

# Comparative concepts: database and visualization

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- Database overview
- Using the visualization: general strategy
- A more complex example: taxonomy of declaratives
- Construction strategies and functions
- Example: strategies for the transitive construction
- Example: function of the ditransitive construction
- Taxonomies of events and semantic roles
- Taxonomy of events by semantic domain
- Taxonomy of semantic roles

# Database overview

Cambridge Textbooks in Linguistics

# Morphosyntax

Constructions of the World's  
Languages

William Croft

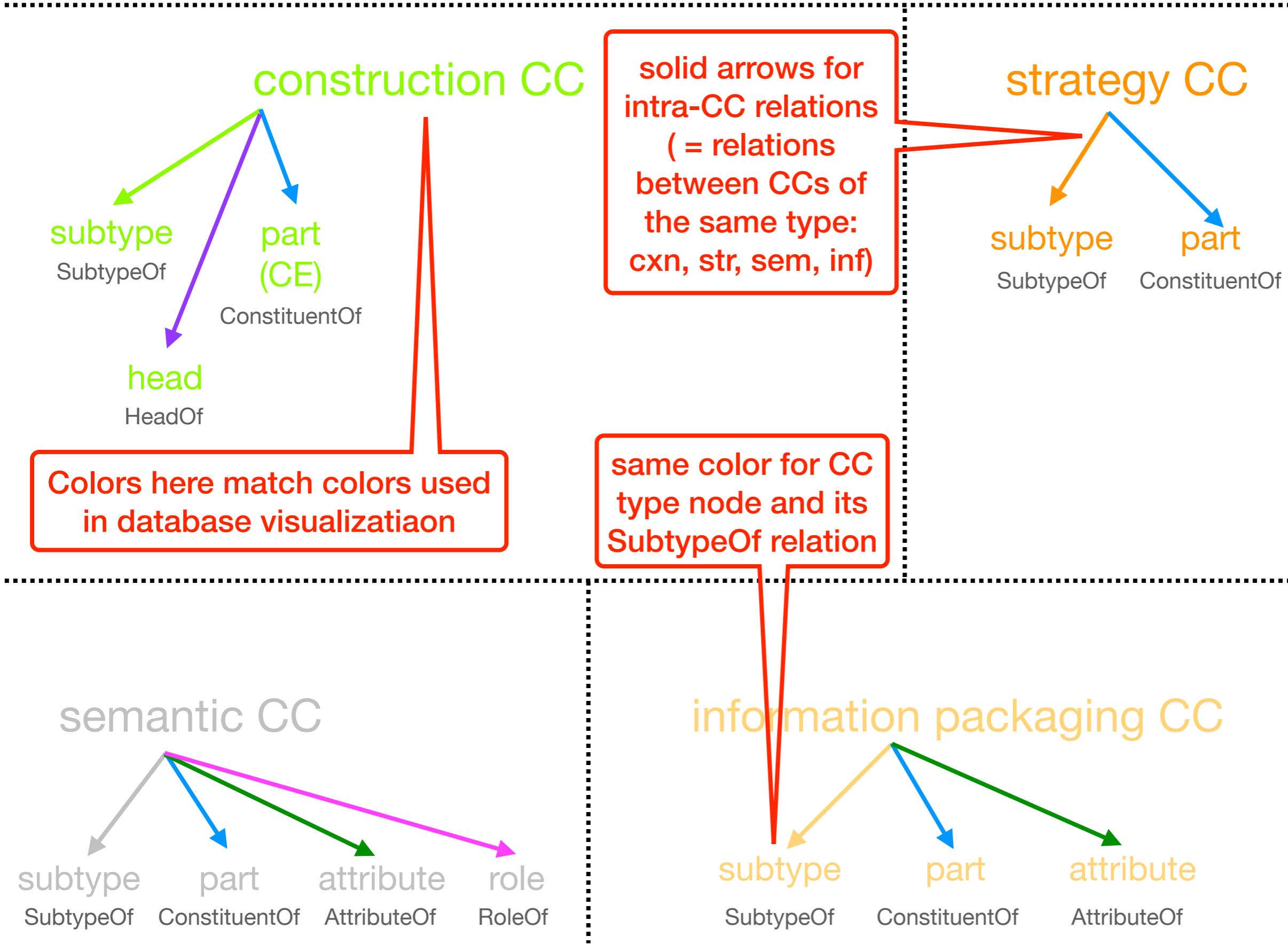
[Cambridge University Press (2022). Pp. xxxvi, 688, plus an 87 page online Glossary]

# The Comparative Concepts (CC) Database in MoCCA

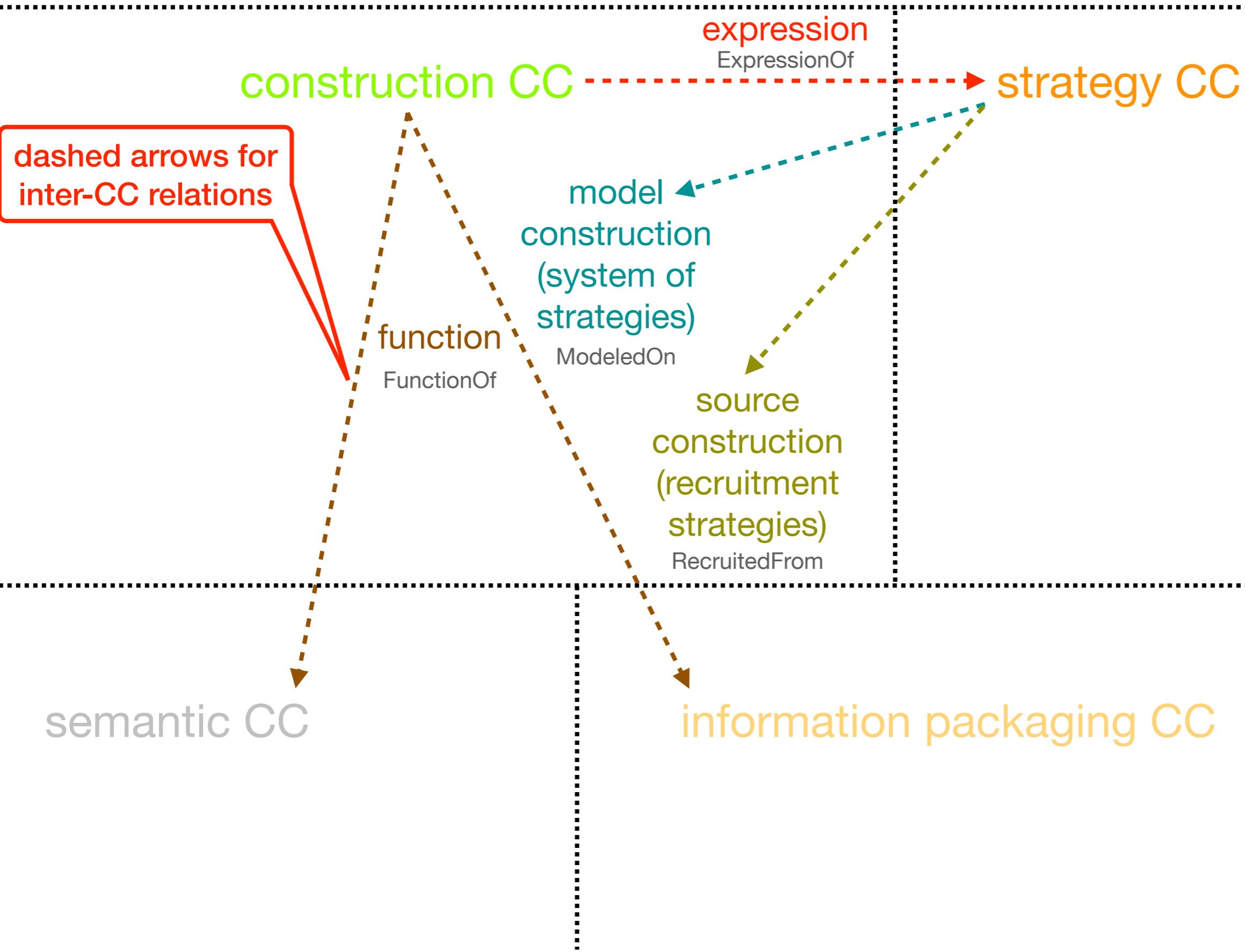
- *Morphosyntax: Constructions of the World's Languages* provides a survey of major constructions, their functions (semantics and information packaging) and their strategies, based on the results of typology since Greenberg (1966)
- The Glossary of Comparative Concepts to *Morphosyntax* is being converted to a database\* that includes relations between the four main types of comparative concepts, to be used for the alignment of constructicons (along with FrameNet)
- The current version includes revisions to the comparative concept inventory in *Morphosyntax*

