAME $_c$[WORK IX-c AMERICAN CITY].

IX-a IX-1 HELP **IX-a**, IX-c IX-1 NOT HELP **IX-c**

'John does business in a French city and he does business in an American city.
There [= in the French city] I help him. There [= in the American city] I don't help him.'

Logic:

How are pronouns connected
to their antecedents?

Schlenker, P. (to appear) 'Donkey Anaphora: the View from Sign Language (ASL And LSF)'. To appear in *Linguistics & Philosophy*.

Scope in Logic and in Language (= 'portée)

■ **In logic, a variable cannot depend on a quantifier unless it is within its syntactic 'scope'.**

a. $\exists x$ $(P(x)\ \&\ Q(x))$ $Q(x)$ is in the scope of $\exists x$

b. $\exists x$ $P(x)$ ... $Q(x)$ $Q(x)$ is NOT in the scope of $\exists x$

■ **In language, a similar notion has been devised under a different name** ('c-command').

a. [No politician]$_1$ works with people who criticize him$_1$.

b. #[No politician]$_1$ works. People criticize him$_1$.

=> *him* is in the scope of *no politician* in a. but not in b.

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A Problem
(Geach 1962)

■ a. #[No Frenchman]$_1$ won the Tour de France. He$_1$ was praised.

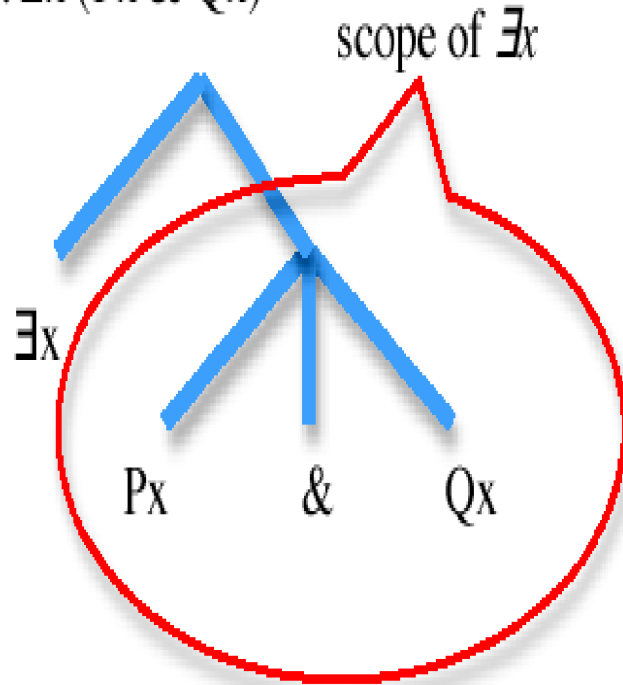b. [A Frenchman]$_1$ won the Tour de France. He$_1$ was praised.

■ **Problem**
Pronouns can depend on indefinites without being in their syntactic scope.
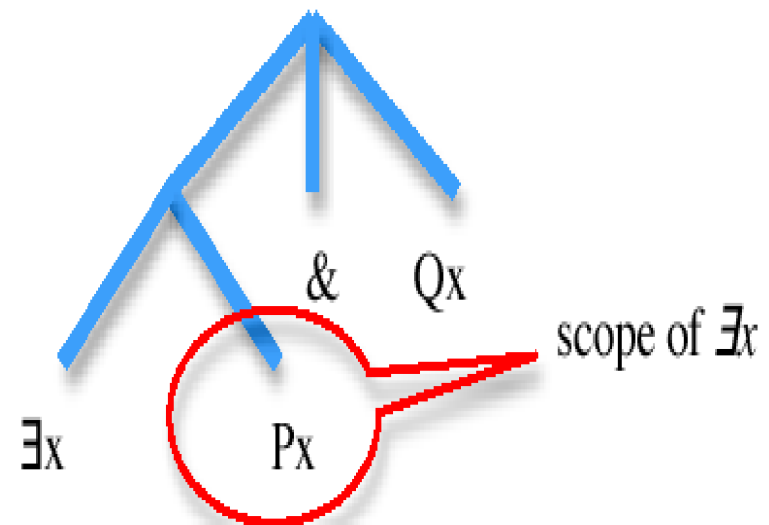
[Scope in Logic]

