

A Formal Account of Disorders in Dialogues

CLASP

Maxime Amblard

November 15, 2017



Introduction

SLAM

Corpus Tagging

Toward a formal treatment

Perspectives

Introduction

1. A formal account of natural language
2. Thought and language disorders

- Semantics

- Semantics
- Compositionality (Frege)

- Semantics
- Compositionality (Frege)
- Logical approaches (Montague)

- Semantics
- Compositionality (Frege)
- Logical approaches (Montague)

(1) John loves Mary

- Semantics
- Compositionality (Frege)
- Logical approaches (Montague)

(1) John loves Mary

love(John, Mary)

- Semantics
- Compositionality (Frege)
- Logical approaches (Montague)

(1) John loves Mary

love(John, Mary)

- How to use these representations?
- Usefulness of these representations?

- Semantics
- Compositionality (Frege)
- Logical approaches (Montague)

(1) John loves Mary

love(John, Mary)

- How to use these representations?
 - Usefulness of these representations?
- (2) If a farmer owns a donkey, he beats it

- Semantics
- Compositionality (Frege)
- Logical approaches (Montague)

(1) John loves Mary

love(John, Mary)

- How to use these representations?
- Usefulness of these representations?

(2) If a farmer owns a donkey, he beats it

$\exists x(\exists y.(\text{farmer } x \wedge \text{donkey } y \wedge \text{own } x y) \rightarrow \text{beat } x y)$

- Semantics
- Compositionality (Frege)
- Logical approaches (Montague)

(1) John loves Mary

love(John, Mary)

- How to use these representations?
- Usefulness of these representations?

(2) If a farmer owns a donkey, he beats it

$\exists x(\exists y.(\text{farmer } x \wedge \text{donkey } y \wedge \text{own } x y) \rightarrow \text{beat } x y)$

- Cognitive reality, conceptual reality? ...

Can we understand madness?

Article "The Conversation France" 05.31.2017



<http://theconversation.com/peut-on-comprendre-la-folie-78510>

SLAM

- Linguistic studies of mental diseases (Chaika 1974) and (Fromkin 1975)
- Pragmatic discontinuities in performing verbal interaction (Trognon and Musiol 1996)
- Discontinuities **definitive** (Musiol 2009): pathological use of discourse planning for patients with schizophrenia (paranoid)

The project aims to systematize the study of pathological conversations under interdisciplinary approaches

- Building of a linguistic resource on mental pathology

The project aims to systematize the study of pathological conversations under interdisciplinary approaches

- Building of a linguistic resource on mental pathology
 - semi-supervised interviews
 - neuro-cognitive tests
 - double eye-trackers

The project aims to systematize the **study of pathological conversations** under **interdisciplinary approaches**

- Building of a linguistic resource on mental pathology
 - semi-supervised interviews
 - neuro-cognitive tests
 - double eye-trackers
- Epistemological and philosophical studies (norm, madness, rationality)

The project aims to systematize the **study of pathological conversations** under **interdisciplinary approaches**

- Building of a linguistic resource on mental pathology
 - semi-supervised interviews
 - neuro-cognitive tests
 - double eye-trackers
- Epistemological and philosophical studies (norm, madness, rationality)
- Identify these purposes with:
 - formal models
 - NLP methods and tools

- Corpus
- Formalization
- Epistemology

- Corpus
 - organize the interviews
 - transcription and tagging
 - analyse different linguistic levels
- Formalization

- Epistemology

- Corpus
- Formalization
 - question the cognitive reality of semantico-pragmatic models,
 - automatically identify unusual uses of the language
- Epistemology

- Corpus
- Formalization
- Epistemology
 - question the normative concepts of rationality and logicity
 - study interpretation under linguistic interaction, and the status of implicit norms

Discontinuity example

- B124 OH OUAIS (↑) ET PIS COMPLIQUÉ (↓) ET C'EST VRAIMENT TRÈS TRÈS COMPLIQUÉ (→) LA POLITIQUE C'EST QUELQUE CHOSE QUAND ON S'EN OCCUPE FAUT ÊTRE GAGNANT PARCE QU'AUTREMENT QUAND ON EST PERDANT C'EST FINI QUOI (↓)
Oh yeah (↑) and complicated (↑) and it's really very very complicated (→) politics, it's really something when you get into it, have to win or else when you lose, well, you're finished (↓)
- A125 OUI
Yes
- B126 J. C. D. EST MORT, L. EST MORT, P. EST MORT EUH (...)
JCD is dead, L is dead, P is dead uh (...)
- A127 ILS SONT MORTS PARCE QU'ILS ONT PERDU À VOTRE AVIS (↑)
So you think they're dead because they lost (↑)
- B128 NON ILS GAGNAIENT MAIS SI ILS SONT MORTS, C'EST LA MALADIE QUOI C'EST C'EST (→)
No they won but if they're dead, it's their disease well it's it's (→)
- A129 OUAIS C'EST PARCE QU'ILS ÉTAIENT MALADES, C'EST PAS PARCE QU'ILS FAISAIENT DE LA POLITIQUE (↑)
Yeah it's because they had a disease, it's not because they were in politics (↑)
- B130 SI ENFIN (→)
Yes I mean (→)
- A131 SI VOUS PENSEZ QUE C'EST PARCE QU'ILS FAISAIENT DE LA POLITIQUE (↑)
Yes you think it's because they were in politics (↑)
- B132 OUI TIENS OUI IL Y A AUSSI C. QUI A ACCOMPLI UN MEURTRE LÀ (→) IL ÉTAIT PRÉSENT LUI AUSSI QUI EST À B. MAIS ENFIN (→) C'EST ENCORE À CAUSE DE LA POLITIQUE ÇA
Yes, so well yeah there was C too who committed murder, uh huh (→) he was there too, the one in B but well (→) it, that, it's because of politics again

Discontinuity example

- B124 OH OUAIS (↑) ET PIS COMPLIQUÉ (↓) ET C'EST VRAIMENT TRÈS TRÈS COMPLIQUÉ (→) LA POLITIQUE C'EST QUELQUE CHOSE QUAND ON S'EN OCCUPE FAUT ÊTRE GAGNANT PARCE QU'AUTREMENT QUAND ON EST PERDANT C'EST FINI QUOI (↓)
Oh yeah (↑) and complicated (↑) and it's really very very complicated (→) **politics**, it's really something when you get into it, **have to win** or else when you lose, well, you're finished (↓)
- A125 OUI
Yes
- B126 J. C. D. EST MORT, L. EST MORT, P. EST MORT EUH (...)
JCD is dead, L is dead, P is dead uh (...)
- A127 ILS SONT MORTS PARCE QU'ILS ONT PERDU À VOTRE AVIS (↑)
So you think **they're dead because they lost** (↑)
- B128 NON ILS GAGNAIENT MAIS SI ILS SONT MORTS, C'EST LA MALADIE QUOI C'EST C'EST (→)
No they won but if they're dead, it's **their disease** well it's it's (→)
- A129 OUAIS C'EST PARCE QU'ILS ÉTAIENT MALADES, C'EST PAS PARCE QU'ILS FAISAIENT DE LA POLITIQUE (↑)
Yeah it's because they had a disease, it's not because they were in politics (↑)
- B130 SI ENFIN (→)
Yes I mean (→)
- A131 SI VOUS PENSEZ QUE C'EST PARCE QU'ILS FAISAIENT DE LA POLITIQUE (↑)
Yes you think it's because they were in politics (↑)
- B132 OUI TIENS OUI IL Y A AUSSI C. QUI A ACCOMPLI UN MEURTRE LÀ (→) IL ÉTAIT PRÉSENT LUI AUSSI QUI EST À B. MAIS ENFIN (→) C'EST ENCORE À CAUSE DE LA POLITIQUE ÇA
Yes, so well yeah there was **C too who committed murder**, uh huh (→) he was there too, the one in B but well (→) it, that, it's because of politics again

Conversation example (english only)

B124 Oh yeah (↑) and complicated (↑) and it's really very very complicated
(→) **politics**, it's really something when you get into it, **have to win** or else
when you lose, well, you're finished (↓)

A125 Yes

B126 JCD **is dead**, L **is dead**, P **is dead** uh (...)

