

TOWARDS A FORMAL MODEL OF WORD MEANING NEGOTIATION



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WHAT IS WORD MEANING NEGOTIATION?

Word meaning negotiation (**WMN**) is a conversational routine in which speakers explicitly discuss the meaning of a word or phrase.

WMN comes in two main varieties (Myrendal, 2015):

- **NONs** – WMNs originating in non-understanding (of a term)
- **DINs** – WMNs originating in disagreement (about the meaning of a term)

STRUCTURE

The T-I-R model

Trigger – contains a lexical item (the trigger word) that results in non-understanding (or disagreement)

Indicator – indicates non-understanding of (or disagreement with) the target word

Response – the original speaker overtly acknowledges the indicator

Reaction to the Response – explicitly ties up the WMN (optional)

The indicator initiates a "pushdown routine". Once resolved, the dialogue resumes from where the trigger utterance left off.

WMNs can be nested.

(Varonis and Gass, 1985)

CONTENT

Semantic operations

Dialogue acts that update the common ground meaning of a trigger word.

- **Meta-linguistic clarification request** – indicates of misalignment on meaning of a word
What do you mean by crocodile tears?
- **Meta-linguistic endorsement (objection)** – support for (or objection to) use of the trigger word in the situation under discussion
Yes, crocodile tears is actually correct to use here. That's not crocodile tears!
- **Explication** – a definition-like statement of meaning
Crocodile tears mean to cry fake tears.
- **Exemplification** – relates the trigger word to something other than the situation under discussion
Like when my daughter wants me to feel sorry for her and she tries to cry but no real tears come.

(Myrendal 2015, p. 115)

WHY MODEL WMN?

- 1. Social science.** To formulate questions about the role of WMN in different speech communities
 - Do community structure, goals, etc. affect the frequency of NONs vs. DINs?
 - Does a speaker's social status predict WMN initiation or semantic operations?
 - Is WMN a predictor of semantic change?
- 2 Dialogue systems.** To help build systems that negotiate and update word meanings in a way that feels natural to users
 - Initiate a WMN when a user produces an out-of-vocabulary word
 - Respond appropriately to user-initiated WMNs

TOWARDS FORMALIZATION...

A *semantic anchor* is a word or phrase to which meaning can be attached. Its semantics may be grounded or un-grounded in the current dialogue state.

In a WMN, agents attempt to ground ungrounded semantic anchors by putting them in relation to grounded anchors.

We model a WMN as a growing pointed multi-graph :

$$G^t = \langle N, g, L, \{R_a\}_{a \in S} \rangle_{t \leq T}$$

N – semantic anchors introduced so far
 g – indicates the grounded anchors ($g : N \rightarrow \{0, 1\}$)
 L – possible semantic relations between anchors
 R_a – relations according to a ($R : N \times N \rightarrow L$)
 S – speakers
 T – utterances

For now, consider a set of three possible semantic relations:

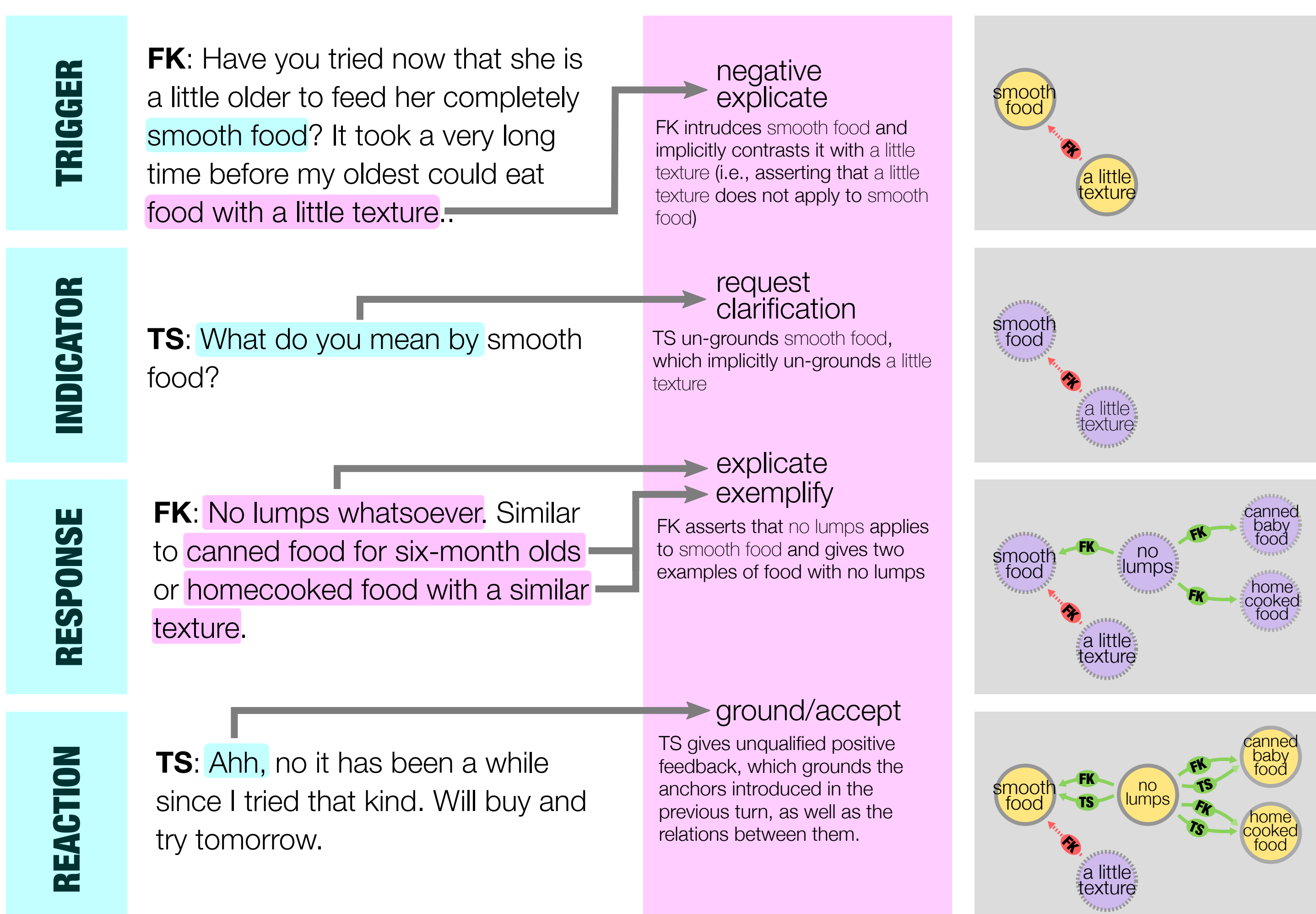
$$L = \{+, -, ?\}$$

- $R_a(x, y) = +$ a asserts that x applies to y (or that y is an example of x)
- $R_a(x, y) = -$ a asserts that x does not apply to y
- $R_a(x, y) = ?$ a poses the question of the relationship between x and y

EXAMPLE 1: "SMOOTH FOOD"

(familjeliv.se via Myrendal, 2015) [Non-understanding]