■ **Scope ("Portée") in Predicate Logic**
   Qx is in the scope of $\exists x$ on the left but not on the right.

a. $\exists x (Px \& Qx)$

scope of $\exists x$

$\exists x$

Px   &   Qx

b. $((\exists x\, Px) \& Qx)$

&   Qx

scope of $\exists x$
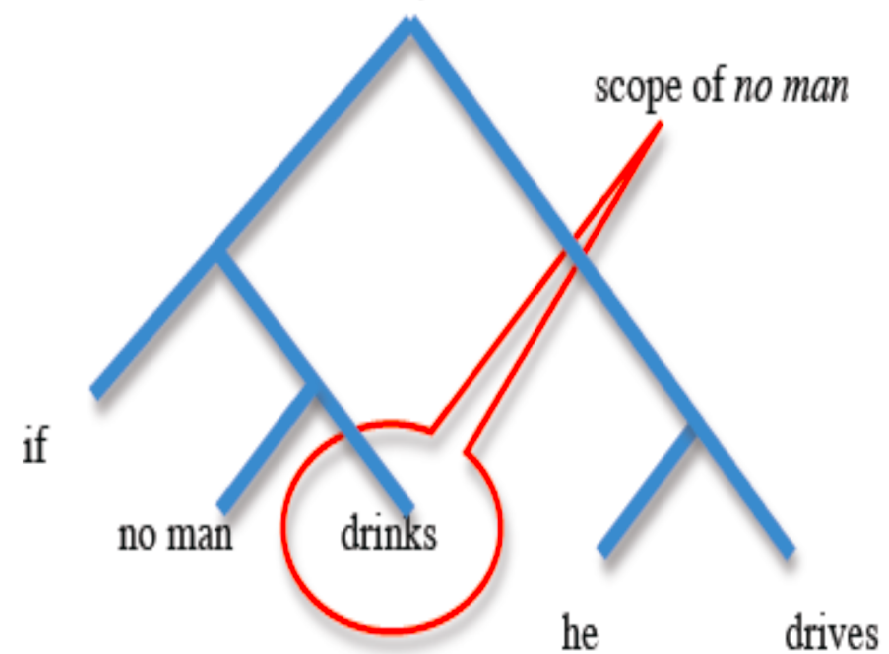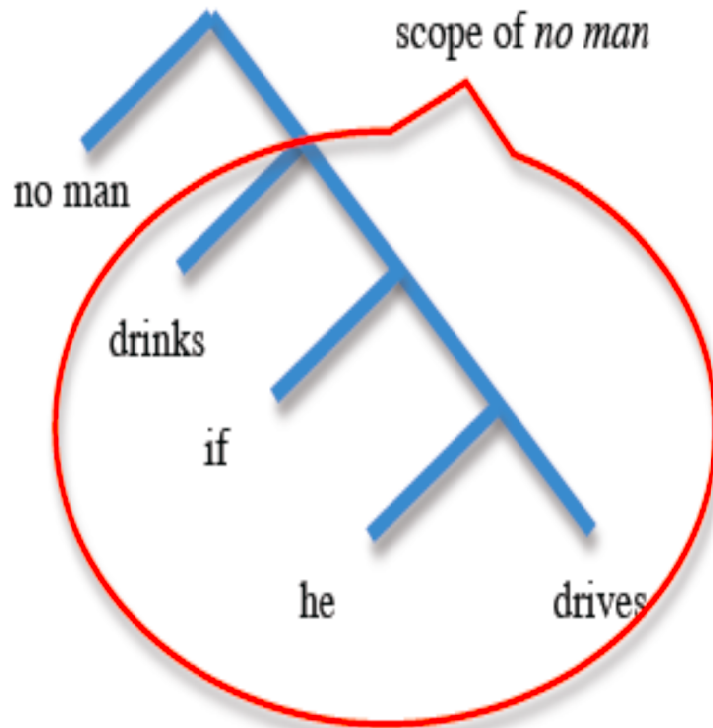
$\exists x$ Px
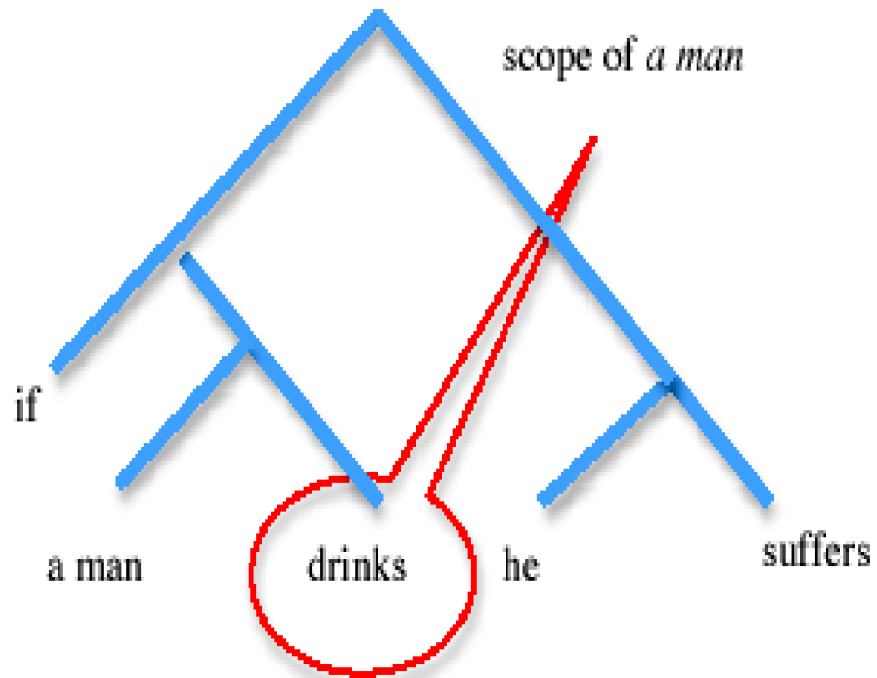
[Scope in Language]