A127 So you think **they're dead because they lost** (↑)

B128 No they won but if they're dead, it's **their disease** well it's it's (→)

A129 Yeah it's because they had a disease, it's not because they were in
politics (↑)

B130 Yes I mean (→)

A131 Yes you think it's because they were in politics (↑)

B132 Yes, so well yeah there was **C too who committed murder**, uh huh (→)
he was there too, the one in B but well (→) it, that, it's because of politics
again

The schizophrenic switch twice from a theme to another one:

The schizophrenic switch twice from a theme to another one:

- politic death (symbolic)
- death (literal)

Discontinuity example

The schizophrenic switch twice from a theme to another one:

- politic death (symbolic)
- death (literal)

The two themes are related but they express two different realities.

A relatively large corpus

	La Rochelle			Lyon			Total
	♂	♀	tot	♂	♀	tot	
Schizophrenics	15	3	18	22	9	31	49
Controls	15	8	23	4	4	8	31
Total	30	11	41	26	13	39	80

A relatively large corpus

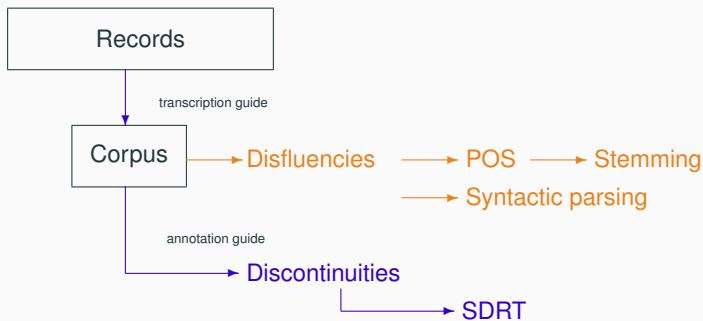
	La Rochelle			Lyon			Total
	♂	♀	tot	♂	♀	tot	
Schizophrenics	15	3	18	22	9	31	49
Controls	15	8	23	4	4	8	31
Total	30	11	41	26	13	39	80

31 575 speeches / 375 000 words

	La Rochelle				Lyon			
	# speeches		# words		# speeches		# words	
S	3 863	11 145	46 859	119 762	4 062	4 433	66 725	79 081
T	7 282		72 903		12 356			
P + S	3 819	11 517	30 293	138 571	4 098	4 480	33 686	37 842
P + T	7 698		108 278		4 156			
Total	22 662		258 333		8 913		116 923	

- A lot of administrative steps:
 - CPP of the area of the medical institution (including a finalise description of the all protocol)
 - CNIL
- Data should not be use for/against the patient
- Patient involvement (significant loss of participation >55%)
- Heavy protocol

- Interview(s) (hand transcription with a guide)
- Neuro-cognitive tests:
 - Wechsler Adult Intelligence Scale-III (IQ)
 - California Verbal Learning Test (strategy and cognitive abilities)
 - Trail Making Test (deprecation of cognitive flexibility and inhibition).
- Oculomotor behavior (double Eye-Trackers)
- Brain activity (EEG)



Talking with patient with schizophrenia

[AMR TALN 2011] [AMR Evol. Psychiatrique 2012] [AMR congrès de linguistique romane 2013]
[AMR Dialogue, Rationality and Formalism Springer 2014] [AMR Philosophie et langage 31 2014]

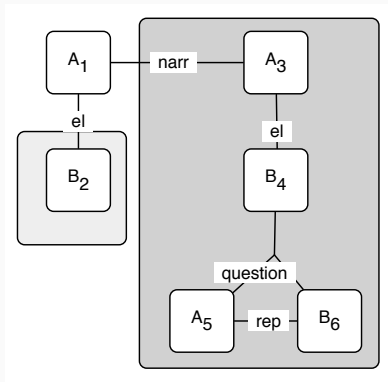
Two interlocutors, thus two (spontaneous) views on the exchange.

Discourse interpretation by	
normal subject (3 rd person)	Schizophrenic (1 st person)
hypothesis: pragmatic correctness ↓ semantics incorrectness	pragmatic incorrectness ↑ hypothesis : semantic correctness
contradictory contents: <i>look</i> like a contradiction	coherent content: <i>possibility of interpretation</i>

⇒ The representation *need more* than logical semantics

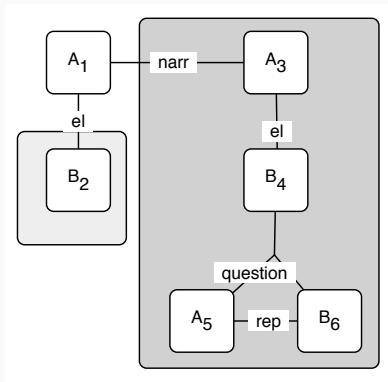
Representation

Use of SDRT + thematic boxes (grey ones)



Representation

Use of SDRT + thematic boxes (grey ones)



They are thematic islands

Two conjectures

- Schizophrenics are **logically consistent**.

Two conjectures

- Schizophrenics are **logically consistent**.
Hence discontinuities appear in the process which produce the representation, thus at the pragmatic level.

Two conjectures

- Schizophrenics are **logically consistent**.
Hence discontinuities appear in the process which produce the representation, thus at the pragmatic level.

- Underspecification (ambiguity) plays a central role

Two conjectures

- Schizophrenics are **logically consistent**.
Hence discontinuities appear in the process which produce the representation, thus at the pragmatic level.
- Underspecification (ambiguity) plays a central role
Slogan: "A choice is never a definitive one!"

Two conjectures

- Schizophrenics are **logically consistent**.
Hence discontinuities appear in the process which produce the representation, thus at the pragmatic level.

- Underspecification (ambiguity) plays a central role
Slogan: "A choice is never a definitive one!"
Phonological, morphological, lexical, discourse, ...