\*Arthur Lorenzi Almeida (Federal University of Juiz de Fora, Brazil), Peter Ljunglöf (Gothenburg University, Sweden), André Coneglian (Federal University of Minas Gerais, Brazil), Bill Croft (University of New Mexico, USA), Joakim Nivre (Uppsala University, Sweden)

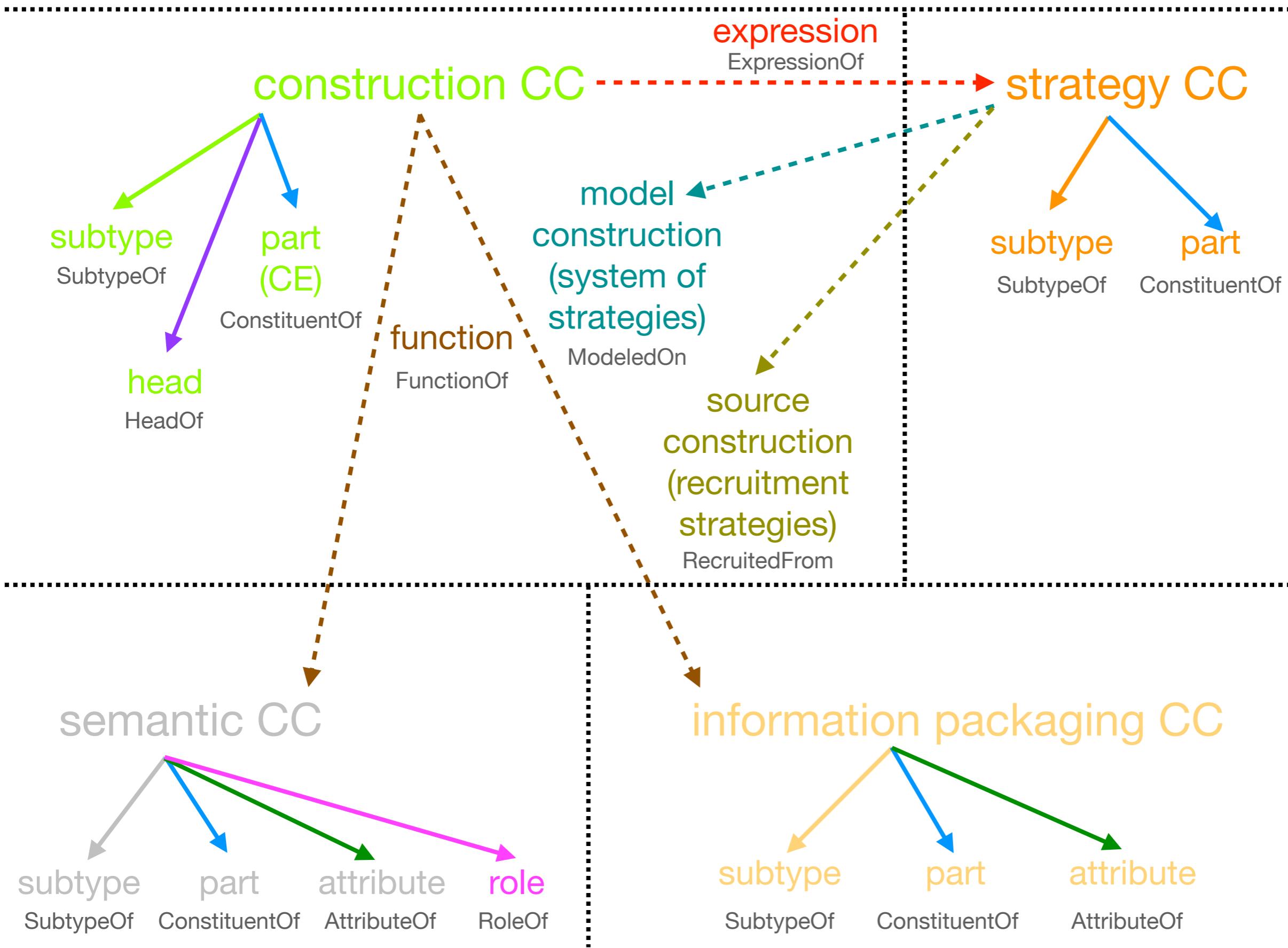
# Structure of the CC database: intra-CC relations



# Structure of the CC database: inter-CC relations



# Structure of the CC database: all relations



menu to filter and/or search the database (toggles on and off)

# Database of Comparative Concepts

Extracted and expanded from the appendix of *Morphosyntax: Constructions of the World's Languages*, by William Croft (2022)

Explore our interactive [graph visualization of the CC database](#).

Build date/time: 2024-11-04 10:04:55

Statistics: 1086 CCs, with 2084 typed relations and 3604 links within CC definitions

Show

construction  strategy  meaning  
 information packaging  definition  other

Find a  name  relation  definition  
that  contains  starts with  words start with

Type at least 3 characters

## A role (sem)

basic name, type information

|                    |   |
|--------------------|---|
| <b>Id</b>          | sem:a-role  |
| <b>Type</b>        | <a href="#">meaning</a>   |
| <b>Alias(es)</b>   | A role   A   A (role)   |
| <b>Function of</b> | <a href="#">ditransitive A-phrase (cxn)</a>   <a href="#">passive-inverse A phrase (cxn)</a>   <a href="#">transitive A-phrase (cxn)</a>  |
| <b>Role of</b>     | <a href="#">agentive change of state event (sem)</a>  |
| <b>Associated</b>  | <a href="#">active category (str)</a>   <a href="#">ergative category (str)</a>   <a href="#">nominative category (str)</a>   |
| <b>Taxonomy</b>    | <a href="#">valency role (sem)</a>  |
| <b>Definition</b>  | <p><b>A role (sem)</b></p> <p>the <a href="#">agent</a> or agent-like <a href="#">central participant role</a> in the prototypical <a href="#">bivalent event</a> (that is, a breaking event) or the prototypical <a href="#">trivalent event</a> (that is, a giving event). Examples: in <i>Jack broke the window</i>, Jack plays the A role in the breaking event; and in <i>Jill gave Joe the keys</i>, Jill plays the A role in the giving event. (Section 6.3.1)</p> |

## A-not-A (str)

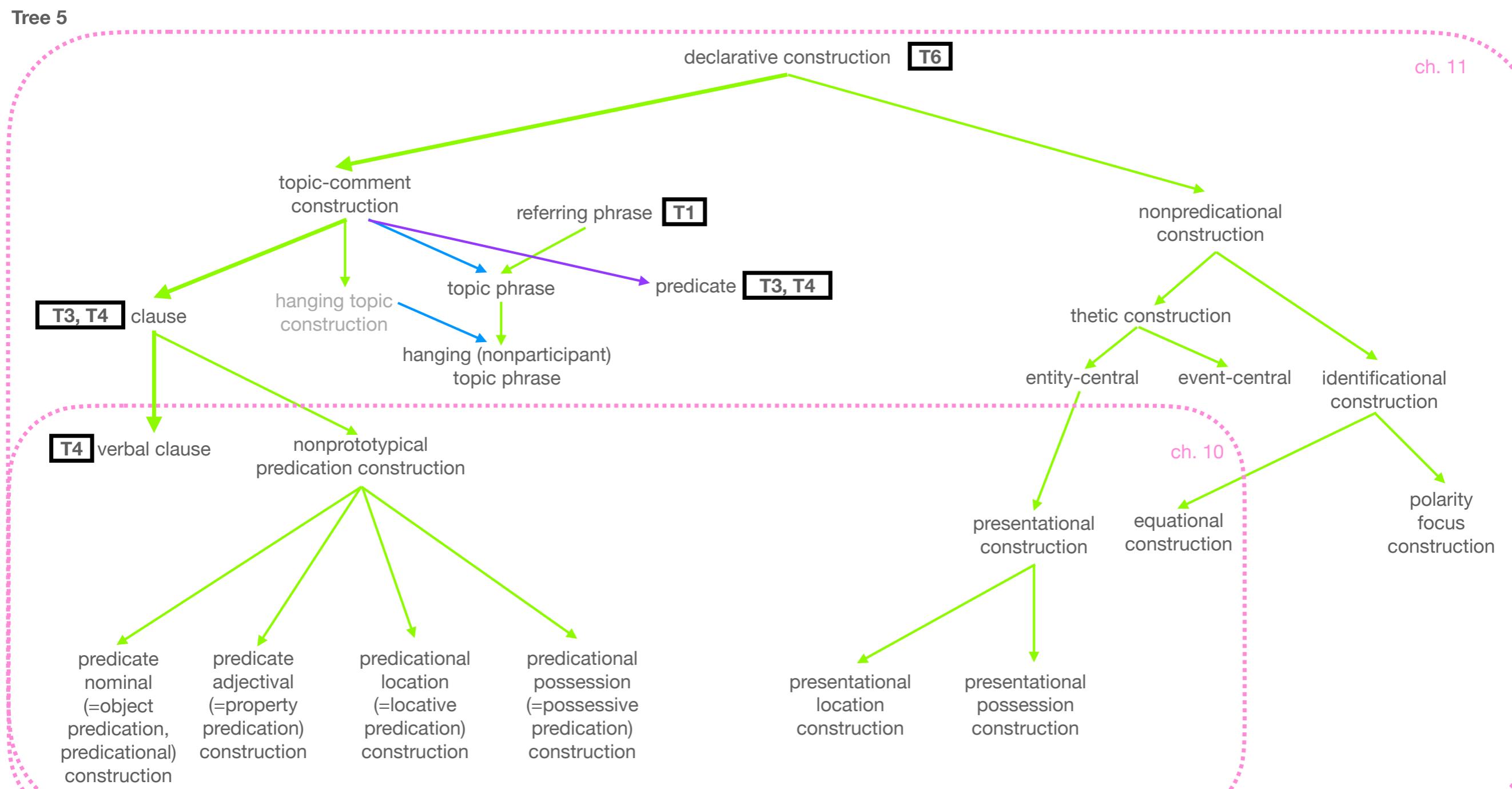
To come: links to examples, with UD parses