■ **Scope (= c-command) in Natural Language**
he is in the scope of *no man* on the left but not on the right.

[A Problem]

- **A difference:** A pronoun can depend on an indefinite **without** being in its scope.

scope of *a man*

if

a man   drinks   he   suffers

Dynamic Semantics vs. Classical Semantics

■ **Theory I. Dynamic logic + pronouns as variables**
Intuition: Indefinites introduce 'discourse referents'
(Kamp 1981, Heim 1982)
=> a new kind of logic, 'dynamic logic', is needed (variables can depend on existential quantifiers without being in their scope).

■ **Theory II. Classical logic + pronouns as descriptions**
(Evans 1977)
Intuition: Pronouns are concealed definite descriptions –
e.g. *he ≈ the Frenchman (who won the Tour de France)*
=> no new logic is needed.

Arguments

■ **Dynamic Semantics is often considered 'intuitive'**
... and it does not have to posit 'concealed' linguistic material.

■ **But there might be independent arguments for the 'pronouns as descriptions' view**

    a. Either this house has no bathroom or it is well hidden. (after B. Partee)
    it ≈ the bathroom

    b. I doubt that this house has no bathroom – but it must be well hidden.
    it ≈ the bathroom

Sign Language Data

- **LSF**
  IX-b GERMAN$_b$ GERMAN$_a$ a,b-MEET.
  IX-b IX-a KNOW LONG-TIME.
  'A German met a German. He had long known him.' (Inf H, 13, 14-15)

- **Dynamic Semantics: appropriate analysis**
  a. The antecedents each introduces a **position**.
  b. Pronouns retrieve this position by way of **pointing**.
  c. Thus there is a **formal and visible connection between an indefinite and a pronoun in another sentence.**

- **Pronouns as descriptions: difficulty even in English**
  A German and a German met. The German knew the German... ?
  The German who met a German knew the German who a German met ?