Guy experienced a lovely evening last night

Elaboration

He had a fantastic meal

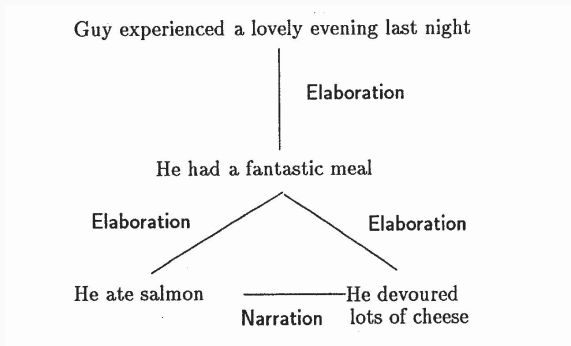
Elaboration

Elaboration

He ate salmon

Narration

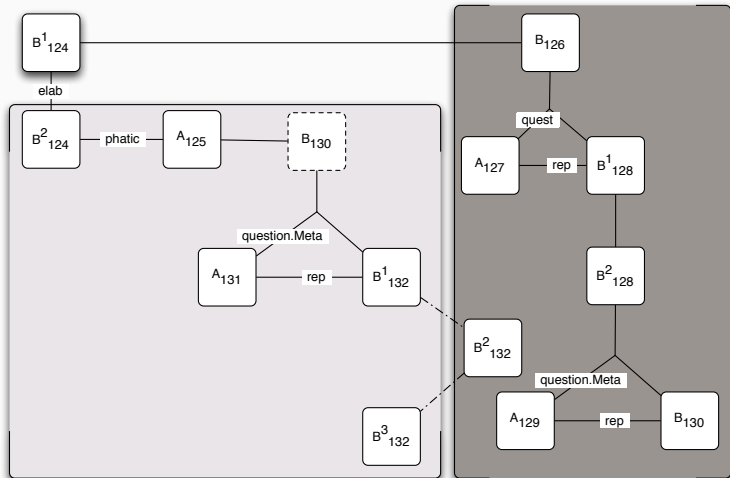
He devoured
lots of cheese



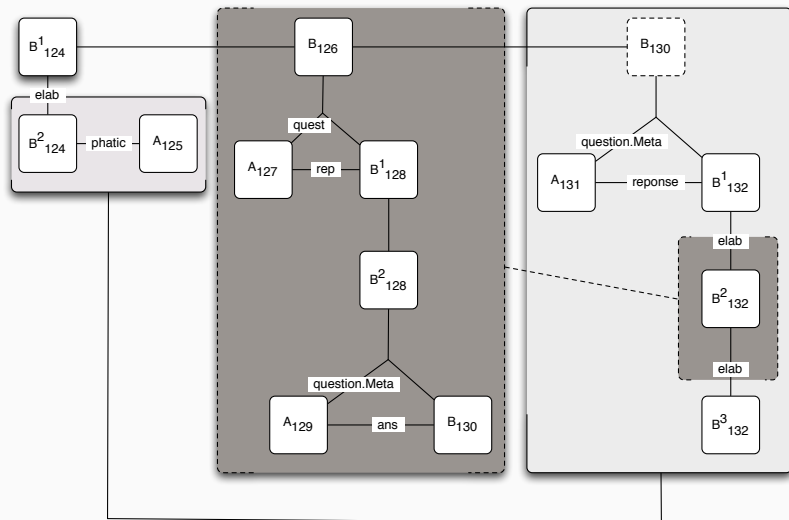
Constraints on attachment: right frontier rule

“He found **it** really marvelous”

Patient understanding



Psychologist understanding



G82 l'an dernier euh (→) j'savais pas comment faire j'étais perdue et pourtant j'avais pris mes médicaments j'suis dans un état vous voyez même ma bouche elle est sèche j'suis dans un triste état

I didn't know what to do. I was lost.

V83 Vous êtes quand même bien (↑)

G84 J pense que ma tête est bien mais on croirait à moitié (↓) la moitié qui va et la moitié qui va pas j'ai l'impression de ça vous voyez (↑)

V85 D'accord

G86 Ou alors c'est la conscience peut être la conscience est ce que c'est ça (↑)

V87 Vous savez ça arrive à tout le monde d'avoir des moments biens et des moments où on est perdu

Everybody is lost at times.

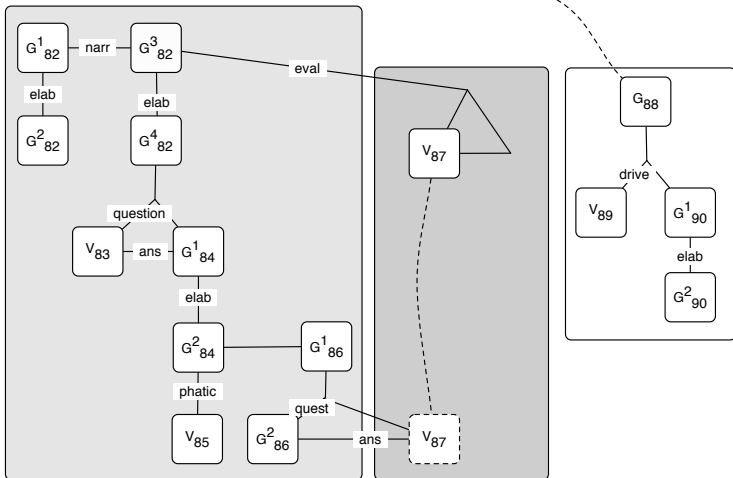
G88 Oui j'ai peur de perdre tout le monde

Yes I am afraid I lose everybody.

V89 Mais ils vont plutôt bien vos enfants (↑)

G90 Ils ont l'air ils ont l'air mais ils ont des allergies ils ont (→) mon petit fils il s'est cassé le bras à l'école tout ça

Rise without attachement 2/2



Corpus Tagging

SLAMtk (python)

- Limit human actions:
 - Disfluencies, `Distagger` (Constant and Dister 2010)
 - POS and lemmas, `MElt` (Denis and Sagot 2009)

SLAMtk (python)

- Limit human actions:
 - Disfluencies, `Distagger` (Constant and Dister 2010)
 - POS and lemmas, `MElt` (Denis and Sagot 2009)

Why?

- Study conventionnal vs pathological uses
- rebuild more consistent speeches (syntactically)

SLAMtk (python)

- Limit human actions:
 - Disfluencies, *Distagger* (Constant and Dister 2010)
 - POS and lemmas, *Melt* (Denis and Sagot 2009)

Why?

- Study conventionnal vs pathological uses
- rebuild more consistent speeches (syntactically)

Results:

- Patients with schizophrenia produce slightly more disfluencies
- But they have no specific behavior for POS / lemmas

f-score : 95,5 %, precision : 95,3 %, recall : 95,8 % (Constant and Dister 2010)

1. 'euh'

(1) *moi ça m'est presque plus euh difficile et euh anti-naturel de parler*

2. Repeat

(2) *j' arrive à être à être concentrée quand il faut faire quelque chose*

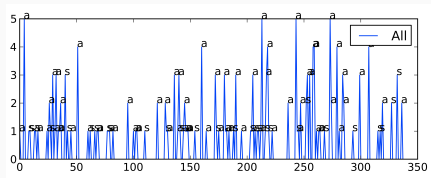
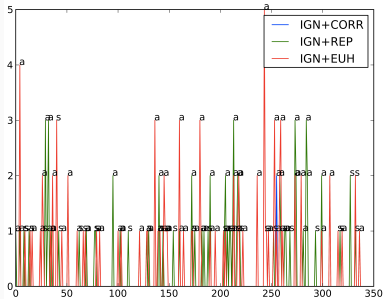
3. self-corrections

(3) *enfin je sais pas trop le les termes*

4. starters

(4) *pis progressivement vous av- pouvez travailler sur votre concentration*

Distribution of disfluencies in an interview



Results (% of disfluencies)

	S	C	S+C	P+S	P+C	P
	Corpus Lyon					
by speeches	0,5417	0,5589	0,545	0,1400	0,1513	0,1424
by words	0,032	0,0168	0,0288	0,0144	0,0138	0,0142
	Corpus La Rochelle					
by speeches	0,7117	0,484	0,5842	0,3338	0,7369	0,5599
by words	0,0595	0,0468	0,0524	0,0421	0,0496	0,0463

