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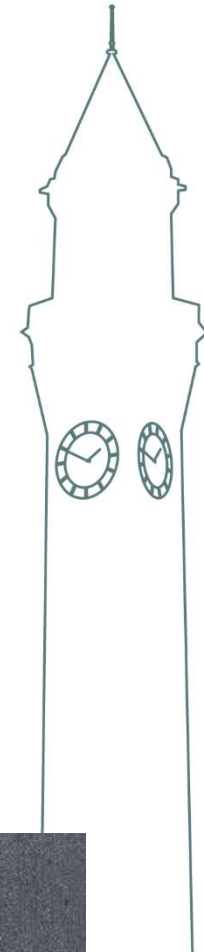
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# Towards a comprehensive constructicon of English:

Bringing together COBUILD Grammar  
Patterns and FrameNet

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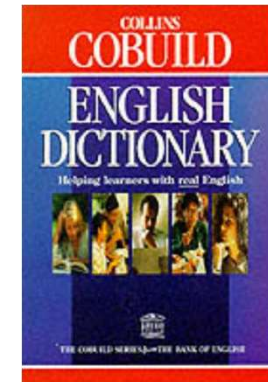


# Overview

- The two resources:
  - COBUILD Grammar Patterns
  - FrameNet
- Merging the two resources
- Identifying constructions: the ‘V that’ pilot study
- First thoughts on:
  - the architecture of the constructional network
  - the design of the constructional entry
- A more comprehensive English construction

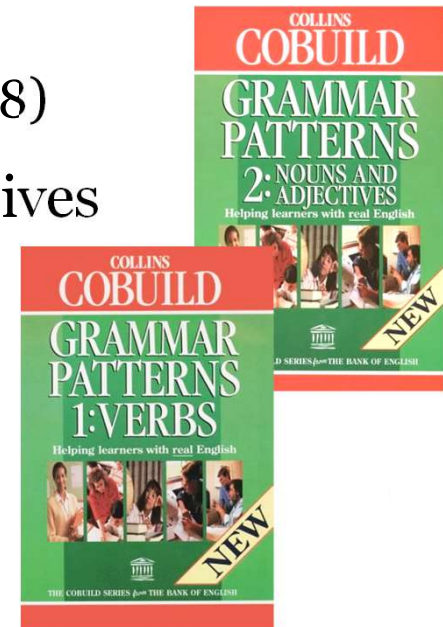
# The COBUILD Grammar Patterns

- An output of COBUILD – a pioneering lexicographic project founded by John Sinclair of the University of Birmingham in collaboration with Collins publishers.
- Key insight:
  - A word is better described in terms of its typical uses
  - This notably includes the syntactic environments or “patterns” in which it can occur
- The Collins COBUILD Dictionary (1987):
  - Designed entirely from authentic corpus data
  - Entries containing information about the language patterns in which the word occurs



# The COBUILD Grammar Patterns

- *A Pattern Grammar* of English (Hunston & Francis 2000)
- Cataloguing the syntactic environment of lexical items in the Bank of English corpus
  - Volume 1: verbs (Francis et al. 1996)
  - Volume 2: nouns and adjectives (Francis et al. 1998)
- 161 patterns for verbs, 63 for nouns, 49 for adjectives
- Lists of all lexical items attested in these patterns
- COBUILD patterns ~ constructions
  - Single coherent grammatical units
  - Fixed parts and open slots



# The COBUILD Grammar Patterns

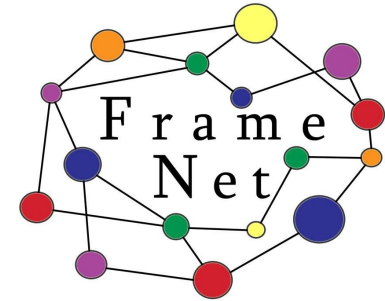
- However, lacks a strong semantic foundation: lexical senses and intuitive “meaning groups”.