|                   |  |
|-------------------|--|
| <b>Id</b>         | str:a-not-a  |
| <b>Type</b>       | <a href="#">strategy</a>   |
| <b>Alias(es)</b>  | A-not-A  |
| <b>Expresses</b>  | <a href="#">polarity question construction (cxn)</a>   |
| <b>Taxonomy</b>   | <a href="#">encoding strategy (str)</a>  |
| <b>Definition</b> | <p><b>A-not-A (str)</b></p> <p>a strategy for <a href="#">polarity question constructions</a> in which both the <a href="#">positive</a> and <a href="#">negative</a> form of the proposition are expressed. Example: Mandarin <i>tā zài jiā bu zài jiā</i> [lit. 'S/he at home not at home'] 'Is s/he at home?' is an instance of the A-not-A strategy for polarity questions. The A-not-A strategy is essentially the recruitment of the <a href="#">alternative question</a> construction for the polarity question function.</p> |

# Manually constructed trees of CC relations (except FunctionOf)

<https://github.com/comparative-concepts/cc-database/tree/main/cc-relation-trees>

# Construction Relations



Using the visualization:  
general strategy

## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Select a graph

Show: Names  Stabilize:  Atlas2  Subgraph:  grow:    remove:

Selection:    expand:    search: Type at least 3 characters

The full database is much too large to visualize on even a large desktop screen

So we have created a series of graphs of parts of the CC database

Even so, the graphs are still too large, so we have created ways to select a subset of nodes and edges, and add (expand/grow) or remove parts of a subgraph

# Visualization of the Comparative Concepts database

## ▼ Instructions

What the controls mean:

- **Graph:** Here you select one of five different graph "types". When you have selected one, you can decide which relations you want to see.
- **Show:** Should the nodes show the ids or the names of the CCs?
- **Stabilize:** You can turn off the auto-stabilization here, or decide which algorithm it should use.
- **Subgraph:** Here you can decide if you want to show just a part of the nodes in the graph (together with their relations).
- **Selection:** Here you can select graph nodes in different ways.

How you can interact with the graph itself:

- To zoom in/out, use the mouse scroll wheel or "pinch" on the touchpad.
- To move the canvas around, click-and-drag the background.
- To select a node, click on it.
- To select several nodes (or deselect), click-and-hold just a little while.
- To unselect all nodes, click on the background (or the button "Clear selection").
- To move the selected nodes, click-and-drag them.
- To see the definition of a CC, hover over a node and wait a little while.

**Graph:** Select a graph ▾

**Show:** Names ▾ **Stabilize:**  **Subgraph:** Clear grow: upwards downwards outwards remove: unselected selected

**Selection:** Clear Unconnected expand: upwards downwards outwards search: Type at least 3 characters

## Notes to users:

- Currently available graphs: Constructions, Strategies, Semantic (content), Information packaging, Cxn↔Str (ExpressionOf), Cxn↔Sem+Inf (FunctionOf)
- All graphs include SubtypeOf and ConstituentOf relations (the latter where applicable)
- Graphs currently show names of the CCs only. Mousing over a node pops up a window with the definition
- Graphs are constructed automatically using Vis-Network. This package optimizes display in a star, not tree, format
- It takes a while to load the Cxn↔Str (ExpressionOf) and Cxn↔Sem+Inf (FunctionOf) graphs; please be patient!
- There is an undo function, which also allows you to save a subgraph you've created for later use

# Visualization of the Comparative Concepts database

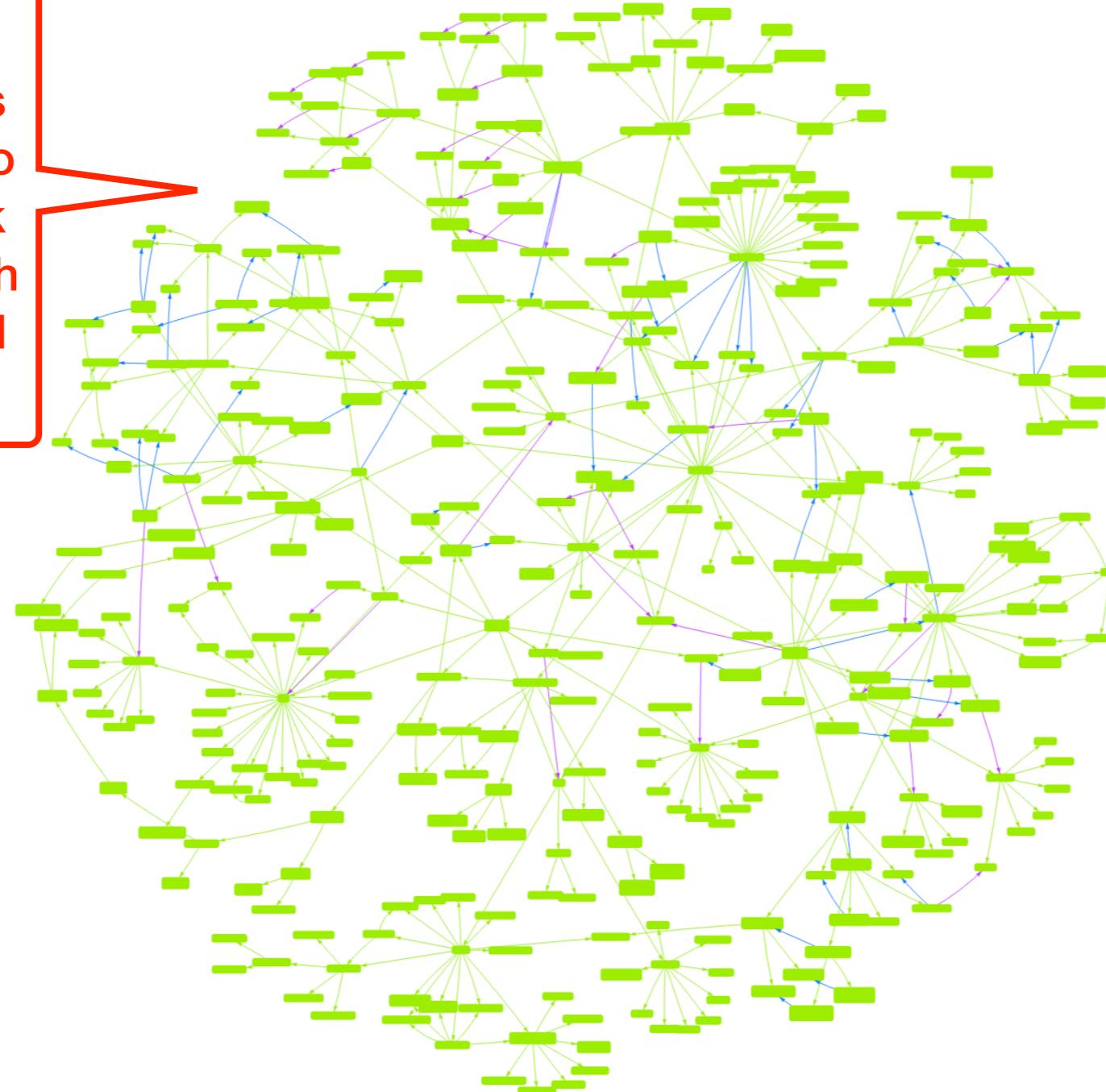
## ► Instructions

Graph: Constructions   SubtypeOf  ConstituentOf  HeadOf

Show: Names  Stabilize:  Atlas2  Subgraph:  grow:    remove:

Selection:    expand:    search:

The graph of all constructions is still too large. So we need to pick out the subgraph we're interested in.



You could just browse the graph. But if you want to focus in, here's a general strategy.