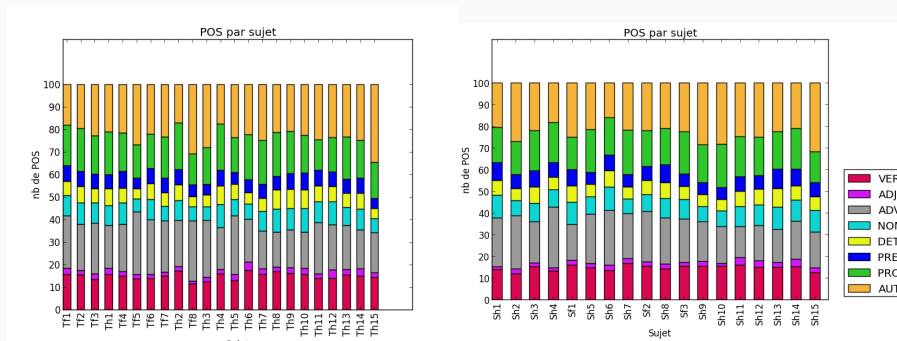
Results (% of disfluencies)

	S	C	S+C	P+S	P+C	P
Corpus Lyon						
by speeches	0,5417	0,5589	0,545	0,1400	0,1513	0,1424
by words	0,032	0,0168	0,0288	0,0144	0,0138	0,0142
Corpus La Rochelle						
by speeches	0,7117	0,484	0,5842	0,3338	0,7369	0,5599
by words	0,0595	0,0468	0,0524	0,0421	0,0496	0,0463

	corpus Ville1	corpus Ville2
S and Psy	10,6806923083	19,4197596818
C and Psy	0,422898291704	3,23530253756
S and C	10,2827554261	16,0376100956

Significance: > 1,96

Repartition of POS tagging for controls (on the left) and patients with schizophrenia (on the right)



	La Rochelle		Lyon									
	FR	TR	FR	TR	♂		♀		With med.		Without	
					FR	TR	FR	TR	FR	TR	FR	TR
T	0,04	0,68	0,11	0,73	0,15	0,76	0,14	0,74				
S	0,05	0,69	0,06	0,70	0,07	0,72	0,08	0,71	0,06	0,71	0,10	0,72
P	0,02	0,64	0,06	0,68								

FR : ratio of the number of lemmas to the total number of forms

(T)TR : ratio of the number of lemmas to the total number of different forms (types)

- Differences between sub-corpus (different transcriptions)
- Differences in age and IQ
- Patients under medicine

Organization of 3 human annotation campaigns

- Identification of decisive discontinuities
- SDRT representation

Organization of 3 human annotation campaigns

- Identification of decisive discontinuities
- SDRT representation

Results

- Huge difficulties for discontinuities
- Relative consensus for SDRT

SDRT annotations with Glozz on pretreated texts.

Début

B1 : J'aimerais savoir ce que font les personnes qui sont à l'hôpital

ce que vous faites la journée par exemple...

A2 : Je suis très amoureuse de Florence M.

B3 : De Florence M.

A4 : Oui superbe la...

comment elle s'appelle Florence R.

elle a tué quand même plus de un million de de personnes

B5 : Qui ça ?

A6 : Florence R.

B7 : C'est qui cette dame là ?

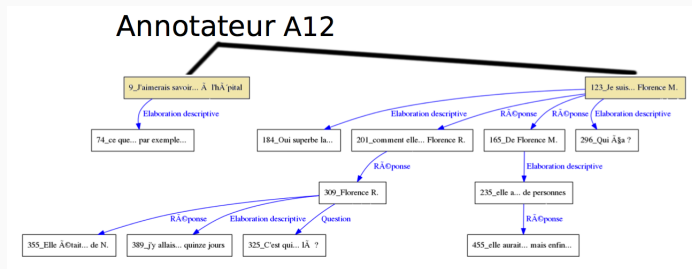
A8 : Elle était psychiatre 40 rue de N.

j'y allais une fois par semaine ou deux fois tous les quinze jours

elle aurait pu me tuer mais enfin...

Analyse of the annotations (ongoing work)

46 annotators on 3 extracts (+ one training text)



- Impossibility of disidentification
 - Task with a small context: randomise speeches
 - Inability to anonymize the history and the geography
- Patient reality
 - Formal analysis of language = define a standard
 - Deviate = dysfunction
 - But, every speaker is confronted daily with language disorders from healthy people
 - The diagnosis can not suffer from approximations

(Rebuschi 2015):

- **Discursive context** that depends on interaction and dynamics of interaction;
- **Doxatic context** which takes up all the presuppositions, beliefs about the world and the projection of the beliefs of the speakers;
- **Pragmatic context** that is interpreted by the situation of the interaction (the speaker who says "I" in playing a role does not say "me" to designate himself, but to designate the individual he plays);
- **Material and social context** in which the idea is to consider both the framework of interactions and all the influences which build it.

Toward a formal treatment

- **Type Theoretic Dynamic Logic (TTDL)** (de Groote 2006) :
montagovian framework, with dynamicity which add continuation in λ -calculus

Type Theoretic Dynamic Logic

- **Type Theoretic Dynamic Logic (TTDL)** (de Groote 2006) :
montagovian framework, with dynamicity which add continuation in λ -calculus
- Primitive types
 - ι : individual / entity
 - o : proposition / truth value
 - γ : left context

Type Theoretic Dynamic Logic

- **Type Theoretic Dynamic Logic (TTDL)** (de Groote 2006) :
montagovian framework, with dynamicity which add continuation in λ -calculus
- Primitive types
 - ι : individual / entity
 - o : proposition / truth value
 - γ : left context

$$\llbracket s \rrbracket = o$$

Type Theoretic Dynamic Logic

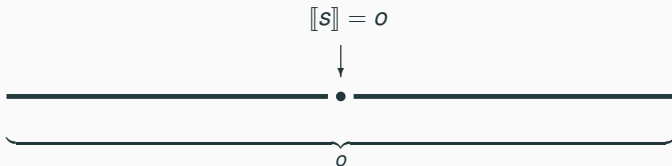
- **Type Theoretic Dynamic Logic (TTDL)** (de Groote 2006) :
montagovian framework, with dynamicity which add continuation in λ -calculus
- Primitive types
 - ι : individual / entity
 - o : proposition / truth value
 - γ : left context

$$[[s]] = o$$



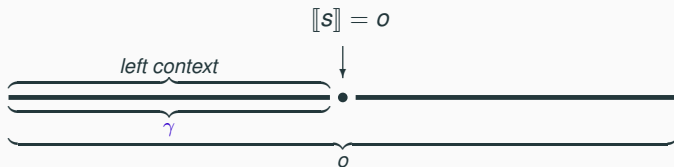
Type Theoretic Dynamic Logic

- Type Theoretic Dynamic Logic (TTDL) (de Groote 2006) :
 - montagovian framework, with dynamicity which add continuation in λ -calculus
- Primitive types
 - ι : individual / entity
 - o : proposition / truth value
 - γ : left context



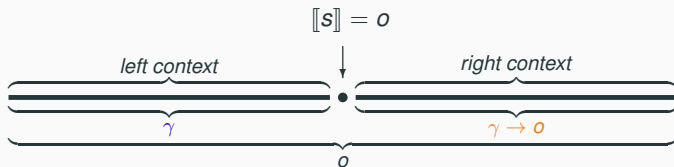
Type Theoretic Dynamic Logic

- Type Theoretic Dynamic Logic (TTDL) (de Groote 2006) :
 - montagovian framework, with dynamicity which add continuation in λ -calculus
- Primitive types
 - ι : individual / entity
 - o : proposition / truth value
 - γ : left context



