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A General Ontology of Everyday Life: Outline and Linguistic Applications

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0. Introduction

Motivation: General comparatibility of languages

Inspiration sources:

- formal semantics (Bach, Link),

- conceptual semantics (Jackendoff),

- ontology of institutions and speech act theory (Searle),

- semantic roles (Dowty), and

- other domains that deal with the impact of human conceptualization on language.

Aim today: illustrating the linguistic usefulness of GOEdL with examples from the domains of speech act theory (meaning of sentence mood), lexical semantics (polysemy) and syntax (control and raising).

1. Background

1.1. Earlier concepts of human language

"Spoken words are the symbols of mental experience […] all men have not the same speech sounds, but the mental experiences, which these directly symbolize, are the same for all, as also are those things of which our experiences are the images."
(Aristotle, On interpretation 1) -> Vocal events are symbols of mental events

"A language is the total body of usages proper to a nation to express thoughts by means of the voice." (Encyclopédie 1755)

A language is "a system of conventional spoken or written symbols by means of which human beings, as members of a social group and participants in its culture, communicate." (Encyclopedia Britannica)

1.2. The ontolinguistic concept of human language

(H 1) The basis of human communication lies in shared conceptual systems: successful communication between agents requires sufficiently overlapping ontologies.

(H 2) Shared ontologies precede shared language logically, onto- and phylogenetically.

(Def) A *prepercept* is a combination of a precept (motor plan) with a percept (mental effect of perception) in a production - perception loop

There are three kinds of concept activators: Concept activators of the

- 1st kind: Active percepts of instances (whatever falls under the concept)
- 2nd kind: Active associated concepts (activation propagation)
- 3rd kind: Active prepercepts correlated with the concepts in a group-specific way (only concepts in the minds of members of the group can be properly activated by concept activators of the third kind)

There are three kinds of prepercept activators: Prepercept activators of

- 1st kind: Sensory input, active intentions
- 2nd kind: Active associated prepercepts (activation propagation)
- 3rd kind: Active concepts correlated with the prepercepts in a group-specific way

(only prepercepts in the minds of members of the group can be properly activated by prepercept activators of the third kind)

(Thesis) Language is best conceptualized not in terms of its means of production or perception, but in terms of its affordance of general purpose unbounded sharing of mental content (states and processes) across agents.

Definition of language (Ontolinguistics)

A language is an open system of digital prepercept - concept correlations of the third kind that enables agents to share contents with an arbitrary degree of granularity.

1.3. Interfaces in the mind

The system of linguistic prepercepts, basic and derived, interfaces with the system of concepts (ontology), basic and derived. Linguistic signs have conceptual content.

In analogy to Sullivan's famous principle for architecture *Form follows function* a basic tenet of ontology-based linguistics can be stated thus:

(P) Container shape follows content structure.

Containers are essentially shaped by content.

Assuming that the ascertainment of concepts and conceptual structures is an ontological endeavor, a methodological corollary of (P) is (M):

(M) A thorough ontological analysis tends to pay off.

2. Ontology-based linguistics: The ontolinguistic approach

2.0. Overview

GOEdL General Ontology of Everyday Life

- DOXE Domain Ontology of eXternal Entities
- DOME Domain Ontology of Mental Entities
- DOMCats Domain Ontology of Modal Categories
- DOLPhen Domain Ontology of Linguistic Phenomena
- DOAE Domain Ontology of Abstract Entities
- …
- …
- …