Example: **V that**

10 meaning groups, for instance:

- The ‘say’ group: *claim*<sup>1</sup>, *complain*<sup>1</sup>, *insist*<sup>1,2</sup>, *report*<sup>1</sup>, *say*<sup>1,2</sup>, ...
  - The ‘think’ group: *assume*<sup>1</sup>, *know*<sup>1,8</sup>, *think*<sup>1,2,14-17</sup>, *understand*<sup>5</sup>,...
  - The ‘show’ group: *confirm*<sup>1</sup>, *demonstrate*<sup>1</sup>, *reveal*<sup>1</sup>, *show*<sup>1,7</sup>, ...
- To be turned into constructions, patterns must be paired with meaning and with semantic role information
  - Idea: use FrameNet as a semantic component for patterns

# FrameNet



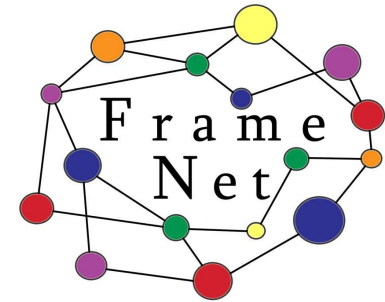
- Aims to describe the lexicon of English in terms of the theory of frame semantics (often considered the semantic component of construction grammar).
- Semantic frames describe basic scenarios or situations that underlie word meanings
- The pairing of a word and frame is a Lexical Unit (LU)
- Frames make reference to actors and props, called Frame Elements (FEs)

Example: **Coming\_to\_believe**

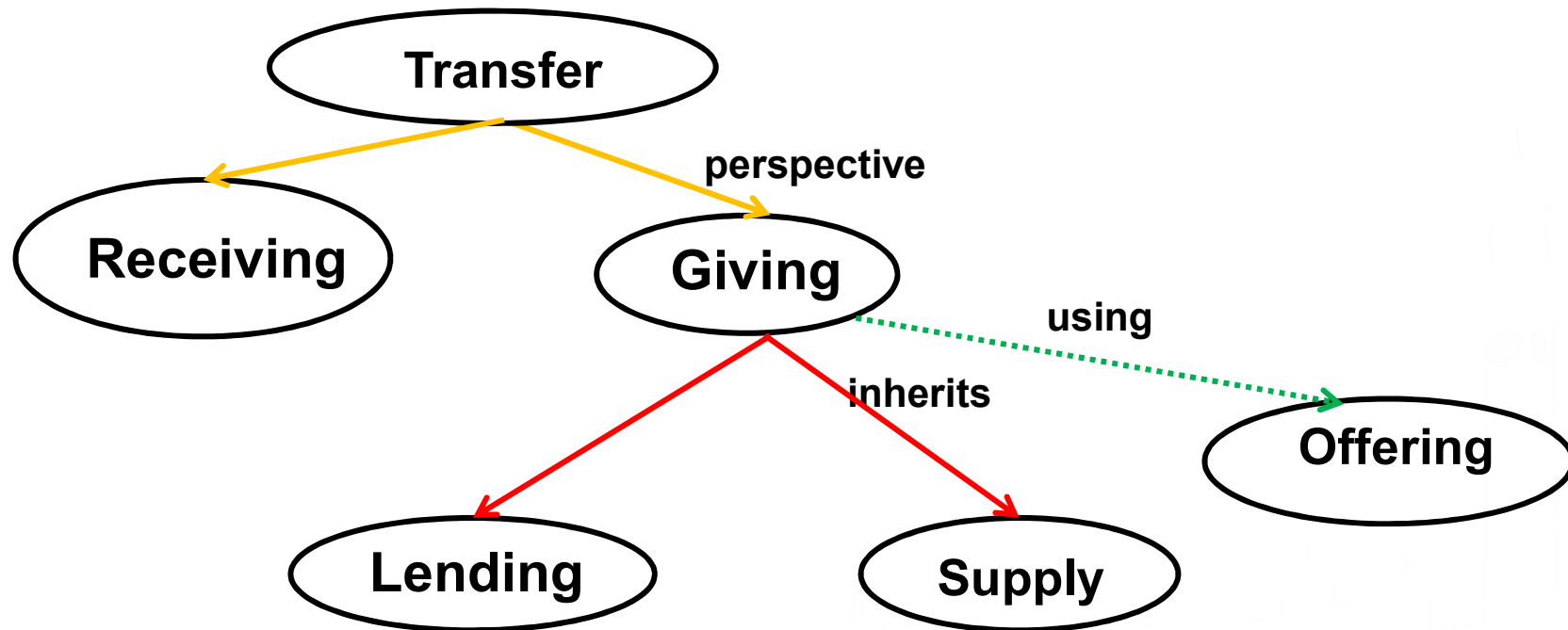
Definition: A person (the **Cognizer**) comes to believe something (the **Content**), sometimes after a process of reasoning.