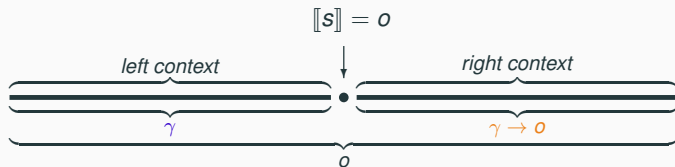
Type Theoretic Dynamic Logic

- Type Theoretic Dynamic Logic (TTDL) (de Groote 2006) :
 - montagovian framework, with dynamicity which add continuation in λ -calculus
- Primitive types
 - ι : individual / entity
 - o : proposition / truth value
 - γ : left context



Type Theoretic Dynamic Logic

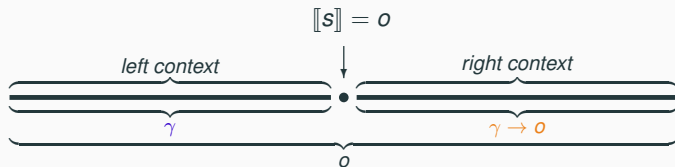
- Type Theoretic Dynamic Logic (TTDL) (de Groote 2006) :
 - montagovian framework, with dynamicity which add continuation in λ -calculus
- Primitive types
 - ι : individual / entity
 - o : proposition / truth value
 - γ : left context



$$[[s]] = \gamma \rightarrow (\gamma \rightarrow o) \rightarrow o$$

Type Theoretic Dynamic Logic

- Type Theoretic Dynamic Logic (TTDL) (de Groote 2006) :
 - montagovian framework, with dynamicity which add continuation in λ -calculus
- Primitive types
 - ι : individual / entity
 - o : proposition / truth value
 - γ : left context



$$[[s]] = \gamma \rightarrow (\gamma \rightarrow o) \rightarrow o$$

$$\lambda e\phi.\exists x. \mathbf{candidate}(x) \wedge \phi(x :: e)$$

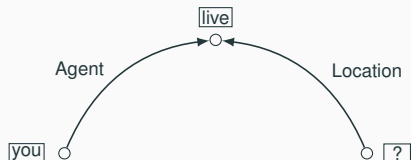
Processing dialogue: **access to subparts** of the interaction for **update**.

Processing dialogue: **access to subparts** of the interaction for **update**.

A₁ Where do you live?

Processing dialogue: **access to subparts** of the interaction for **update**.

A₁ Where do you live?

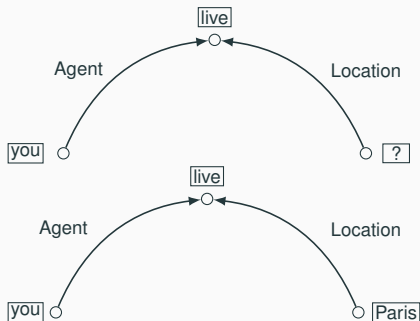


Frame Semantics

Processing dialogue: **access to subparts** of the interaction for **update**.

A₁ Where do you live?

B₂ In Paris.



Use of :

- TTDL for compositionality
- Frame Semantics for representation of the content

Use of :

- TTDL for compositionality
- Frame Semantics for representation of the content
- Ongoing work: defining such a framework and apply it to the SLAM corpus

Features extraction

- a feature v
- type of frames: γ

$$find_v : \gamma \rightarrow v \times (v \rightarrow \gamma)$$

Features extraction

- a feature v
- type of frames: γ

$$find_v : \gamma \rightarrow v \times (v \rightarrow \gamma)$$

Example:

$$\llbracket A_1 \rrbracket = \begin{bmatrix} LIVE \\ Ag: A \\ Loc: Paris \end{bmatrix}$$

$find_{Loc}$ to A_1 :

$$(Paris, \lambda l. \begin{bmatrix} LIVE \\ Ag: A \\ Loc: l \end{bmatrix})$$

assertion

$$\llbracket u \rrbracket = \gamma \rightarrow \gamma$$

question

$$\llbracket q_v \rrbracket = \gamma \rightarrow v \times (v \rightarrow \gamma)$$

answer

$$\llbracket a_v \rrbracket = v \times (v \rightarrow \gamma) \rightarrow \gamma$$

Example 1/2

A₁ I live in Paris.

B₂ How long have you been living there?

A₃ For five years.

A₁ I live in Paris.

B₂ How long have you been living there?

A₃ For five years.

$$\begin{aligned} \llbracket A_1 \cdot^q B_2 \cdot^a A_3 \rrbracket c_e &= \lambda c. \llbracket A_3 \rrbracket \left(\llbracket B_2 \rrbracket (\llbracket A_1 \rrbracket c) \right) c_e \\ &\rightarrow_{\beta} \llbracket A_3 \rrbracket \left(\llbracket B_2 \rrbracket (\llbracket A_1 \rrbracket c_e) \right) \end{aligned}$$

Example 2/2

$$\llbracket A_1 \rrbracket_{c_e} = \begin{bmatrix} \text{LIVE} \\ \text{Ag: } A \\ \text{Loc: } Paris \end{bmatrix} = \textcircled{1}$$

$$\llbracket B_2 \rrbracket \textcircled{1} = \lambda t. \begin{bmatrix} \text{LIVE} \\ \text{Ag: } A \\ \text{Loc: } Paris \\ \text{Tmp: } t \end{bmatrix} = \textcircled{2}$$

$$\llbracket A_3 \rrbracket \textcircled{2} = \begin{bmatrix} \text{LIVE} \\ \text{Ag: } A \\ \text{Loc: } Paris \\ \text{Tmp: } Five\ years \end{bmatrix}$$

Perspectives



- Increase the phenomena analyzed in SLAM_{tk}
Especially work on syntax and lexical statistics
- Try DDN approaches on the SLAM corpus
Need more ressources in French
- Deeply study the human annotations of the corpus
- Increase the coverage of the corpus in volume and number of pathologies studied
Collection of data at the Montperrin Hospital of Aix-En-Provence
- Define remedial help process
- Refine the analysis of dysfunction, opening towards a cognitive interpretation and give more complex context for the interpretation

- Defining robust semantics grammars for TTDL
- Definition of a TTDL for dialogue framework
 - Ongoing work on questions and answers with Maria Boritchev
- (French translation of Fracas)

Thanks!

- 5 persons
- Translation of 10% of the all corpus all together
- Many issues! especially:
 - do we translate word/word, syntax/syntax
 - do we translate the meaning?
- We define a short translation guide
- Translation by pairs (around 50% done)
- Then discussions all together about the hardest cases
- We will probably :
 - Produce two versions of the ressource
 - Test them with Game With A Purpose (GWAP) as Zombilingo

References

-  Amblard, Maxime (2007). “Calculs de représentations sémantiques et syntaxe générative : les grammaires minimalistes catégorielles”. THESE. Université Sciences et Technologies - Bordeaux I. URL: <http://tel.archives-ouvertes.fr/tel-00185844>.
-  – (2011a). “Encoding Phases using Commutativity and Non-commutativity in a Logical Framework”. Anglais. In: *Logical Aspect of Computational Linguistic*. Ed. by Sylvain Pogodalla and Jean-Philippe Prost. Vol. 6736. Lecture Notes in Artificial Intelligence. ISBN : 978-3-642-22220-7 The original publication is available at www.springerlink.com. Montpellier, France: Springer, pp. 1–16. DOI: 10.1007/978-3-642-22221-4_1. URL: <http://hal.archives-ouvertes.fr/hal-00601621>.