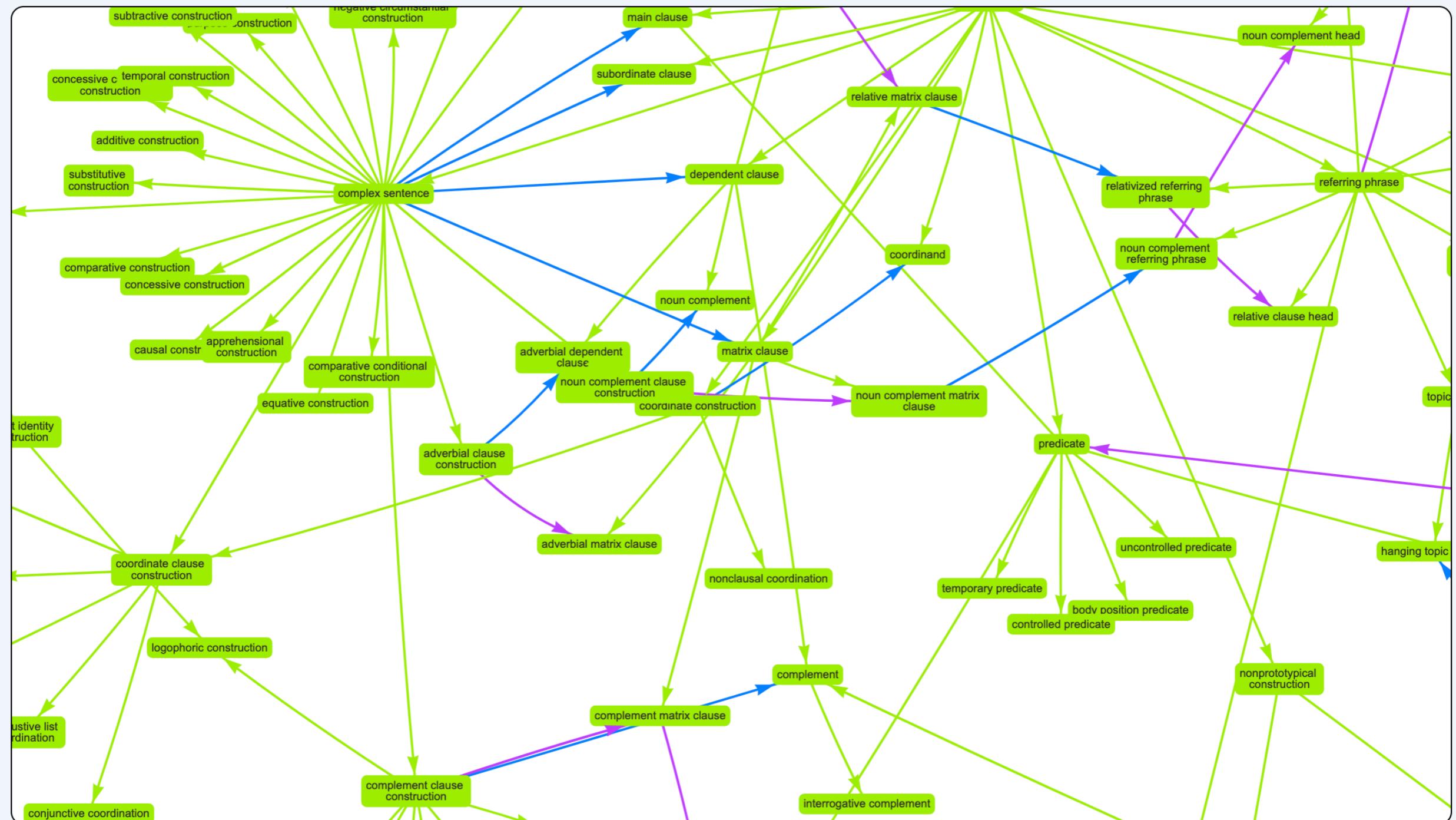
## Visualization of the Comparative Concepts database

### ► Instructions

Graph: **Constructions**  [SubtypeOf](#)  [ConstituentOf](#)  [HeadOf](#)

Show: **Names**  **Stabilize:**  **Atlas2**  Subgraph: **clear** grow: **upwards** **downwards** **outwards** remove: **unselected** **selected**

Selection: **clear** **all visible** **unconnected** expand: **upwards** **downwards** **outwards** search: Type at least 3 characters



Current graph: 355 nodes; 488 edges

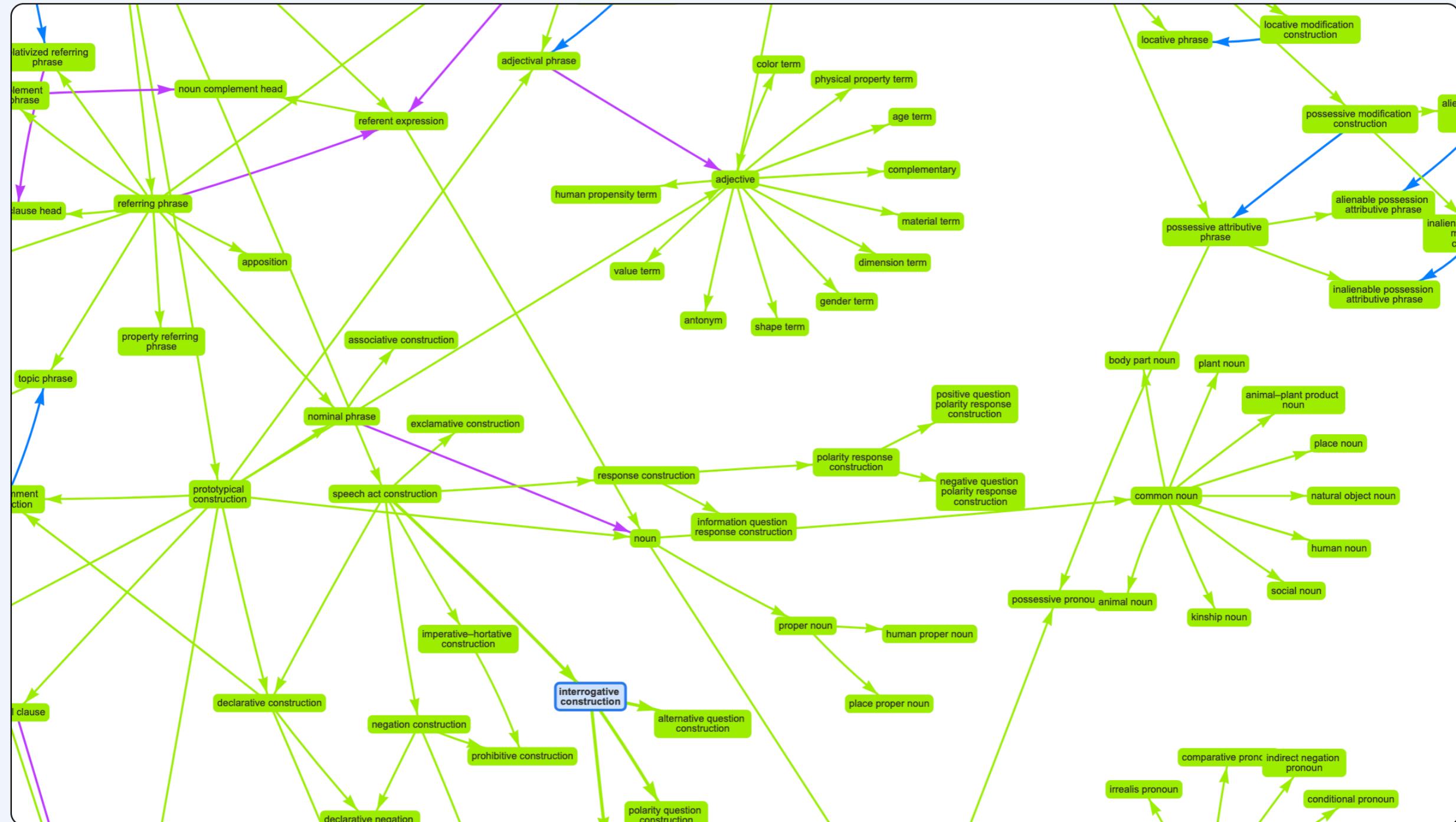
# Visualization of the Comparative Concepts database

## ► Instructions

**Graph:** Constructions   SubtypeOf  ConstituentOf  HeadOf

**Show:** Names  **Stabilize:**  Atlas2  **Subgraph:** clear grow: upwards downwards outwards remove: unselected selected