**Sue** REALIZED **that Bob was lost**

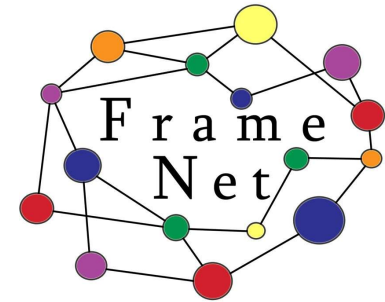
# FrameNet



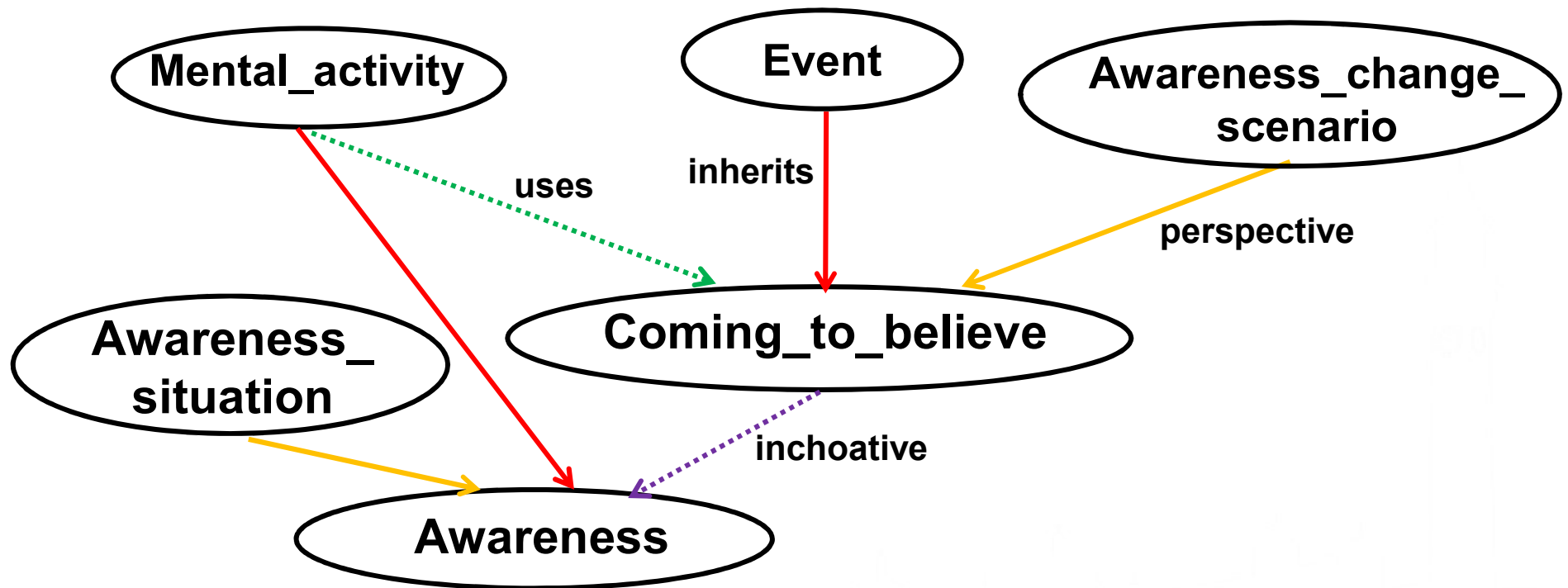
- FrameNet posits frame-to-frame relations e.g. **Inheritance** (complete inheritance), **Use** (partial inheritance), among others... (see Ruppenhofer et al. 2016).