-  Amblard, Maxime (2011b). “Minimalist Grammars and Minimalist Categorical Grammars, definitions toward inclusion of generated languages”. Anglais. In: *Logic and Grammar: Essays Dedicated to Alain Lecomte on the Occasion of His 60th Birthday*. Ed. by Sylvain Pogodalla, Myriam Quatrini, and Christian Retore. Lecture Notes in Artificial Intelligence. ISBN : 978-3-642-21489-9 The original publication is available at www.springerlink.com. springer, pp. 61–80. DOI: 10.1007/978-3-642-21490-5_4. URL: <http://hal.archives-ouvertes.fr/hal-00617040>.
-  – (2015). “La non-commutativité comme argument linguistique : modéliser la notion de phase dans un cadre logique”. In: *Traitement Automatique des Langues* 56.1, pp. 91–115. URL: <https://hal.inria.fr/hal-01188669>.
-  Amblard, Maxime and Karën Fort (2014). “Étude quantitative des disfluences dans le discours de schizophrènes : automatiser pour limiter les biais”. In: *TALN - Traitement Automatique des Langues Naturelles*. Marseille, France, pp. 292–303. URL: <http://hal.inria.fr/hal-01054391>.

-  Amblard, Maxime, Karën Fort, Caroline Demily, et al. (2015). “Analyse lexicale outillée de la parole transcrite de patients schizophrènes”. In: *Traitement Automatique des Langues*. Natural Language Processing and Cognition 55.3, pp. 91–115. URL: <https://hal.inria.fr/hal-01188677>.
-  Amblard, Maxime, Karën Fort, Michel Musiol, et al. (2014). “L'impossibilité de l'anonymat dans le cadre de l'analyse du discours”. In: *Journée ATALA éthique et TAL*. Paris, France. URL: <https://hal.archives-ouvertes.fr/hal-01079308>.
-  Amblard, Maxime, Alain Lecomte, and Christian Retoré (2010). “Categorial Minimalist Grammar: From Generative Syntax To Logical Form”. In: *Linguistic Analysis* 36.1–4, pp. 273–306. URL: <https://hal.archives-ouvertes.fr/hal-00545748>.
-  Amblard, Maxime, Michel Musiol, and Manuel Rebuschi (2011). “Une analyse basée sur la S-DRT pour la modélisation de dialogues pathologiques”. In: *Traitement Automatique des Langues Naturelles - TALN 2011*. Ed. by Mathieu Lafourcade and Violaine Prince. Montpellier, France: Laboratoire d'Informatique de Robotique et de Microélectronique, p. 6. URL: <http://hal.archives-ouvertes.fr/hal-00601622>.



Amblard, Maxime, Michel Musiol, and Manuel Rebuschi (2012).
“Schizophrénie et Langage : Analyse et modélisation. De l’utilisation des modèles formels en pragmatique pour la modélisation de discours pathologiques”. In: *Congrès MSH 2012*. Caen, France. URL:
<http://hal.archives-ouvertes.fr/hal-00761540>.














– (2014). “L’interaction conversationnelle à l’épreuve du handicap schizophrénique.” In: *Recherches sur la philosophie et le langage* 31, pp. 1–21. URL:
<https://hal.archives-ouvertes.fr/hal-00955660>.



Amblard, Maxime and Sylvain Pogodalla (2014). “Modeling the Dynamic Effects of Discourse: Principles and Frameworks”. In: *Dialogue, Rationality, and Formalism*. Ed. by Manuel Rebuschi et al. Vol. 3. Interdisciplinary Works in Logic, Epistemology, Psychology and Linguistics. Logic, Argumentation & Reasoning. Springer, pp. 247–282. DOI:
[10.1007/978-3-319-03044-9_12](https://doi.org/10.1007/978-3-319-03044-9_12). URL:
<https://hal.inria.fr/hal-00737765>.

-  Amblard, Maxime and Christian Retoré (2014). “Partially Commutative Linear Logic and Lambek Calculus with Product: Natural Deduction, Normalisation, Subformula Property”. In: *IfColog Journal of Logics and their Applications (FLAP)* 1.1, pp. 53–94. URL: <https://hal.archives-ouvertes.fr/hal-01071642>.
-  Chaika, Elaine (1974). “A linguist looks at “schizophrenic” language”. In: *Brain and Language* 1.3, pp. 257–276.
-  Chomsky, Noam (1995). *The minimalist program*. Vol. 28. Cambridge Univ Press.
-  – (1999). *Derivation by phase*. ms, MIT.
-  Constant, Matthieu and Anne Dister (2010). “Automatic detection of disfluencies in speech transcriptions”. In: *Spoken Communication*. Ed. by M. Pettorino et al. Vol. 1. Cambridge Scholars Publishing, pp. 259–272. URL: <http://hal-upec-upem.archives-ouvertes.fr/hal-00636983>.

-  de Groote, Philippe (1996). "Partially commutative linear logic: sequent calculus and phase semantics". In: *Third Roma Workshop: Proofs and Linguistics Categories – Applications of Logic to the analysis and implementation of Natural Language*. Ed. by Vito Michele Abrusci and Claudia Casadio. Bologna:CLUEB, pp. 199–208.
-  – (2006). "Towards a Montagovian account of dynamics". In: *Proceedings of Semantics and Linguistic Theory (SALT) 16*. Ed. by Masayuki Gibson and Jonathan Howell.
-  Denis, Pascal and Benoit Sagot (2009). "Coupling an Annotated Corpus and a Morphosyntactic Lexicon for State-of-the-Art POS Tagging with Less Human Effort". In: *Pacific Asia Conference on Language Information and Computing (PACLIC)*. URL:
<http://atoll.inria.fr/~sagot/pub/paclic09tagging.pdf>.
-  Fromkin, Victoria A. (1975). "A linguist looks at "a linguist looks at 'schizophrenic language'"". In: *Brain and Language* 2, pp. 498–503. ISSN: 0093-934X. DOI:
[http://dx.doi.org/10.1016/S0093-934X\(75\)80087-3](http://dx.doi.org/10.1016/S0093-934X(75)80087-3). URL:
<http://www.sciencedirect.com/science/article/pii/S0093934X75800873>.

-  Groenendijk, Jeroen and Martin Stokhof (1991). “Dynamic predicate logic”. In: *Linguistics and philosophy* 14.1, pp. 39–100.
-  Heim, Irene (1982). “The Semantics of Definite and Indefinite Noun Phrases”. PhD thesis. University of Massachusetts, Amherst.
-  – (1983). “File Change Semantics and the Familiarity Theory of Definiteness”. In: *Meaning, Use and the Interpretation of Language*. Ed. by Rainer Bäuerle, Christoph Schwarze, and Arnim von Stechows. Reprinted in **partee02**. Walter de Gruyter & Co, pp. 164–190.
-  Kamp, Hans (1981). “A theory of truth and semantic representation”. In: *Formal Semantics*, pp. 189–222.
-  Maršík, Jirka and Maxime Amblard (2013). “Integration of Multiple Constraints in ACG”. In: *Logic and Engineering of Natural Language Semantics 10*. Kanagawa, Japan, pp. 1–14. URL: <https://hal.archives-ouvertes.fr/hal-00869748>.
-  – (2015). “Pragmatic Side Effects”. In: *Redrawing Pragmasemantic Borders*. Groningen, Netherlands. URL: <https://hal.inria.fr/hal-01164729>.
-  – (2016). “Introducing a Calculus of Effects and Handlers for Natural Language Semantics”. In: *Formal Grammar (in submission)*.