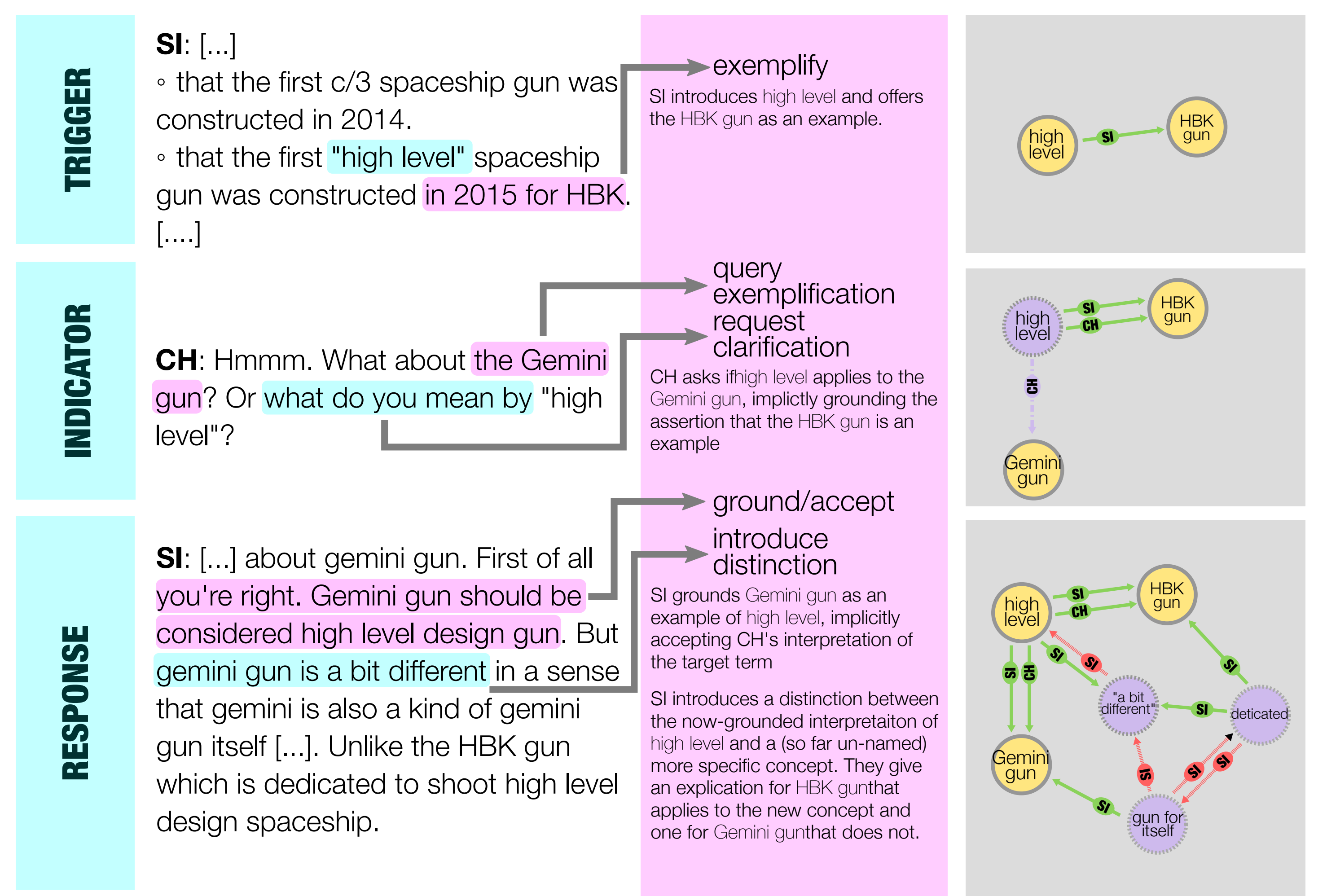
This WMN appears in a thread from a Swedish discussion forum. A parent has asked for advice on getting their one-year-old to eat solid food. The trigger term is "slät mat" (smooth food).



EXAMPLE 2: "HIGH LEVEL"

(conwaylife.com/forums) [Disagreement]

This comes from a recreational mathematics forum for Conway's Game of Life and related cellular automata. The trigger post is in reply to a thread soliciting "did-you-know" factoids. A "spaceship" is a repeating pattern that moves across the board. A "gun" produces (shoots) spaceships.



KEY

- w $g(w) = 1$ grounded semantic anchor
- w $g(w) = 0$ ungrounded semantic anchor
- $x \xrightarrow{+} y$ $R_A(x, y) = +$ Speaker A asserts a positive semantic relationship between x and y .
- $x \xrightarrow{-} y$ $R_A(x, y) = -$ Speaker A asserts a negative semantic relationship between x and y .
- $x \xrightarrow{?} y$ $R_A(x, y) = ?$ Speaker A poses the question of the semantic relationship between x and y .

REFERENCES

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