**Selection:** clear all visible unconnected expand: upwards downwards outwards search: interrogative construction



**Current graph:** 355 nodes, 1 selected; 488 edges

General strategy: (1) search on construction you're interested in

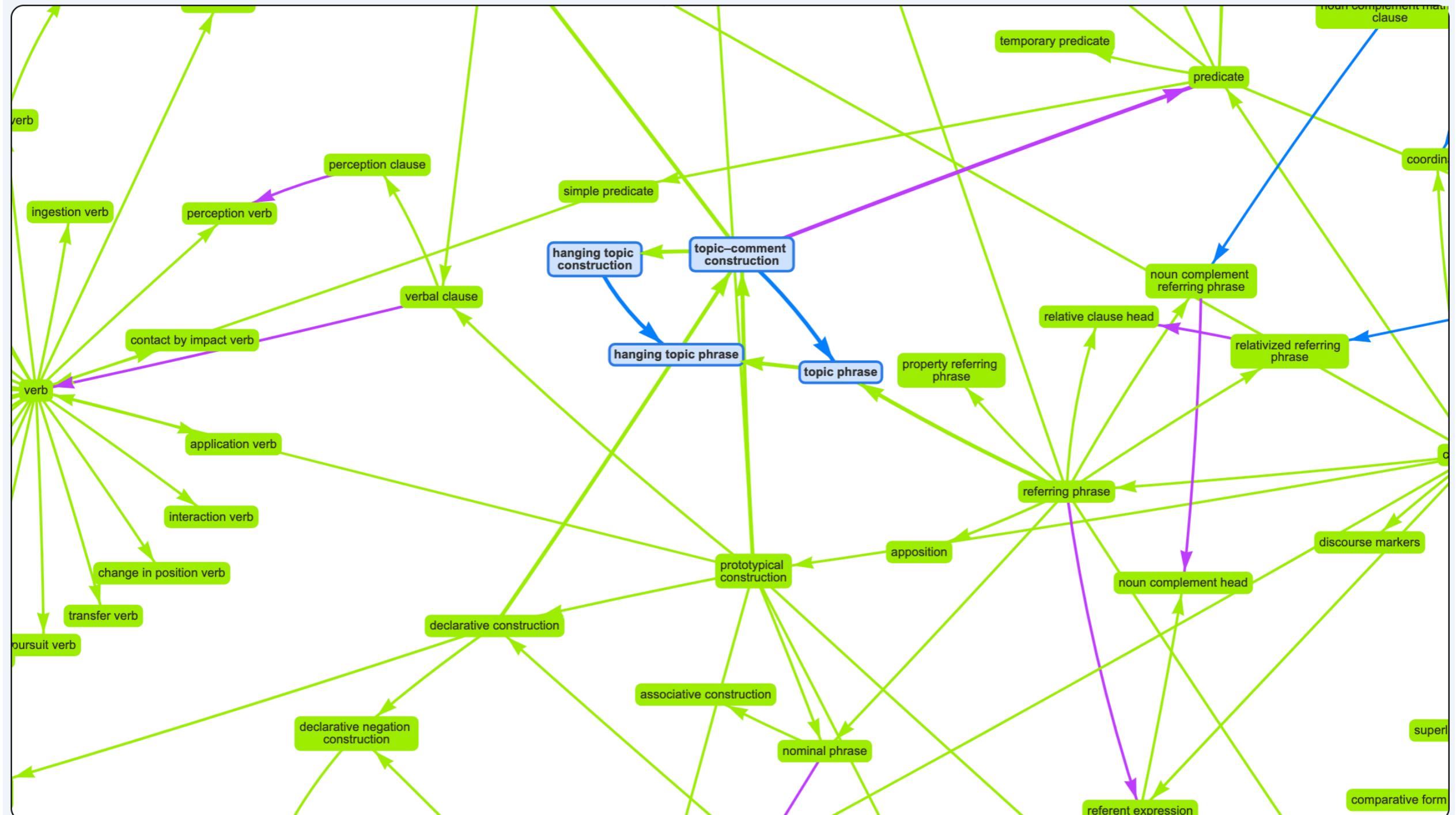
# Visualization of the Comparative Concepts database

## ► Instructions

**Graph:** Constructions   SubtypeOf  ConstituentOf  HeadOf

**Show:** Names  **Stabilize:**  Atlas2  **Subgraph:** clear grow: upwards downwards outwards remove: unselected selected

**Selection:** clear all visible unconnected expand: upwards downwards outwards search: topic



Current graph: 355 nodes, 4 selected; 488 edges

## Visualization of the Comparative Concepts database

### ► Instructions

Graph:   [SubtypeOf](#)  [ConstituentOf](#)  [HeadOf](#)

Show:   [Stabilize](#):  [Atlas2](#) Subgraph:  grow:    remove:

Selection:    expand:    search:

General strategy: (2) Click on “remove unselected” to make the construction your starting point

topic–comment  
construction

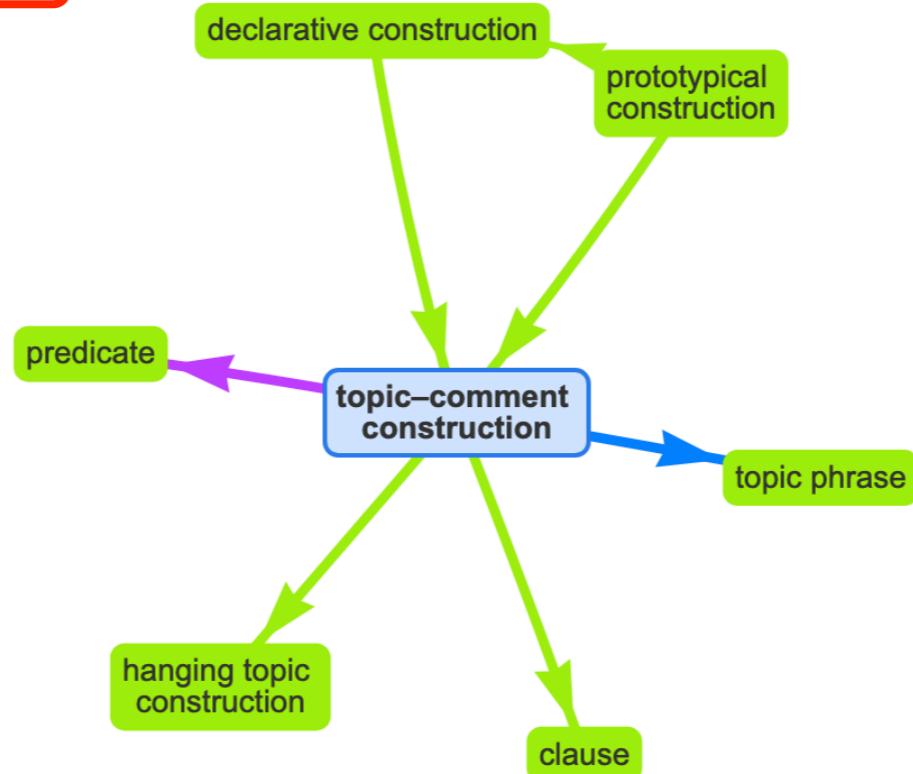
# Visualization of the Comparative Concepts database

## ► Instructions

Graph: **Constructions**  SubtypeOf  ConstituentOf  HeadOf  
Show: **Names**  **Stabilize:**  **Atlas2**  Subgraph: **clear** grow: **upwards** **downwards** **outwards** remove: **unselected** **selected**  
Selection: **clear** **all visible** **unconnected** expand: **upwards** **downwards** **outwards** search: **topic**

General strategy: (3) Grow the graph. If you want to just explore the neighborhood, toggle on all the relations

General strategy: (4) Then click on grow: outwards to see all relations in all directions



## Visualization of the Comparative Concepts database

### ► Instructions

Graph:

Constructions

SubtypeOf

ConstituentOf

HeadOf

Show:

Names

Stabilize

Atlas2

Subgraph:

clear

grow: upwards

downwards

outwards

remove: unselected

selected

Selection:

clear

all visible

unconnected

expand: upwards

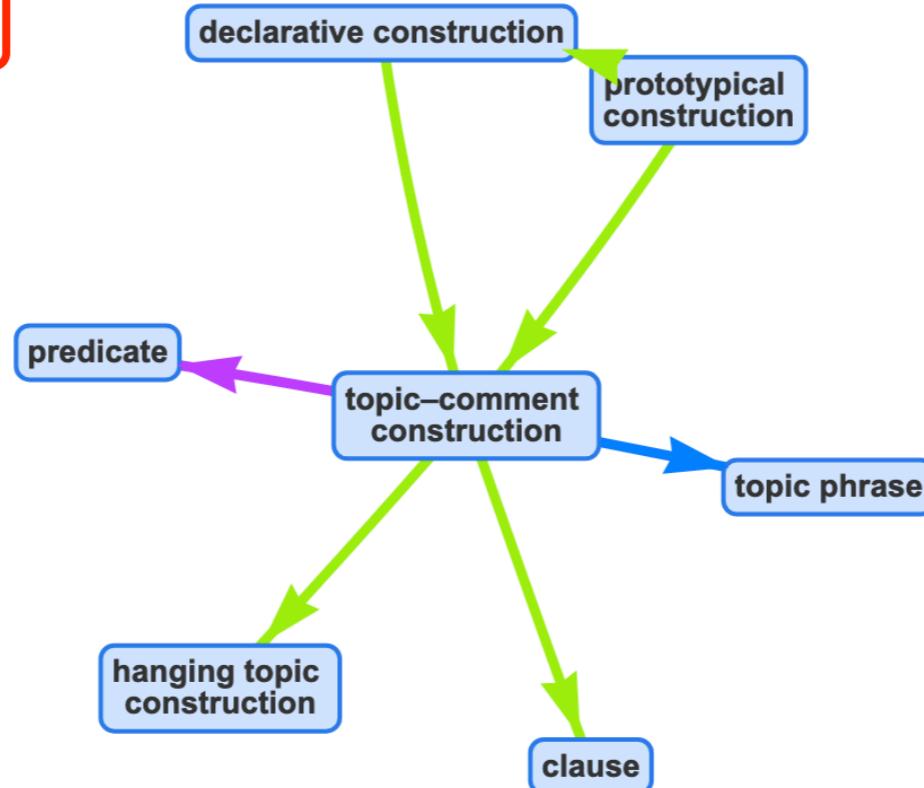
downwards

outwards

search: topic

General strategy: (5) To grow the graph again, expand: outwards to select the CCs you just grew