# FrameNet



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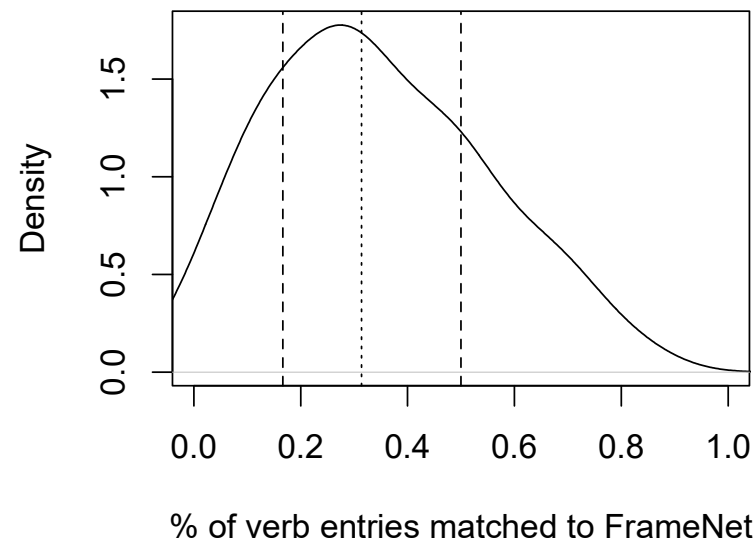
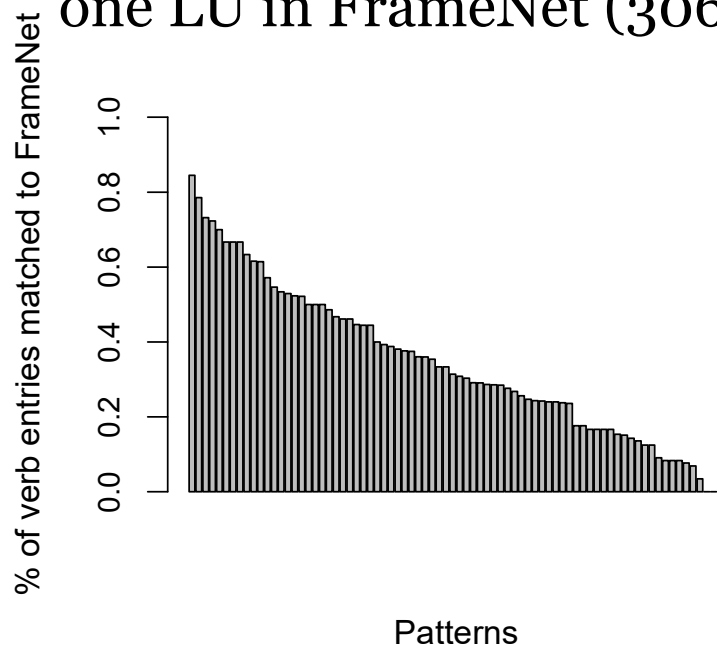
# Automatic matching procedure

- Automatic procedure using the XML version of FrameNet and the COBUILD patterns (provided by HarperCollins)
  - Every verb listed in each pattern is looked up in FrameNet
  - If found, this returns one or more Lexical Units (LU)
  - For each lexical unit, the annotated examples (from the BNC corpus) are consulted (if any)
  - If the valency realization of the frame elements matches the pattern, the LU is mapped onto the COBUILD entry
    - He [NP.Ext] immediately REALIZED that this was a most unusual kind of cat [Sfin.Dep]*
  - Sometimes more than one lexical unit matches a single COBUILD entry.

# Results of automatic matching

Out of 78 matchable patterns in the COBUILD verb patterns...

**40.5%** of the verbs listed in these patterns matched to at least one LU in FrameNet (3063 out of 7572).



- 25% of the patterns have a 50% or more match
- 50% of the patterns have matching rates between 17 and 50%
- 25% of the patterns have a matching rate under 17%