-  Musiol, Michel (2009). "Incoherence et formes psychopathologique dans l'interaction verbale schizophrénique". In: *Psychose, langage et action (approches neuro-cognitives)*. Bruxelles: De Boeck, pp. 219–238.
-  Musiol, Michel, Maxime Amblard, and Manuel Rebuschi (2013). "Approche sémantico-formelle des troubles du discours : les conditions de la saisie de leurs aspects psycholinguistiques." In: *27ème Congrès International de Linguistique et de Philologie Romanes*. Nancy, France. URL: <http://hal.archives-ouvertes.fr/hal-00910701>.
-  Qian, Sai and Maxime Amblard (2011). "Event in compositional dynamic semantics". In: *Logical Aspects of Computational Linguistics*. Springer. URL: http://dx.doi.org/10.1007/978-3-642-22221-4_15.
-  – (2012). "Accessibility for Plurals in Continuation Semantics". Anglais. In: *The Forth JSAI International Symposia on AI (isAI2012) - Proceedings of the Ninth International Workshop of Logic and Engineering of Natural Language Semantics 9 (LENLS 9)*. 978-4-915905-51-3 C3004 (JSAI). Myasaki, Japon, pp. 52–65. URL: <http://hal.archives-ouvertes.fr/hal-00762203>.
-  – (2013). "Accessibility for Plurals in Continuation Semantics". In: *New Frontiers in Artificial Intelligence*. Springer, pp. 53–68.

-  Qian, Sai, Philippe de Groote, and Maxime Amblard (2016). “Modal Subordination in Type Theoretic Dynamic Logic”. In: *Linguistic Issues in Language Technology*. Modes of Modality in NLP 14, p. 54. URL: <https://hal.inria.fr/hal-01370557>.
-  Rebuschi, Manuel (2015). “Modélisation et rationalité dans l’analyse linguistique de conversations pathologiques”. In: *Rencontres doctorales internationales en philosophie des sciences*.
-  Rebuschi, Manuel, Maxime Amblard, and Michel Musiol (2012). “Schizophrénie, logicité et compréhension en première personne”. In: *L’Évolution psychiatrique* to appear.
-  – (2014). “Using SDRT to analyze pathological conversations. Logicality, rationality and pragmatic deviances”. Anglais. In: *Interdisciplinary Works in Logic, Epistemology, Psychology and Linguistics: Dialogue, Rationality, and Formalism*. Logic, Argumentation & Reasoning. Springer, pp. 343–368. ISBN: 978-3-319-03043-2. URL: <http://hal.archives-ouvertes.fr/hal-00910725>.
-  Retoré, Christian (2004). “A description of the non-sequential execution of Petri nets in partially commutative linear logic”. In: *Logic Colloquium 99* Lecture Notes in Logic, pp. 152–181.

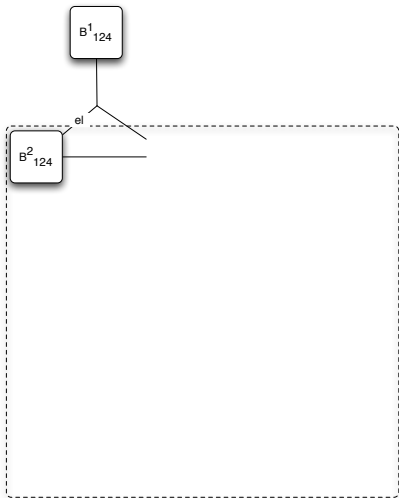


Trognon, Alain and Michel Musiol (1996). “L’accomplissement interactionnel du trouble schizophrénique”. In: *Raisons Pratiques* 7, pp. 179–209.

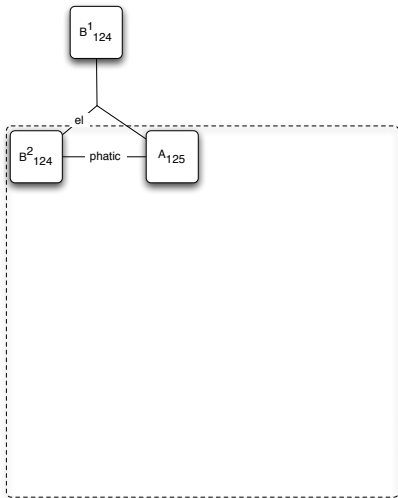
(B124) Oh yeah (↑) and complicated (↑) and it's really very very complicated (→)

B¹₁₂₄

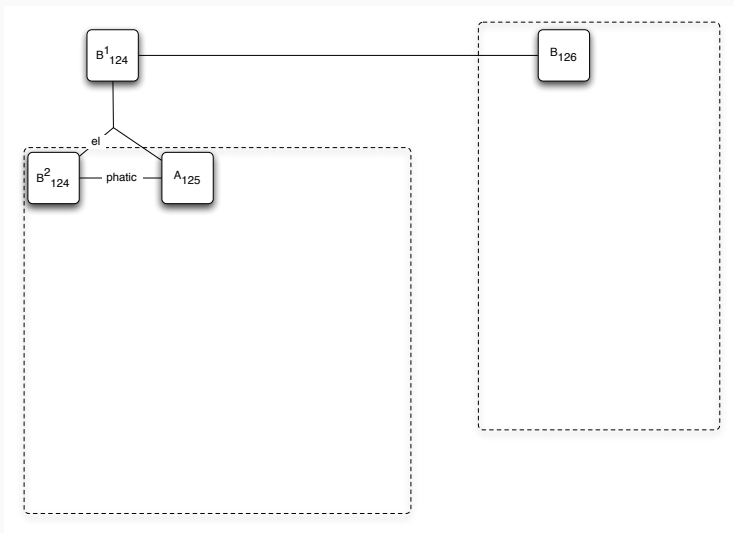
politics, it's really something when you get into it, have to win or else when you lose, well, you're finished (↓)



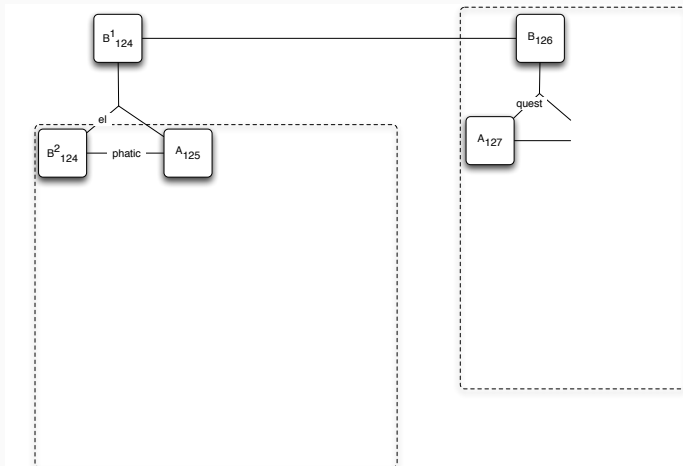
(A125) Yes



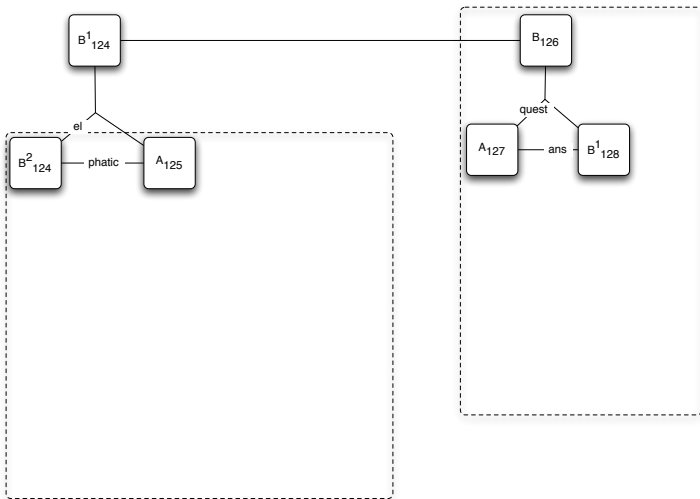
(B126) JCD is dead, L is dead, P is dead uh (...)