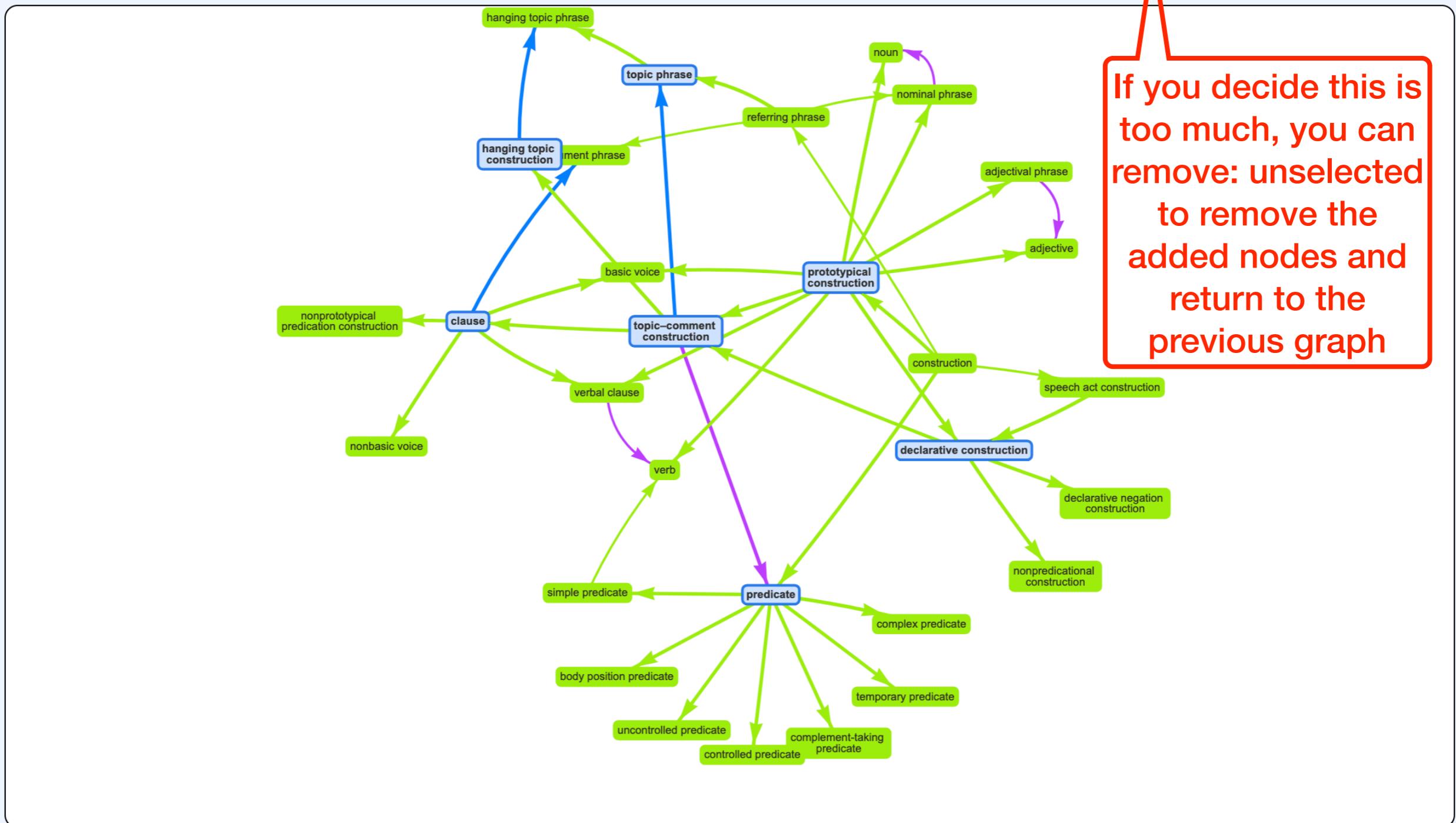
General strategy: (6) Then grow: outwards again (see next slide)



# Visualization of the Comparative Concepts database

## ► Instructions

Graph:   SubtypeOf  ConstituentOf  HeadOf  
Show:   Stabilize:  Atlas2  clear grow: upwards downwards outwards remove: unselected selected  
Selection:    expand: upwards downwards outwards search: topic



Current graph: 30 nodes (of 355), 7 selected; 42 edges (of 488)

# Visualization of the Comparative Concepts database

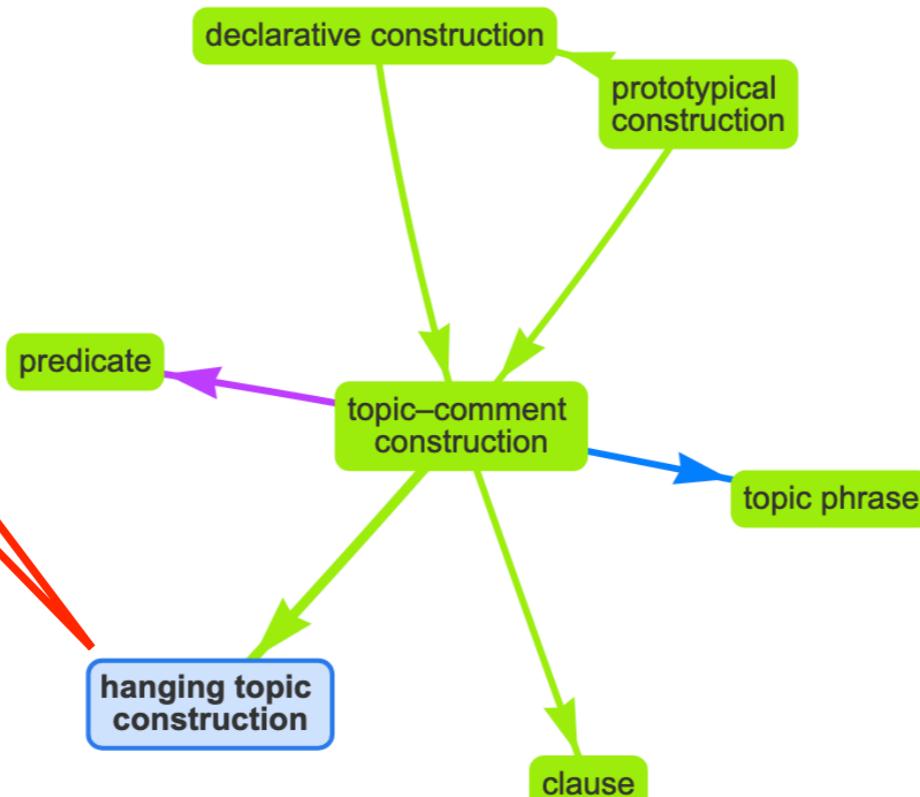
## ► Instructions

Graph: Constructions   SubtypeOf  ConstituentOf  HeadOf

Show: Names  Stabilize:  Atlas2  Subgraph:  grow:    remove:

Selection:    expand:    search:

General strategy: (5b)  
Let's back up to step  
5. Say you're  
interested in just the  
hanging topic  
construction. Select  
just that construction  
by clicking on it