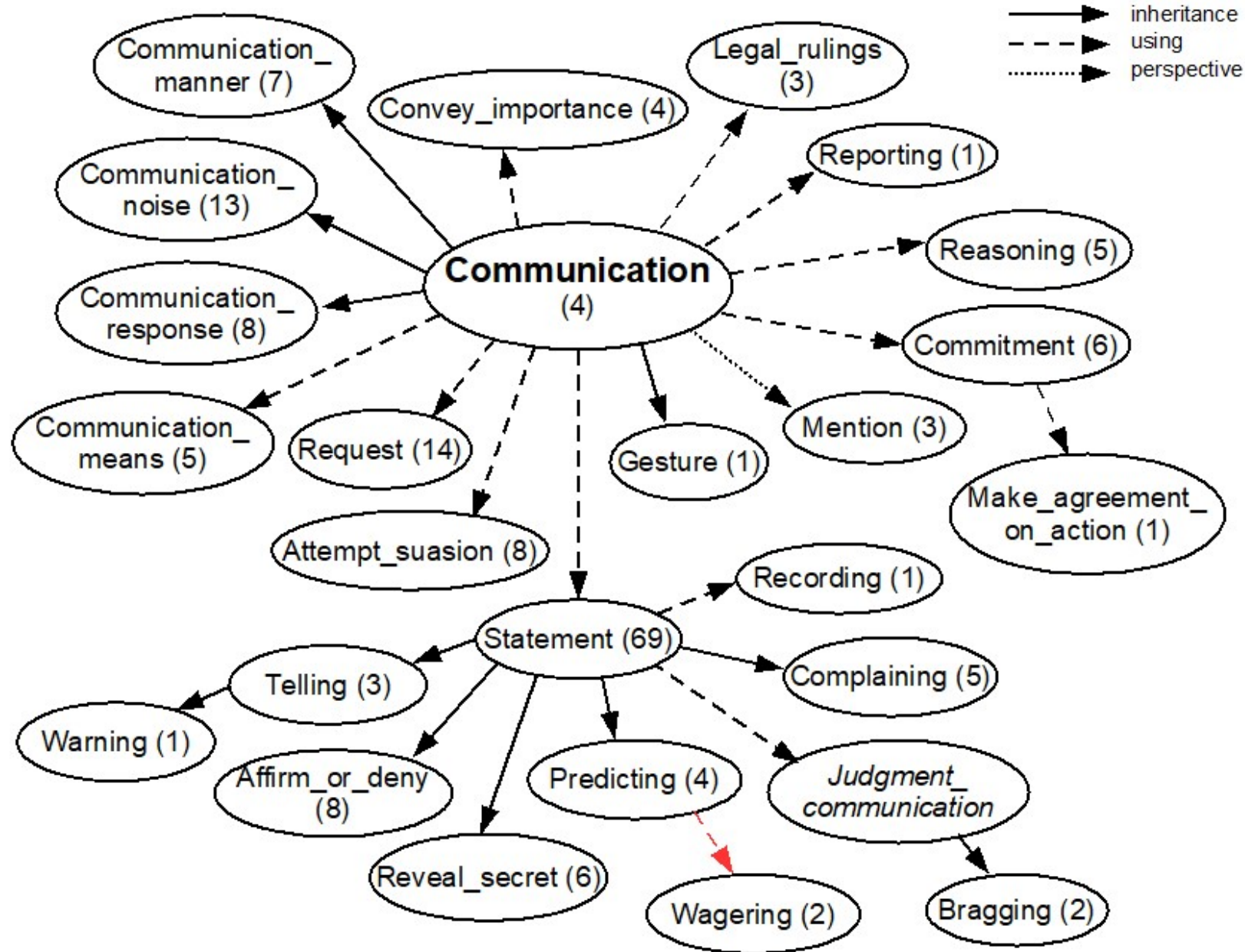
# Manual intervention

- Matching the patterns to FrameNet will necessitate a lot of manual intervention
  1. Checking the results of the automatic procedure
  2. Identifying appropriate Lexical Units which do not have an annotated example containing the relevant pattern
  3. Identifying an appropriate Frame, when there is no relevant Lexical Unit
  4. Occasionally reassigning the COBUILD entry to a more appropriate Frame