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[Sign Language Data]

- **ASL**
  WHEN $_a$ONE a-MEET-b $_b$ONE…
  a. IX-a TELL IX-b HAPPY a-MEET-b (Inf 1, 2, 285; 111)
  b. IX-b TELL IX-a HAPPY a-MEET-b (Inf 1, 2, 285; 111)

- **Dynamic Semantics: appropriate analysis**
  a. The antecedent introduces a position in signing space.
  b. Pronouns retrieves this position by way of pointing.
  c. Thus **there is a formal and visible connection between an indefinite and a pronoun outside its scope.**

- **Pronouns as descriptions: difficulty even in English**
  When someone meets someone, <u>the person</u> tells <u>the person</u>... ?
  <u>the person that meets a person</u> tells <u>the person that a person meets</u> ... ?

Sign Language Data

- **English**

  a. Either this house has no bathroom or $\boxed{\text{it}}$ is well hidden.

  b. I doubt that this house has no bathroom – but $\boxed{\text{it}}$ must be well hidden.

- **ASL**

  a. EITHER NO ${}_a$ONE WILL GO MARS, EITHER-OR
  IX-a WILL FAMOUS
  'No one will go to Mars, or he [= the person who goes to Mars] will be famous.' (Inf 1, i P1040984; i P1040985)

  b. IX-1 DOUBT NO ${}_a$ONE WILL GO M.A.R.S.
  IX-a WILL FAMOUS.
  'I don't think no one will go to Mars. He [= the person who goes to Mars] will be famous.' (Inf 1, i, P1040980; i, P1040981)

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Conclusion on Logic

■ ASL (and LSF) **make(s) visible a formal connection** between an antecedent and a pronoun which is not within its scope.

■ This provides evidence **for the analysis offered by Dynamic Semantics**.

■ We also obtain **unexpected new data**: in ASL, **under restricted conditions,** all sorts of antecedents (including 'no one') can introduce 'discourse referents'.

Ontology:

Does language have grammatical means of reference to times and possible worlds?

Schlenker, P. (to appear) 'Temporal and Modal Anaphora in Sign Language'. To appear in *Natural Language and Linguistic Theory*.36

Temporal and Modal Talk

- **Beyond the Here and Now**

  "Man is apparently almost unique in being able to talk about things that are remote in space or time (or both) from where the talking goes on." (Hockett 1960)

- **Temporal Talk**

  Sam will visit Paris

  ≈ at some future time, Sam visits Paris

- **Modal Talk**

  Sam must be in Paris

  ≈ in every world compatible with what we know, Sam is in Paris

Explicit vs. Implicit Reference to Times/Worlds

■ **Theory I. Temporal and Modal Logic**
Intuition: The grammatical resources we have to talk about situations (times and possible words) are **less rich** than those we have to talk about individuals.
=> we **explicitly refer to individuals** (with pronouns), but **not to times and possible worlds**.

■ **Theory II. Temporal and Modal Anaphora**
Intuition: There are time- and world-denoting pronominal expressions (B. Partee, M. Stone)

Deictic Uses of Tense and Mood

- **Nominal Anaphora**

  [In a seminar:]

  He talks too fast.

  => the person made salient by the situation talks too fast.

- **Temporal Anaphora** (after B. Partee)

  [Watching a picture:]

  I wasn't young

  => at <u>the time made salient by the situation</u> I wasn't young.

- **Modal Anaphora** (after M. Stone)

  [There is a party at my place, and one of the guests comes near the stereo to turn up the volume.]

  No! My neighbors would kill me.

  => in <u>the worlds made salient</u>, my neighbors kill me.

Anaphoric Uses of Tense and Mood

- **Nominal Anaphora**
  A Frenchman won the Tour de France. He was praised
  => <u>The Frenchman who won the Tour de France</u> was praised

- **Temporal Anaphora** (after B. Partee)
  Mary woke up sometime during the night. She was nervous.
  => Mary was nervous at <u>the time at which she woke up</u>.