2.1. Conceptual building blocks of everyday life: GOEdL

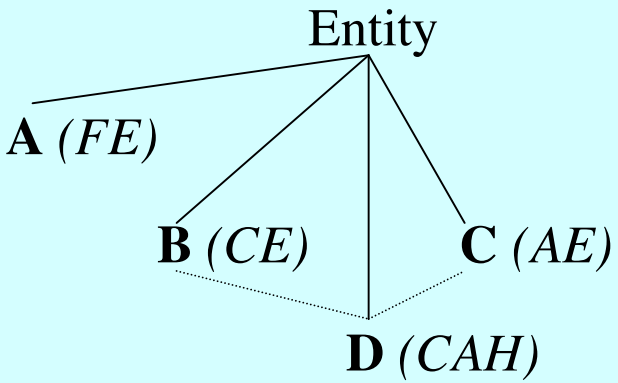
ENTITY

A. Framing entity (provides spatiotemporal location)

B. Concrete entity (completely has spatiotemporal location)

C. Abstract entity (completely lacks spatiotemporal location)

D. Concrete-abstract hybrid (partially has, partially lacks spatiotemporal location)



B. Concrete entity (spatiotemporally located)

I. External entity (outside any mind)

A. External situation (external container; spatiotemporally coherent)

B. External inventity (external content; primary meronomy is spatial)

C. External eventity (external content; primary meronomy is temporal)

II. Mental entity (inside some mind or minds)

A. M-situation (mental container; inherently bounded)

B. M-inventity (mental content; primary meronomy is 'spatial')

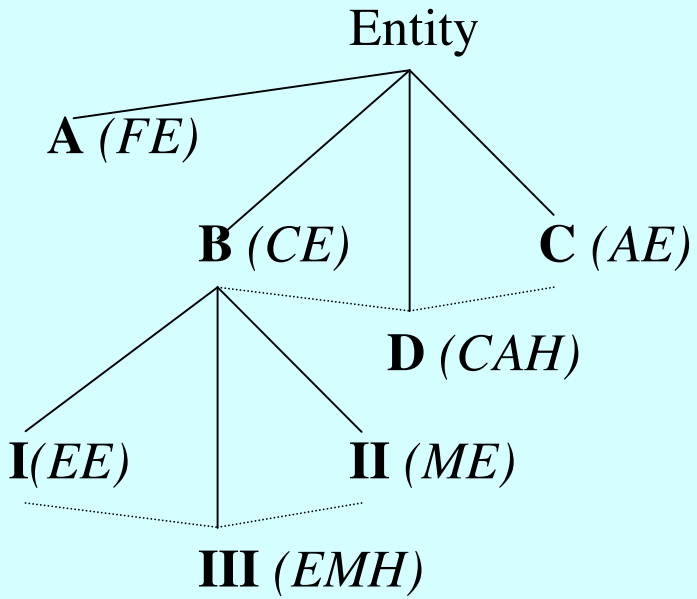
C. M-eventity (mental content; primary meronomy is temporal)

III. External-mental hybrid (located partially in and partially outside some mind(s))

A. E-m hybrid situation (compound of external situation and mental entities)

B. E-m hybrid inventity (compound of external inventity and mental entities)

C. E-m hybrid eventity (compound of external eventity and mental entities)



2.2. A Domain Ontology of eXternal Entities: DOXE

I. EXTERNAL ENTITY (outside any mind)

A. External situation (external container; spatiotemporally coherent; inherently bounded)

1. Exclusive situation (external situation without its content)
2. Inclusive situation (external situation including its content)
   [= 1. Exclusive situation + I. External entity]

B. External inventity (content; primarily spatial meronomy)

1. Individual (inherently space-bounded, completeness central)
   Count inventity
   a. Absolute individual (meronomically free)
   b. Relational individual (meronomically bound)
      i. Super-individual (meronomically superordinated)
      ii. Sub-individual (meronomically subordinated)

2. Dividual (not inherently space-bounded, completeness peripheral)

Mass inventity

a. Substance (non-atomic)

b. Collection (atomic)

C. External eventity (content; primarily temporal meronomy)

1. Characteristic (not inherently time-bounded)

a. Property (inalienable)

b. Stage (alienable)

i. Static stage: (lacks dynamics)
State

ii. Dynamic stage: (has dynamics)
Activity

2. Transition (stage change) (doubly time-bounded change)

   a. Transitional event: (not extended)
      Achievement

   b. Transitional process: (extended)
      Accomplishment

3. Transient (stage preserved)(doubly time-bounded interlude)

   a. Transient event: (not extended)
      Semelfactive

   b. Transient process: (extended)
      Intergressive

2.3. A Domain Ontology of Mental Entities: DOME

2.3.1. An ontology of propositional contents (subontology of DOME)

PROPOSITIONAL CONTENT TOKEN [i-situation: internal representation of a situation]

A. Plain proposition token (i-situation ⊕ plain i-situation type)
   1. Near-proposition token (exclusive i-situation ⊕ i-situation type)
      a. Closed near-proposition (exclusive i-situation ⊕ closed i-sit type)
      b. Open near-proposition (exclusive i-situation ⊕ open i-sit type)
   2. Full proposition token (inclusive i-situation ⊕ i-situation type)
      a. Closed proposition (inclusive i-situation ⊕ closed i-sit type)
      b. Open proposition (inclusive i-situation ⊕ open i-situation type)