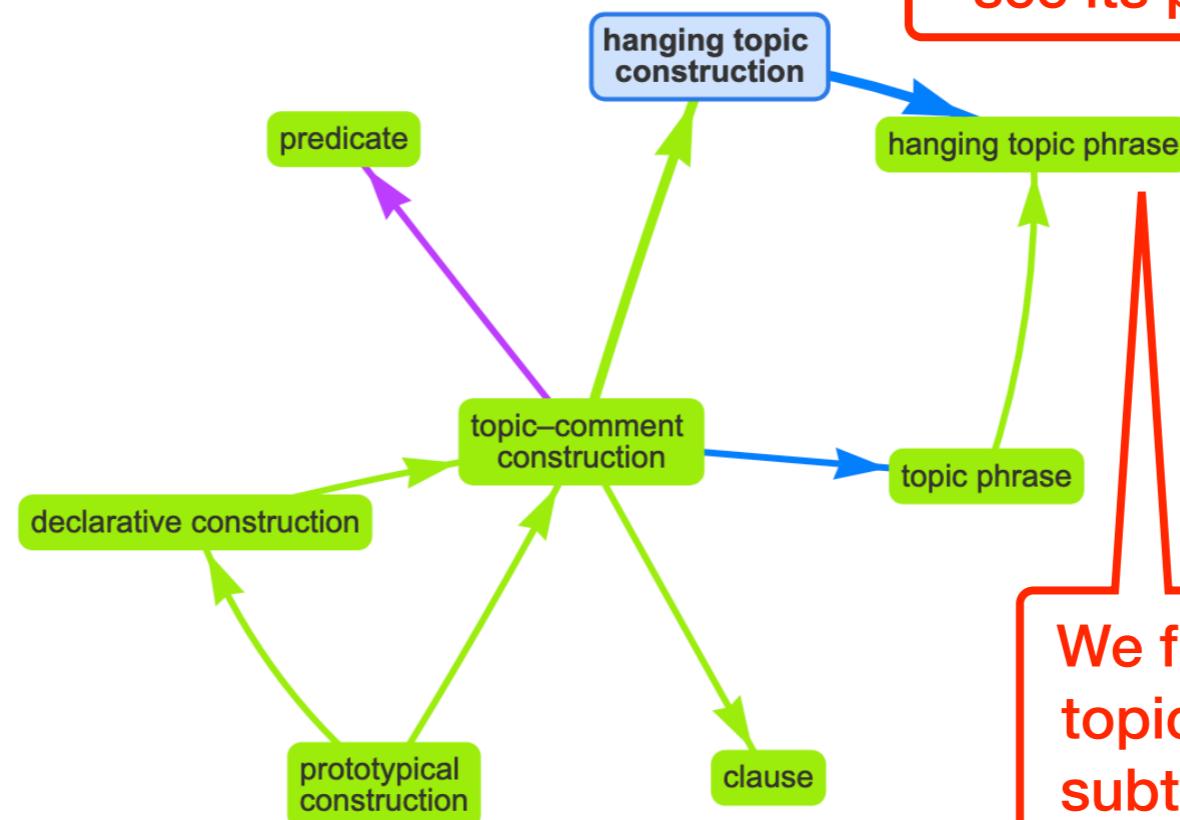
# Visualization of the Comparative Concepts database

## ► Instructions

Graph: **Constructions**  [SubtypeOf](#)  [ConstituentOf](#)  [HeadOf](#)

Show: **Names**  **Stabilize:**  **Atlas2**  Subgraph: **clear** grow: **upwards** **downwards** **outwards** remove: **unselected** **selected**

Selection: **clear** **all visible** **unconnected** expand: **upwards** **downwards** **outwards** search: **topic**



General strategy: (6b) Then grow: downwards only, to see its parts or subtypes

We find it has a hanging topic phrase, which is a subtype of topic phrase

# Visualization of the Comparative Concepts database

## ► Instructions

Graph: **Constructions**   SubtypeOf  ConstituentOf  HeadOf

Show: **Names**  Stabilize:  **Atlas2**  Subgraph:  grow:    remove:

Selection:    expand:    search:

General strategy: (3c) Let's back up to step 3. If you're only interested in the subtypes, toggle off ConstituentOf and Head of.

General strategy: (4c) Then grow just downwards.

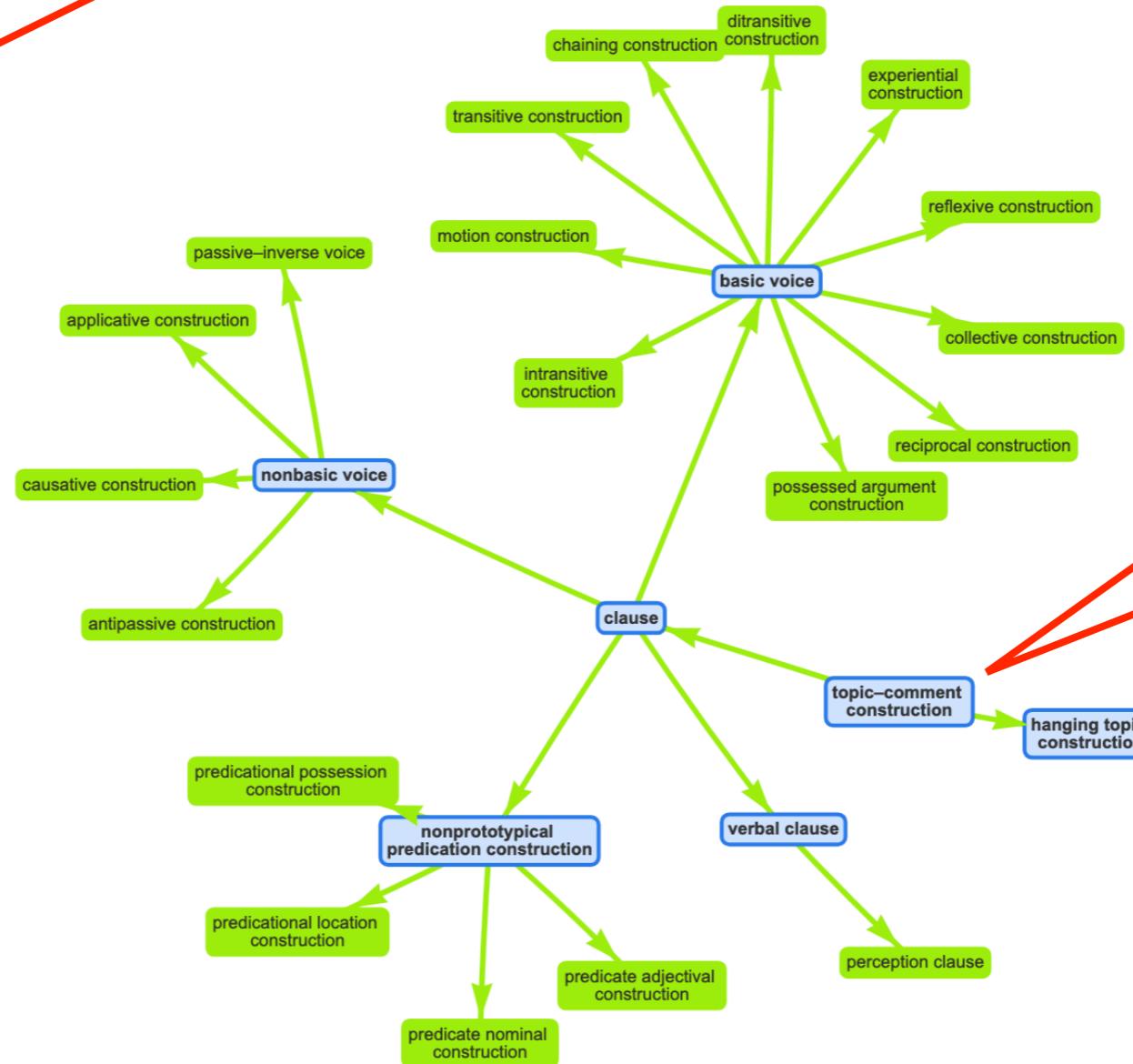
topic–comment  
construction

## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Constructions   SubtypeOf  ConstituentOf  HeadOf  
Show: Names  Stabilize:  Atlas2  Subgraph:  grow:    remove:    
Selection:    expand:    search:

General strategy:  
(5c-6c) As with steps 5-6 before, to continue growing the graph, expand: downwards and grow: downwards.



Here, we have expanded/grown downwards twice in a row, after the first grow downwards from a single CC.