- **Modal Anaphora** (after M. Stone)
  I could be a millionaire. But I <u>would</u> pay taxes.
  => I would pay taxes in <u>the worlds in which I am a millionaire.</u>

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Temporal and Modal Talk in ASL

- **Temporal**

  Context: Every year there are flu outbreaks.

  $$\text{re}\underline{\quad}$$

  IX-1 SOMETIMES INFECTED$_a$. **IX-a** IX-1 PROBLEM.

  Rating (7 = best): 6.7

  'Sometimes I get infected. Then I have a problem.'

  'When does the speaker have a problem? When infected.'

- **[Modal]** $\quad\quad\quad\quad\quad$ re$\underline{\quad}$

  FLU OUTBREAK. IX-1 POSSIBLE INFECTED$_a$. **IX-a**
  IX-1 PROBLEM.

  Rating (7 = best): 6.3

  'There was a flu outbreak. I might be infected. Then I have a problem.'

  'In what case does the speaker have a problem? If infected.' 41

Temporal and Modal Talk in ASL

■ It is possible to **point towards positions** assigned to individuals as well as situations (times and worlds).

■ The **same dual / trial / plural pronouns** can be used to refer to individuals and situations (times and worlds).

■ **A new fact**
Temporal and modal pointing gives rise to the **same patterns of agreement** as locative pointing.

Temporal Agreement

■ **Temporal Agreement in ASL**

Context: John is retired.

JOHN IX-b $_a$[PAST COLLEGE STUDENT CL] $_c$[PAST COLLEGE PROFESSOR CL].

IX-a IX-1 HELP **IX-a**, IX-c IX-1 NOT HELP **IX-c**

'At some point John was a college student and at some point he was a university professor.
Then [=when he was a student] I helped him. Then [= when he was a professor] I didn't help him.'

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[Temporal and Modal Talk in ASL]

- **Temporal**

  Context: Every year, the speaker plays in the lottery.

  SOMETIMES IX-1VERY LUCKY$_a$. SOMETIMES LITTLE-BIT LUCKY$_b$. NO-MATTER **THE-TWO-a, b** IX-1 HAPPY.

  Rating (7 = best): 6.5

  'Sometimes I am very lucky. Sometimes I am a little lucky. In both cases, I am happy.'

[Temporal and Modal Talk in ASL]

- **Modal**

  Context: The speaker is playing in a lottery, and he believes he has won.

  NOW IX-1 POSSIBLE VERY RICH$_a$. POSSIBLE LITTLE-BIT RICH$_b$. NO-MATTER **THE-TWO-a, b** IX-1 LUCKY.
  Rating (7 = best): 6.5
  'Now I might be rich, and I might a little rich. In both cases I am lucky.'

[Modal Agreement]

■ **Modal Agreement in ASL**

Context: I don't know who John is.

JOHN IX-b ₐ[POSSIBLE COLLEGE STUDENT CL]
꜀[POSSIBLE COLLEGE PROFESSOR CL].

  re__   re__

IX-a IX-1 HELP **IX-a**,   IX-c IX-1 NOT HELP **IX-c**

'It's possible that John is a college student and it's possible that he is a university professor.
Then [= if he is a student] I will help him. Then [= if he is a professor] I won't help him.'

Conclusion on Ontology

■ ASL **makes visible a temporal and modal reference** .

■ This provides evidence **for the view that language has situation-denoting pronominals.**

■ We also obtain **unexpected new data**: in ASL, **temporal and modal reference seems to be particularly similar to locative reference.**

Perspectives:

How is the first person perspective conveyed in indirect discourse?

The Standard Analysis: Fixed Context
(Kaplan 1977)

■ **'I' vs. 'the speaker'**
a. The speaker always sounds stupid.
b. ≠ I always sound stupid.
I can only refer to the speaker of the actual context; *the speaker* can refer to the speaker of other situations.