B. Modalized proposition token (i-situation ⊕ modalized i-situation type)
   I. Externally modalized proposition token (cf. DOMCats)
      (1 and 2 as above)
   II. Attitudinally modalized proposition token (cf. DOMCats)
      (1 and 2 as above)

2.3.2. An ontology of propositional attitudes (subontology of DOME)

PROPOSITIONAL ATTITUDE TOKEN

1. Presentative attitude token (mental role of a blueprint proposition)
   a. Intention token (feasibility by attitude holder required)
   b. Volition token (feasibility required)
   c. Wish token (feasibility irrelevant)
2. Representative attitude token (mental role of a picture proposition)
   a. Knowledge token (uncontroversially assumed to be true)
      i. Transparent knowledge token (content: full proposition token)
         A. Passive transparent knowledge (mental state)
         B. Activated transparent knowledge (mental activity)
      ii. Opaque knowledge token (content: near-proposition)
         A. Passive opaque knowledge (mental state)
         B. Activated opaque knowledge (mental activity)
   b. Belief token (content: full proposition; assumed to be true)
   c. Hypothetical assumption token (content: full proposition; truth irrelevant)

2.4. A Domain Ontology of Modal Categories: DOMCats

MODAL CATEGORY

A. Action modality

I. Autonomous action modality

a. Action disposition modality

b. Action circumstance modality

II. Dependent action modality

a. Conditional action modality

b. Deontic modality

B. General modality

I. Autonomous general modality

a. General disposition modality

b. General circumstance modality

c. Alethic (ontic) modality

II. Dependent general modality: General conditional modality

C. Attitudinal modality (cf. propositional attitudes in DOME)

I. Presentation modality

a. Intentional modality

b. Volitional modality

c. Optative modality

II. Representation modality

a. Epistemic modality

b. Doxastic modality

c. Hypothetic modality

D. Illocutionary modality (see DOLPhen)

2.5. A Domain Ontology of Linguistic Phenomena: DOLPhen

ORAL ILLOCUTION TOKEN

Force *Content*

A. Holistic illocution token (no compositional force-content structure)

I. Telic holistic illocution (success conditions defined)

II. Atelic holistic illocution (success conditions defined)

B. Structured illocution token (with compositional force-content structure)

I. Volitional illocution (for goal sharing)

a. Plain volitional illocution (for action goal sharing) full proposition

i. Directive illocution (we agree that you do)

ii. Promissive illocution (we agree that I do)

iii. Exhortative illocution (we agree that we do)

b. Epistemic volitional illocution (for knowledge goal sharing)

i. Transparent epistemic volitional illocution	full proposition
1. Assertive Illocution	
A. Assertion	
B. Commissive	
ii. Opaque epistemic volitional illocution	near-proposition
1. Polar question	closed near-prop.
a. Simple polar question	
b. Multiple polar question	
2. Gap question	open near-prop.
a. Simple gap question	
b. Multiple gap question	

II. Expressive illocution (for emotion sharing)
  a. Optative
    i. Narrow optative
    ii. Imprecative

III. Hybrid illocution (for knowledge and emotion sharing)
  a. Expressive assertive
    i. Direct expressive assertion — full proposition
    ii. Indirect assertion (rhetorical question)
      1. Rhetorical polar question — closed near-prop.
      2. Rhetorical gap question — open near-prop.
  b. Exclamation
    i. Overt constituent exclamation
      1. Interrogative gap exclamation — open near-prop.
      2. Demonstrative gap exclamation — open proposition
    ii. Covert constituent exclamation — open proposition

3. Ontology-based pragmatics: Speech act theory

Hengeveld et al. (2007) BASIC ILLOCUTIONS IN THE NATIVE LANGUAGES OF BRAZIL

Propositional

Assertive

Declarative

↑Mirative

↑Questioning

Polar Interrogative

↑Content Interrogative

Behavioural

Imperative ← Prohibitive

↑Hortative ← ↑Dishortative

↑Admonitive

↑Supplicative

4. Ontology-based semantics: Antonymy, Monosemy, Polysemy

4.0. Three theses

(T 1) Polysemy is compatible with monosemy.

(T 2) Polysemy is incompatible with indeterminacy.

(T 3) Polysemy is compatible with indeterminacy.

Are these theses consistent?

4.1. The problem: Antonymy, polysemy and paraphrase

4.1.1. Lexical antonymy, sentential antonymy

(1) a. John's death is a top priority for Mary.

b. John's life is a top priority for Mary.

(2) a. Mary tries to get rid of her illness.

b. Mary tries to get rid of her health.