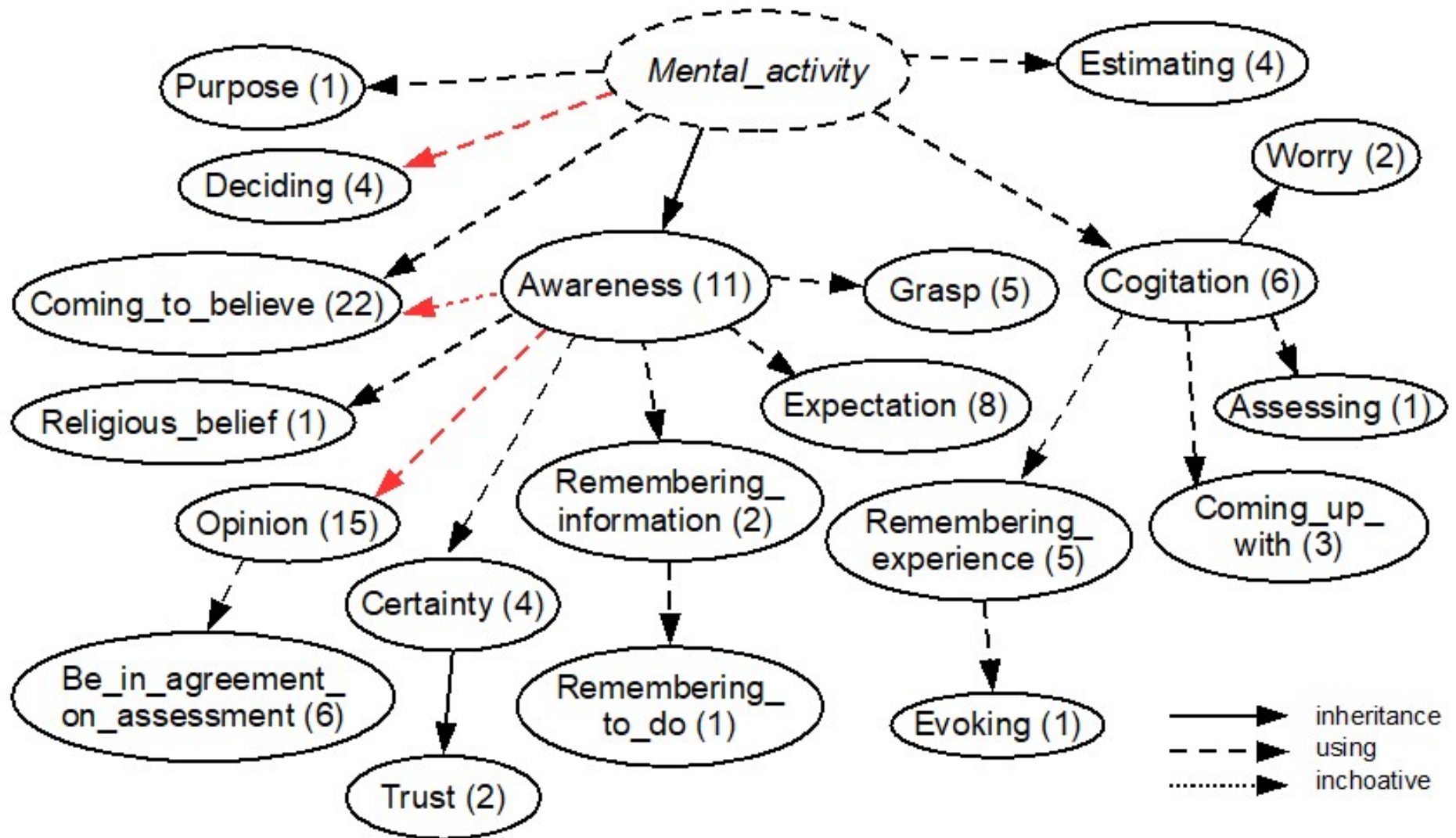
# Identifying constructions

- Constructions as form/meaning pairings:
  - Form = pattern
  - Meaning = **generalization over frames** used in the pattern
- Likely more than one construction for the same pattern
  
- Example: **V that** (Perek & Patten forthc.)
  - 357 Lexical Units identified for this pattern (combination of automatic and manual matching)
  - We use the frame-to-frame relations of FrameNet to identify generalisations over frames in a systematic way.