■ **Reported speech**
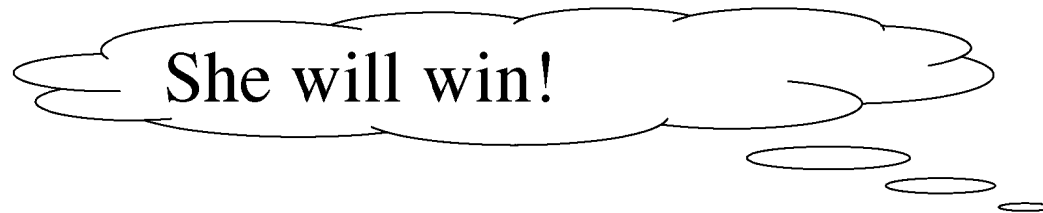a. Sam says: 'I am an idiot'.
b. ≠ Sam says that I am an idiot.

■ **Quotations block grammatical dependencies**
a. *Who did Sam say   'I like _'?
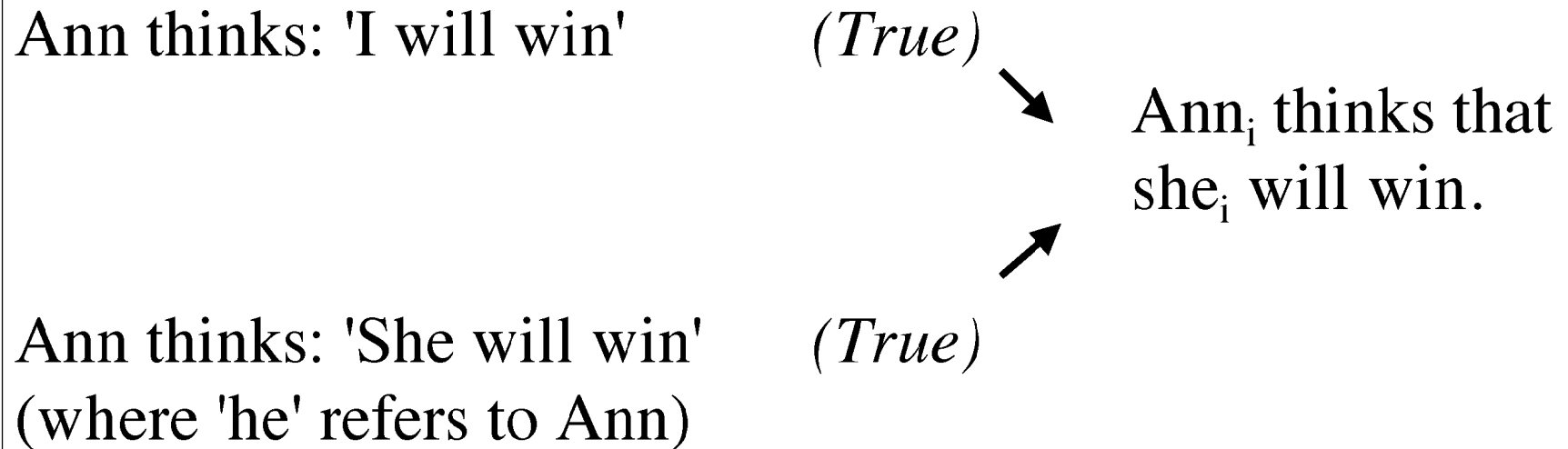b. *Qui est-ce que Sam a dit 'j'aime_'?

The first person perspective can be crucial...

■ **Situation:** There is a signing competition. Ann is watching her own hands without realizing it.

She will win!

[Image effacée pour des raisons de copyright]

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...but it is apparently lost in indirect discourse.

Ann thinks: 'I will win'   *(True)*

Ann$_i$ thinks that she$_i$ will win.

Ann thinks: 'She will win'   *(True)*
(where 'he' refers to Ann)

Apparently, there is *information loss* in indirect discourse: information about the first vs. third person perspective is **not preserved.**

Context Shift

- **Theory I. No Context Shift** (Kaplan 1977)
  Intuition: The only context that plays a grammatical role is the **context of the actual speech act.**