(3) a. John makes every effort to avoid bankruptcy.

b. John makes every effort to avoid solvency.

4.1.2. Lexical antonymy, sentential paraphrase

(4) a. Mary risked death to save John.
b. Mary risked her life to save John.

(5) a. Mary risked illness.
b. Mary risked her health.

(6) a. In doing that John risked bankruptcy.
b. In doing that John risked his own solvency.

Is *risk* polysemous with two antonymous readings?

4.2. Disentangling the meanings of *risk* and *riskieren*

(7) Und einige - wie Soros - riskieren auch eigenes Geld.
'And some - like Soros - risk also some of their own money'
(SU: ACTOR; DO: ASSET)

(8) Um kein Defizit in diesem Jahr zu riskieren, …
'In order not to risk a deficit this year, …'
(SU: ACTOR; DO: DAMAGE)

(9) …, ob es lohnt, ein Experiment zu riskieren.
'…, whether it pays to risk an experiment'
(SU: ACTOR; DO: TRIGGER)

In a corpus of 256 German sentences, the direct object codes DAMAGE in 170 cases, it codes ASSET in 115 cases, and TRIGGER in 67 cases.

4.3. First attempt: Three readings of *risk*

Problem: Too many generalizations missed

4.4. Second attempt: One *risk*, three semantic roles of the direct object

(LP 1)	GR	1. subject	2. direct object	3. predicate
	SC	1. ACTOR	2. DAMAGE	3. RISKING
(LP 2)	GR	1. subject	2. direct object	3. predicate
	SC	1. ACTOR	2. ASSET	3. RISKING
(LP 3)	GR	1. subject	2. direct object	3. predicate
	SC	1. ACTOR	2. TRIGGER	3. RISKING

Three problems: (a) The semantic roles are too specific;
(b) some cases fit all three roles;
(c) some cases fit neither role.

(10) Was I willing to risk *the drunken drivers* to go back out and pick up ... ?

(11) To love, you have to risk Ø. And it's worth it.

4.5. Third attempt: *risk* as monosemous cognate object verb

(12) To risk *the risk of sounding like an ass*, I feel compelled to ask you this question

(13) […] he's willing to risk *the risk of ignorance, malnutrition, unemployment, imprisonment and death of the nation's unfortunates* so that those who are already privileged may pocket some more cash.

(14) […] willing to take us even though they had to risk *the risk of getting caught by traffic police*

4.6. Formalizing the monosemy of *risk* with its readings

Remember the three problems:

(a) the semantic roles are too specific;
(b) some cases fit all three roles;
(c) some cases fit neither role.

Solution: The following linking pattern is assumed

(COGNATE TOKEN is the specialization of the UNDERGOER role for cognate object verbs):

(LP 4) GR	1. subject	2. direct object	3. predicate
SC	1. ACTOR	2. COGNATE TOKEN	3. RISKING

Meaning postulate for transient RISK

MP risk

$\forall e_0 \Box [\ \text{risk}_T'(e_0) \rightarrow$

$\exists i\ \exists e_1\ \exists e_2\ \exists e_3\ [\ \text{AG}(e_0, i) \wedge$

$\text{COG.TOK}(e_0, e_1) \wedge$

$e_1 = \text{CAUS}(e_2, e_3) \wedge\ \text{AG}(e_2, i) \wedge$

$e_3 = \Diamond_{>N} \exists e_4\ [\ \text{OCC}(e_4) \vee \exists x\ [\ e_4 = \text{LOSS}(x)\ ]$

$\wedge\ \text{BAD}(e_4)]]]$

$\Diamond_{>N}$:= Possible with a degree of probability that exceeds N, where N is the threshold of negligibility

Application

1. The direct reading interprets the direct object as coding e_1, the cognate token itself:

(15) The older you get the more important it is to risk something every day.

2. The determinate proxy readings interpret the direct object

2.1. either as TRIGGER

(16) […] I did not care to risk *a jump*

2.2. or as a DAMAGE, which in turn can be done

2.2.1. either directly

(17) […] I did not care to risk […] *a sprained ankle*

2.2.2. or indirectly via an ASSET, a second degree proxy for the cognate token:

(18) Why did he risk *his life* for a man he did not know?

3. The indeterminate proxy readings interpret the direct object as any other component of the cognate token:

(19) The captain did not want to risk *the treacherous waters of Diamond Shoals*

4.7. Summary

Theses from the beginning:

(T 1) Polysemy is compatible with monosemy.

(T 2) Polysemy is incompatible with indeterminacy.