# The communication network of frames in V that



# The `mental_activity` network of frames in **V** that



# V that constructions based on frames

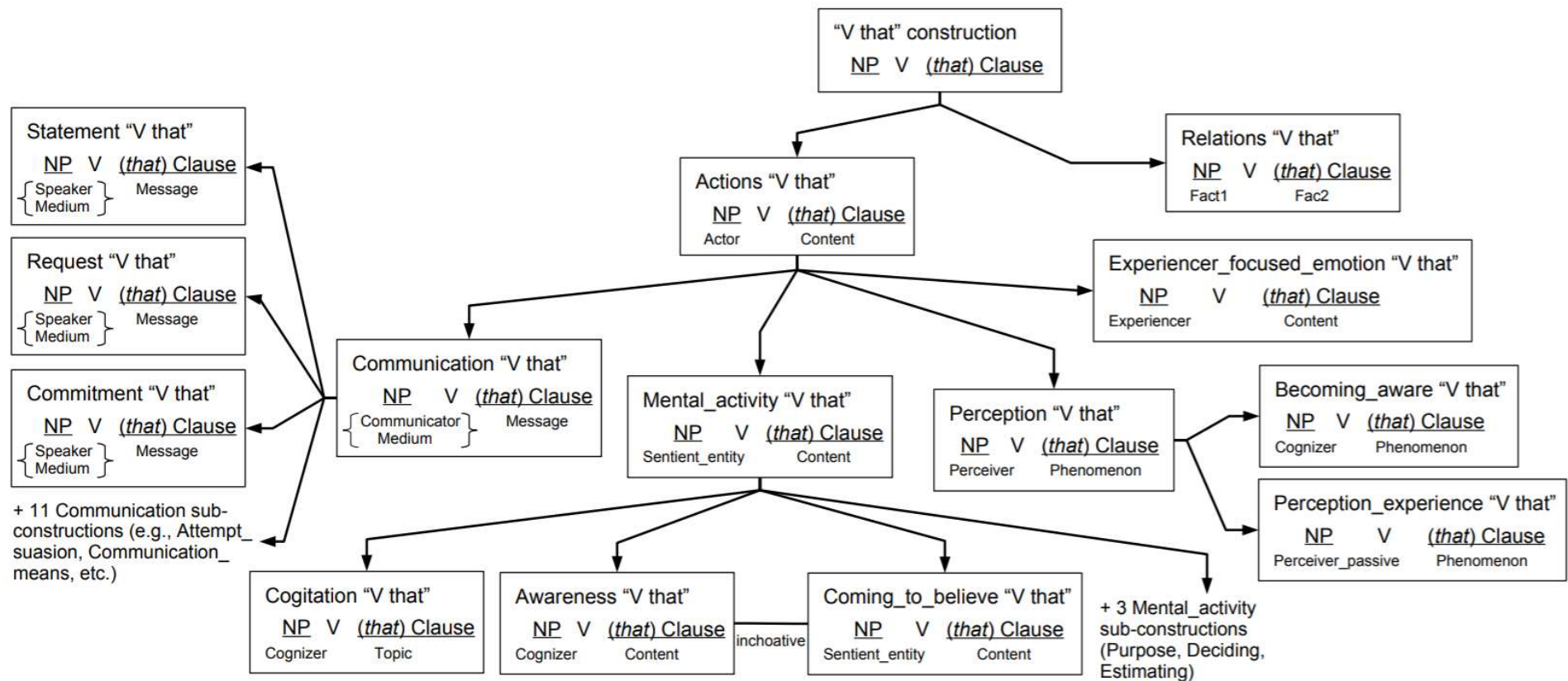
- Communication “V that” construction:
  - Statement “V that” construction
  - Request “V that” construction
  - Commitment “V that” construction (11 more)
  
- Mental\_Activity V that construction:
  - Awareness “V that” construction
  - Cogitation “V that” construction (4 more)
  
- Perception “V that” construction
  
- Emotion “V that” construction

# Abstracting V that constructions

- 8 remaining frames e.g.:
  - Evidence frame (**Support** and **Proposition**):  
*Others say that **the outcome of the case** CONFIRMS **that federal prisoner No 41586 was bluffing**.*
  - Sign frame (**Indicator** and **Indicated**)
  - Contingency frame: (**Determinant** and **Outcome**) ...
- A “V that” construction without a corresponding frame:  
*Relations “V that”*: [NP fact 1 V that clause fact 2]
- Do we need an overarching “V that” construction that generalises over all instances?  
(see Boas 2003, 2008, Bybee 2010, Perek 2014, 2015)



# The “V that” constructional network



# The constructional network

- How many levels?
  - Trade off between detail and clarity (a pedagogic resource)
  
- What kinds of relations?
  - What kinds of horizontal relations might we employ?

# The constructional entry

## Communication “V that” construction

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### Form and meaning

Structure:	NP <sub>Communicator Medium</sub> V      ( <i>that</i> ) Clause <sub>Message</sub>
	[ I ] <sub>Communicator</sub> [ said ] <sub>V</sub> <i>that</i> [ I would do it ] <sub>Message</sub> .
	[ She ] <sub>Communicator</sub> [ claims ] <sub>V</sub> [ she paid no money for it ] <sub>Message</sub> .
	[ The article ] <sub>Medium</sub> [ points out ] <sub>V</sub> <i>that</i> [ trade with Britain's European partners has risen considerably since 1973 ] <sub>Message</sub> .
	[ The president ] <sub>Communicator</sub> [ ordered ] <sub>V</sub> <i>that</i> [ the conference be suspended ] <sub>Message</sub> .