Only option:	**c** Sam says that I_c am an idiot

- **Theory II. Context Shift** (Schlenker 2003)
  Intuition: Indirect discourse sometimes makes it possible to '**shift the context**' and thus adopt another thinking agent's perspective.
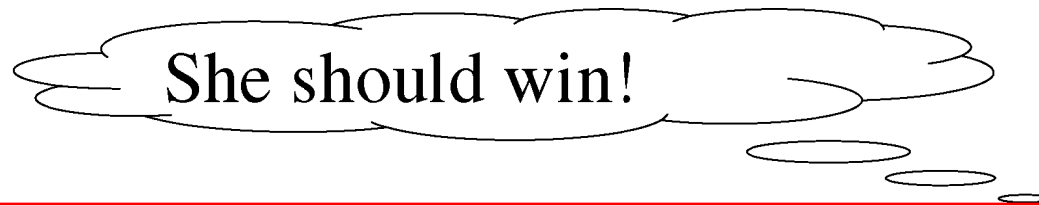 => some of these cases do not involve quotation.

Two options:	**c Sam says that I-c am an idiot**
	c Sam says that c' I-c' am an idiot

Regaining the first person perspective

■ a. True: Ann hopes that she will win.
b. **False:** Ann hopes **to win**
☞ a. is ambiguous, but **b. only reports 1ˢᵗ person thought**

She should win!

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Shifting the Context <u>Without</u> Quotation

■ **First person in Amharic** (Schlenker 2003)

ǰon   ǰəgna nə-ññ   yɨl-all

John hero   be.PF-1SO 3M.say-AUX.3M

'John says that he is a hero'

■ **Present tense in Russian** (Schlenker 2003)

petja$_i$ skazal, čto on$_i$ plačet   [Russian]

Pejta$_i$ said   that he$_i$ is-crying

'Petja said that he was crying [at the time of his utterance]

■ **First Person in Zazaki** (Anand 2006)

čenɛkɛ [kɛ Hɛseni va   **mɨ** ɟ paci kɛrda] rindɛka
girl   that Hesen said I   ɟ kiss did   pretty.be-PRES
'The girl that Hesen said {Hesen, I} kissed is pretty." (Ar

'Role Shift' in ASL (= 'transfert')

■ **No Role Shift** (Informant 1, 2, 49)

$_a$PETER TELL $_b$ANN a-GIVE-b CAR.
'Peter told Ann that he would give her a car'

■ **Role Shift** (Informant 1, 2, 49)

$$RS_a \underline{\hspace{3cm}}$$
$_a$PETER TELL $_b$ANN   1-GIVE-2 CAR.
'Peter told Ann that he would give her a car

■ ... and it can be shown with standard tests (= grammatical dependencies) that **Role Shift isn't standard quotation.**

[Role Shift ≠ Standard Quotation]

■ **Role Shift in Indirect Discourse (ASL)**

Context: the speaker is in NYC

$$RS_a_____$$

IN LA WHO IX-a JOHN$_a$ SAY **IX-1** WILL MEET __ HERE WHO

'In LA, who did John say he would meet there [in LA]'?

IX-1 = JOHN
HERE = LA

Role Shift Without Indirect Discourse

■ **Role Shift without Indirect Discourse (ASL)**

LAST-WEEK IX-1 1-MEET PETER$_a$ IN LA$_b$.

  RS_____

IX-a 1-FIGHT-FIGHT PEOPLE.

'Last week I met Peter in LA. He fought with people.'

(Inf 1, 6, 429-430)

Conclusion on Perspectives

- ASL **makes visible an operation of 'context shift'** which was postulated for indirect reasons for some spoken languages (e.g. Zazaki).

- This provides evidence **for the view that language has a grammatical operation of context shift.**

- We also obtain **unexpected new data**: in ASL, **context shift can arise outside of indirect discourse.**

Comparative Formal Semantics

- **I. Logic:** variables (pronouns) can depend on antecedents without being in their syntactic scope => **dynamic logic**.
  II. Ontology: language has **situation-denoting pronominals** (time and possible worlds).
  III. Perspectives: context-shifting constructions

- **Sign Language**
  a. ASL and LSF sometimes provide **visible evidence** for semantic operations which are harder to observe in spoken language (antecedence, reference, context shift).
  b. They also provide **unexpected new data and problems.**

- **Comparative semantics** should study **sign language**; and researchers who are native signers should play a crucial role.