(T 3) Polysemy is compatible with indeterminacy.

Claim: These theses are compatible.

Supporting evidence:

(T 1) Although most of the time polysemy and monosemy are mutually exclusive, they can coexist if the readings of the polysemous use serve as proxies for the monosemous use featuring salient parts of the latter (metonymy-based polysemy).

(T 2) In general polysemy and indeterminacy are mutually exclusive: Polysemy requires the presence of several clearly distinct clear cores, inderminacy requires their absence.

(T 3) If polysemy is already established additional indeterminate uses are not excluded.

5. Ontology-based syntax: Control and raising across categories

5.1. Reconceptualizing the control relation

(1) *Maria$_i$ plant, ^{i}[eine Bank auszurauben].*

Maria plans a bank to-rob

(2) *Maria$_i$ ist außerstande, ^{i}[eine Bank auszurauben].*

Maria is incapable a bank to-rob

(3) *Maria$_i$ fehlt der Mut, ^{i}[eine Bank auszurauben].*

Maria lacks the courage a bank to-rob

(T 1) RRG-theory of control for transitive verbs in obligatory control constructions

1. Causative and jussive verbs have Undergoer control.
2. All other verbs have Actor control.

(T 2) Concept-based theory of control for relational heads in obligatory control structures

1. Concepts of causation and attempted causation have Undergoer control.
2. All other concepts have Actor control.

5.2. Control nouns and control chains

(4) *Es ist nicht leicht, ^{a}[glücklich zu sein].*
it is not easy happy to be

(5) a. *Maria$_i$ fehlt der ^{i}Mut, ^{i}[eine Bank auszurauben].*
Maria lacks the courage a bank to-rob
b. *Maria$_i$ imponiert der ^{a}Mut, ^{a}[eine Bank auszurauben].*
Maria impresses the courage a bank to-rob

5.3. Control problems

5.3.1. Controller choice options

(6) a. *Eine ^{i}Garantie^{k,j}, ^{i}[heute noch zu liefern]$_j$, hat uns$_k$ [die Firma]$_i$ nicht ^{i}gegeben^{k}.*
A warranty today still to deliver has to-us the company not given
b. *Eine ^{i}Garantie^{k,j}, ^{i}[heute noch zu liefern]$_j$, wurde uns$_k$ nicht ^{i}gegeben^{k}.*
A warranty today still to deliver was to-us not given
c. *Eine ^{i}Garantie^{k,j}, ^{i}[heute noch zu liefern]$_j$, hat die [Firma]$_i$ nicht ^{i}gegeben^{k}.*
A warranty today still to deliver has the company not given
d. *Eine ^{i}Garantie^{k,j}, ^{i}[heute noch zu liefern]$_j$, wurde nicht ^{i}gegeben^{k}.*
A warranty today still to deliver was not given
[DONOR (Garantie) = AGENT (TARGET (Garantie)) ≠ RECIPIENT (Garantie)]

(7) a. *[Der Konvent]$_k$ hat uns$_i$ kein ^{k}Mandat$^{i,m\,k}$erteilt^{i,m}, ^{i}[dies zu tun]$_m$.*
The convent has to-us no mandate issued this to do

b. *Uns$_i$ wurde kein ^{k}Mandat$^{i,m\,k}$erteilt^{i,m}, ^{i}[dies zu tun]$_m$.*
To-us was no mandate issued this to do

c. *[Der Konvent]$_k$ kein ^{k}Mandat$^{i,m\,k}$erteilt^{i,m}, ^{i}[dies zu tun]$_m$.*
The convent has no mandate issued this to do

d. *Es wurde kein ^{k}Mandat$^{i,m\,k}$erteilt^{i,m}, ^{i}[dies zu tun]$_m$.*
EXPL was no mandate issued this to do
[DONOR (Mandat) ≠ AGENT (TARGET (Mandat)) = RECIPIENT (Mandat)]

5.3.2. Controller choice variation

(8) *Der ^{i}Druck^{k,m} [der Tochter]$_i$ auf [die Eltern]$_k$, ^{i}[allein ausgehen zu dürfen]$_m$, wuchs.*
The pressure of-the daughter on the parents alone go-out to be-allowed increased
[AGENT (Druck) = AGENT (TARGET (Druck)) ≠ PATIENT (Druck)]