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Definition:                      A **Communicator** conveys a **Message** through a **Medium**, by verbal or non-verbal means.

# The constructional entry

Definition:	A <b>Communicator</b> conveys a <b>Message</b> through a <b>Medium</b> , by verbal or non-verbal means.		
Components:	NP	Communicator	The sentient entity that uses language in the written or spoken modality to convey a Message to the Addressee.
		Medium	The physical or abstract setting in which the Message is conveyed.
	V	Verb (Communication frame)	
	( <i>that</i> ) Clause	Message	Message is a proposition or set of propositions that the Communicator wants the Addressee to believe or take for granted.

# The constructional entry

## Related constructions

Parent constructions: "V that" construction

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Sub-constructions:

- Statement "V that" construction
- Request "V that" construction
- Commitment "V that" construction
- 11 other frame-specific constructions (click to expand)

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Child constructions: Communication "V to n that" construction

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# The constructional entry

## Lexical items (V slot)

(Statement) accept, acknowledge, add, agree, allege, announce, assert, caution, claim, comment, concur, confirm, conjecture, contend, declare, disagree, estimate, exclaim, explain, guess, hazard, hint, hypothesize, imply, insinuate, insist, intimate, joke, maintain, marvel, mention, move, note, observe, opine, plead, posit, postulate, pretend, proclaim, profess, pronounce, propose, quip, reaffirm, recall, recollect, reflect, regret, reiterate, remark, repeat, report, say, speculate, state, submit, suggest, surmise, swear, testify, theorize, venture, verify, volunteer, write

(Request) ask, beg, command, demand, dictate, direct, instruct, ordain, order, plead, request, specify, stipulate, urge

(Communication\_noise) bellow, bleat, burble, crow, cry, groan, moan, murmur, scream, squawk, wail, whine, yell

(Affirm\_or\_deny) affirm, attest, aver, certify, concede, deny, grant, protest

(Attempt\_suasion), advise, advocate, beg, insist, preach, propose, recommend, suggest

(Communication\_response), answer, counter, interject, object, rejoin, reply, respond, retort

(Communication\_manner) chant, declaim, enthuse, mutter, shout, sneer, whisper

(Commitment) guarantee, pledge, promise, swear, threaten, vow

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# The constructional entry

## Examples

He **said** the country was unstable.

I **said** that I would do it.

The president **boasted** that it would be by far the biggest service program in American history.

I **agree** that the project has possibilities.

The president **ordered** that the conference be suspended.

She **claims** she paid no money for it.

Many passengers **complained** that once they emerged from the train, there were no emergency personnel to greet them.

I **explained** that you were upset and wanted to be alone.

However, the article **points out** that trade with Britain's European partners has risen considerably since 1973.

He **predicted** that the terms would be rejected and the war would continue.

Taylor **said** he was delighted to be at the festival.

The kids have loved him for years while their cynical elders **sneered** that he was just a pretty face.

We all felt hungry, so I **suggested** that we stop for an early lunch.

Mr Lightman **wrote** that there had been a number of misapplications of funds and breaches of duty.

# The constructional entry

- Inspired by the Swedish Constructicon (Lyngfelt *et al.* 2018)
- Relations between constructions:
  - subconstructions
  - child constructions
  - parent constructions
  - neighbour constructions
- Comprehensive listing and exemplification of lexical items
  - Unique aspect to this proposed constructicon
  - Useful from a pedagogic perspective (Patten & Perek *forthc.*)



# Conclusion

- ❑ The COBUILD Grammar Patterns and FrameNet complement each other well; frames can be used to turn patterns into constructions.
- ❑ Automatic matching gives us a useful head start, although lot of manual processing is necessary to merge the two resources.
- ❑ The resulting construction would be unmatched in terms of coverage...
- ❑ ...and it is *a different* coverage, complementing that of the FrameNet Construction project.

# Conclusion

- A constructicon built from patterns and frames would go a long way towards achieving the commitment of the constructicon to describing the entirety of the grammar in terms of constructions...
- Our proposed project name:  
***the English constructicon***

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