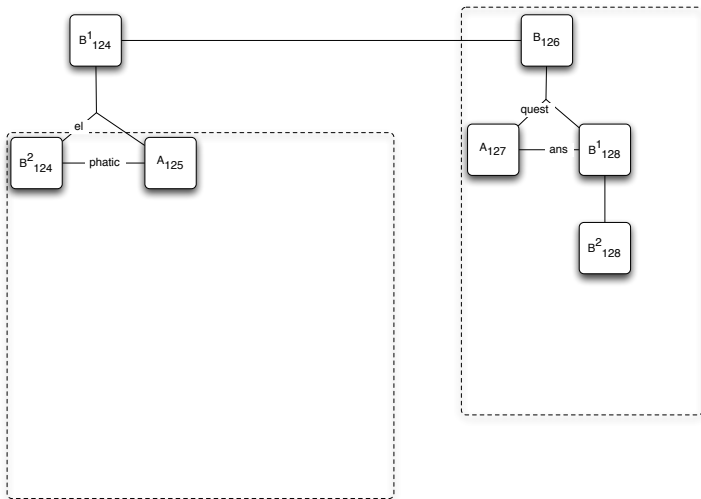
(A127) So you think they're dead because they lost (↑)



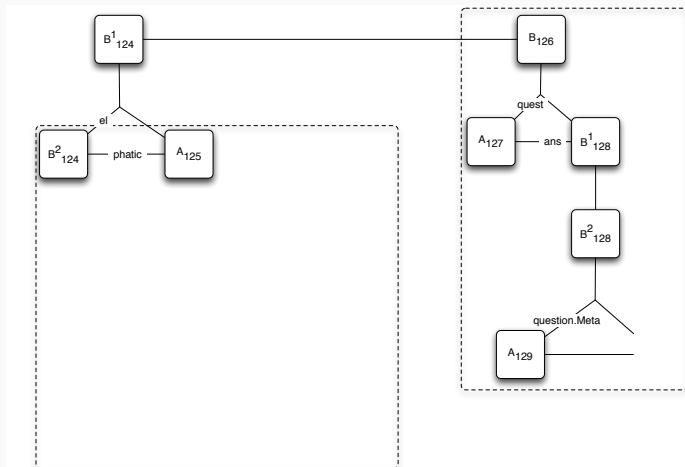
(B128) No they won but if they're dead, it's their disease well it's it's (→)



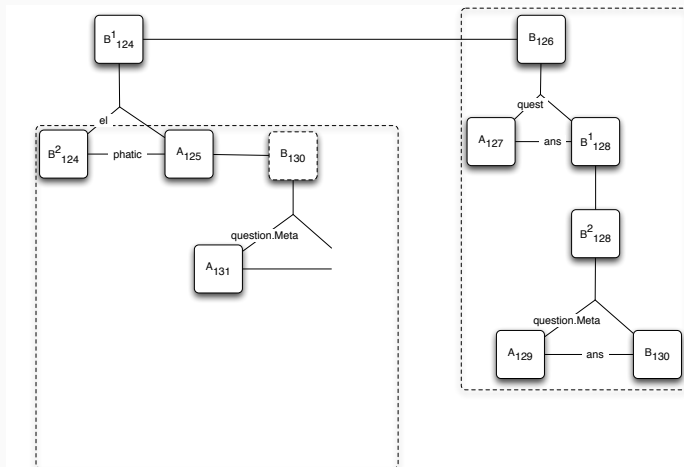
(B128) No they won but if they're dead, it's their disease well it's it's (→)



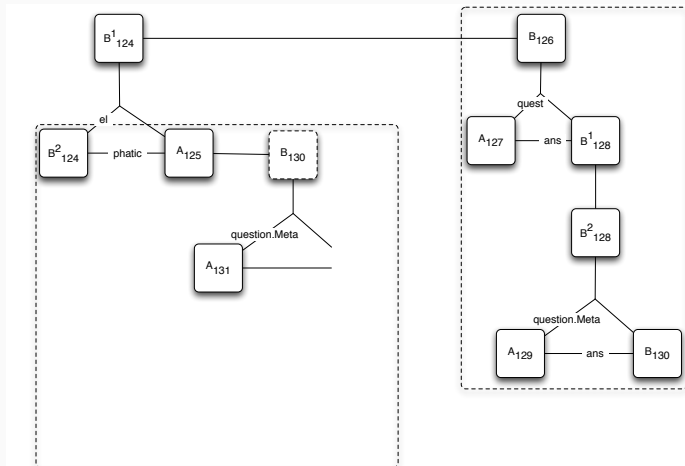
(A129) Yeah it's because they had a disease, it's not because they were in politics (↑)



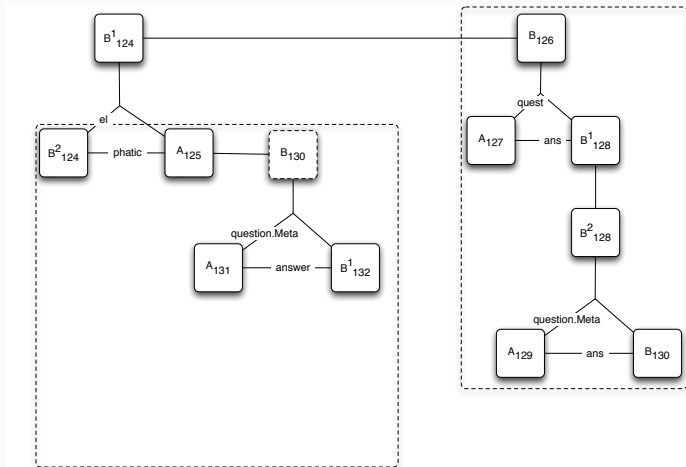
(B130) Yes I mean (→)



(A131) Yes you think it's because they were in politics (↑)

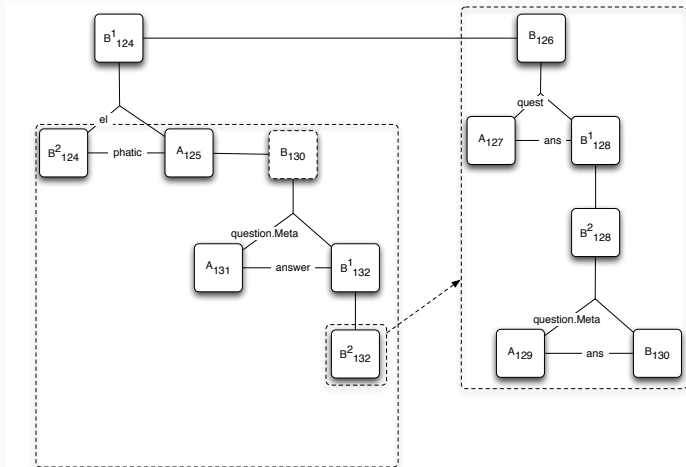


(B132) Yes, so well yeah there was C too who committed murder, uh huh (→) he was there too, the one in B but well (→) it, that, it's because of politics again



(B132) Yes, so well yeah there was C too who committed murder, uh huh (→) he was there too, the one in B but well

(→) it, that, it's because of politics again



(B132) Yes, so well yeah there was C too who committed murder, uh huh (→) he was there too, the one in B but well

(→) *it, that, it's because of politics again*