(9) a. *Das ^{i}Gesuch^{k,m} [des Häftlings]$_i$ an [den Richter]$_k$, ^{k}[ihn$_i$ zu entlassen]$_m$,*
The plea of-the inmate on the judge him to release
überraschte. / came-as-a-surprise.
[AGENT (Gesuch) ≠ AGENT (TARGET (Gesuch)) = RECIPIENT (Gesuch)]

b. *Das $^{i}Gesuch^{k,m}$ [des Häftlings]$_i$ an [den Richter]$_k$, ^{i}[entlassen zu werden]$_m$,*
The plea of-the inmate on the judge released to PASSIVE
überraschte. / came-as-a-surprise.
[AGENT (Gesuch) = AGENT (TARGET (Gesuch)) ≠ RECIPIENT (Gesuch)]

5.4. Elaborating the causality-based theory of control

Correcting a category mistake

(8') *Der $^{i}Druck^{k,m}$ [der Tochter]$_i$ auf [die Eltern]$_k$, ^{k}[CAUSE^{n} ^{i}[allein ausgehn zu dürfen]$_n$]$_m$, wuchs.*

[AGENT (Druck) = POSSESSOR (EFFECT (TARGET (Druck))) ≠
PA (Druck) = AGENT (CAUSE (TARGET (Druck)))]

(9) b.' *Das $^{i}Gesuch^{k,m}$ [des Häftlings]$_i$ an [den Richter]$_k$, ^{k}[CAUSE^{n} ^{i}[entlassen zu werden]$_n$]$_m$, überraschte.*

[AGENT (Gesuch) = EXPONENT (EFFECT (TARGET (Gesuch))) ≠
RECIPIENT (Gesuch) = AGENT (CAUSE (TARGET (Druck)))]

Causative coercion (Pollard and Sag 1994)

Introducing restricted control

(10) *Der* ^{i}*Druck*^{k,m} *[der Tochter]*$_{i}$ *auf [die Eltern]*$_{k}$, ^{k}*[CAUSE*$^{n\ k/k+i/i/*a}$*[pünktlich*
The pressure of-the daughter on the parents on-time

zurück zu sein]$_{n}$*]*$_{jm}$, *wuchs*. / back to be increased

[AG (Druck) ≠ PA (Druck) = AG (CAUSE (TRGT (Druck));
x = EXPONENT (TRGT (Druck))]

(T 3) Control-by-control theory of participant sharing

If one participant Pi_H of the head concept H is analytically conceived as having the highest degree of causal control over instances of the dependent concept D with the open role Pj_D, then Pi_H uniquely controls Pj_D,

else Pj_D is freely controlled, i.e. the controller need not be a participant of H or of any linguistically expressed concept and is identified via pragmatical reasoning.

5.5. Transcending the causality-based theory of control

(11) a. *Er$_k$ hatte den ^{k}Verdacht, ^{k}[bespitzelt zu werden].*
He had the suspicion spied-on to be

b. *Er$_k$ hatte sie$_i$ im ^{k}Verdacht^i, ^{i}[bespitzelt zu werden].*
He had her in-the suspicion spied-on to be

No causal relation, instead:

(SUS) The ontology of plain and targeted suspicion:

• If the content of an targeted suspicion contains an unspecified participant, it can only be conceived as identical with its target.

• If the content of a plain suspicion contains an unspecified participant, it can only be conceived as identical with its possessor.

Support: Impossibility of coercion

(12) a. *Sie$_i$ war irgendwie anders. Er$_k$ hatte den ^{k}Verdacht, ^{*i}[schwanger zu sein].*
She was somehow different. He had the suspicion pregnant to be

b. *Eva$_i$ war irgendwie anders. Sie$_i$ hatte ihn$_k$ im ^{i}Verdacht^k, ^{*k}[schwanger zu sein].*
Eva was somehow different. He had him in-the suspicion pregnant to be

(T 4) Ontological theory of participant sharing

If one participant Pi_H of the head concept H is analytically required to have joint reference with the open role Pj_D of the dependent concept D, then Pi_H uniquely controls Pj_D,

else if one participant Pi_H of the head concept H is analytically conceived as having the highest degree of causal control over instances of the dependent concept D with the open role Pj_D, then Pi_H uniquely controls Pj_D,

else Pj_D is freely controlled, i.e. the controller need not be a participant of H or of any linguistically expressed concept and is identified via pragmatical reasoning.

6. Conclusion

A consequent implementation of the view that *ancilla lingua est mentis*, human language is the servant of human thought, leads to analyses of recalcitrant linguistic problems which look rather promising so far.

Please stay tuned for more to come.

THANK YOU FOR YOUR KIND ATTENTION!

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