You can Undo a change in your subgraph. Every time you grow or remove nodes, the URL changes.

https://comparative-concepts.github.io/cc-database

Getting Started Home - BBC News ABQ Weather Yahoo! Mail My UNM UNM Home Doonesbury FiveThirtyEight COVID-19 Other Bookmarks

## Visualization of the Comparative Concepts database

► Instructions

Graph: **Constructions**  SubtypeOf  ConstituentOf  HeadOf

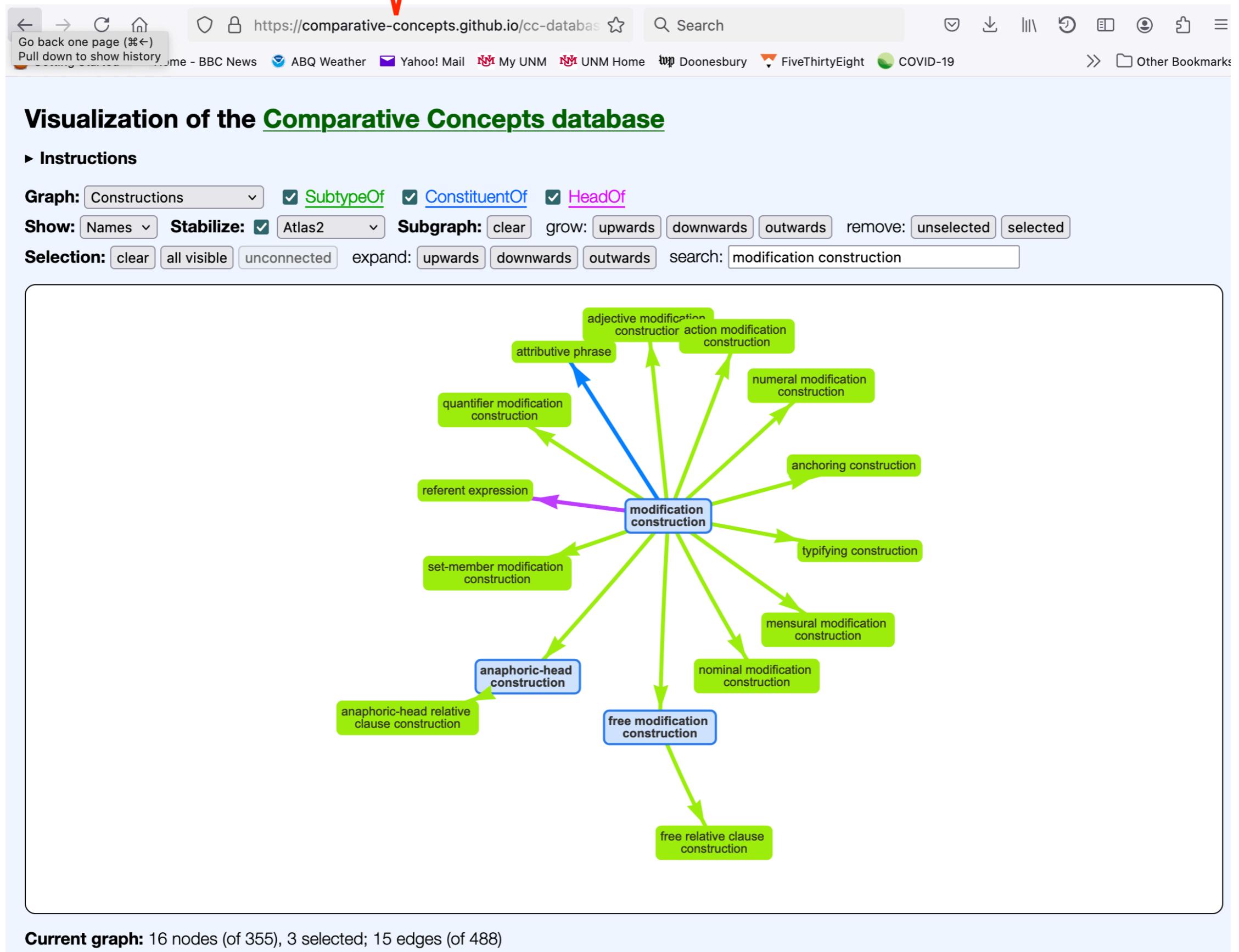
Show: Names  Stabilize: **Atlas2** Subgraph: clear grow: upwards downwards outwards remove: unselected selected

Selection: clear all visible unconnected expand: upwards downwards outwards search: modification construction

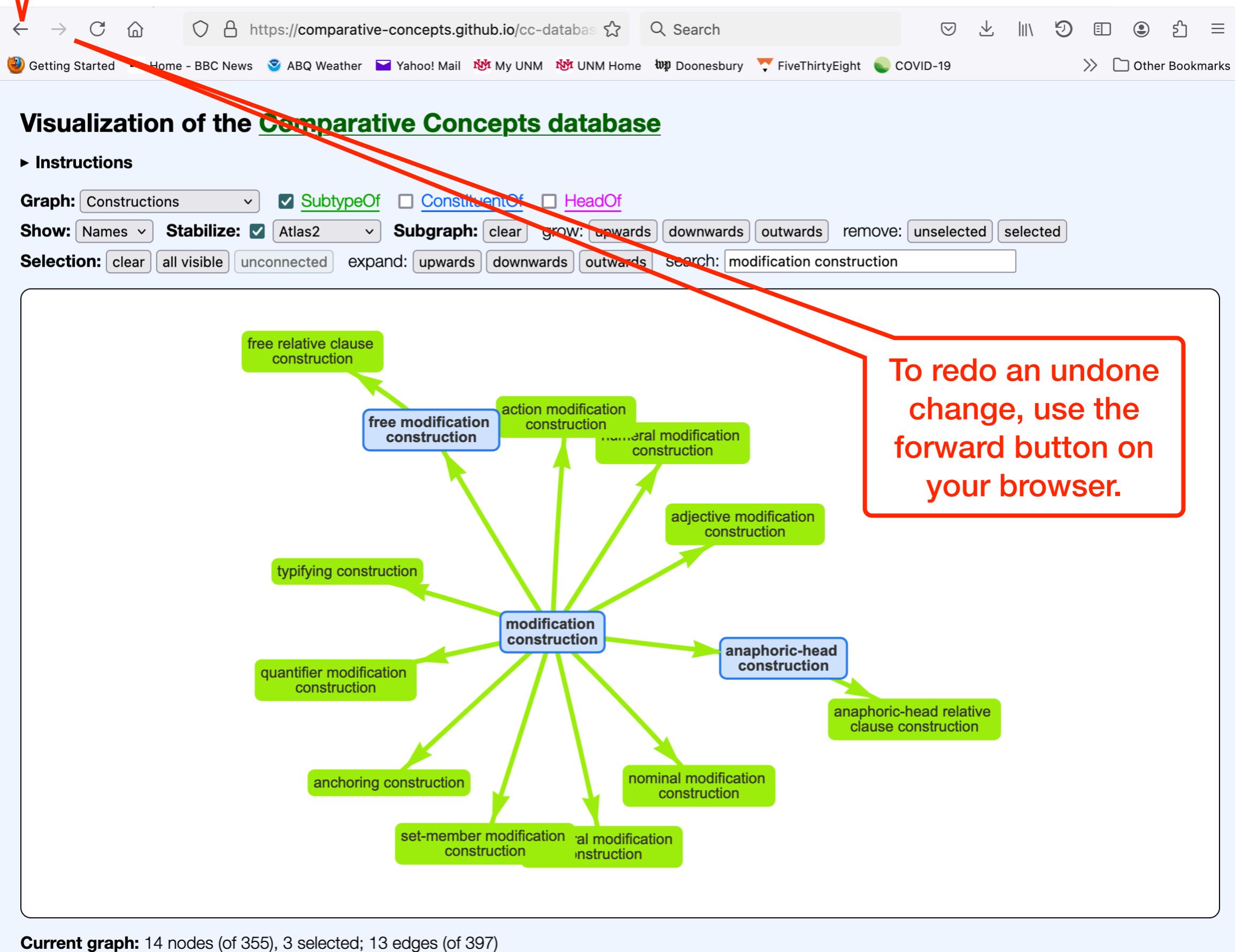
```
graph TD; MC(modification construction) --> FRC("free relative clause construction"); MC --> AM("action modification construction"); MC --> ADM("adverbial modification construction"); MC --> ADC("adjective modification construction"); MC --> AHC("anaphoric-head construction"); MC --> AHRCC("anaphoric-head relative clause construction"); MC --> NM("nominal modification construction"); MC --> SM("set-member modification construction"); MC --> AC("anchoring construction"); MC --> QMC("quantifier modification construction"); MC --> T("typifying construction"); MC --> FM("free modification construction"); MC --> RM("real modification construction");
```

Current graph: 14 nodes (of 355), 3 selected; 13 edges (of 397)

And every time you toggle on or off relations, the URL changes.



To undo a change, simply use the back button on your browser.



If you have a subgraph you want to save and go back to later, you can bookmark its URL in your browser, or save the URL in some other way (in a file of subgraph URLs, etc.)

https://comparative-concepts.github.io/cc-database

Getting Started Home - BBC News ABQ Weather Yahoo! Mail My UNM UNM Home Doonesbury FiveThirtyEight COVID-19 Other Bookmarks

## Visualization of the Comparative Concepts database

▶ Instructions

Graph: Constructions SubtypeOf ConstituentOf HeadOf

Show: Names Stabilize: Atlas2 Subgraph: clear grow: upwards downwards outwards remove: unselected selected

Selection: clear all visible unconnected expand: upwards downwards outwards search: modification construction

```
graph TD; MC[modification construction] --> FMC[free modification construction]; MC --> AHC[anaphoric-head construction]; FMC --> FRC[free relative clause construction]; AHC --> ARCC[anaphoric-head relative clause construction]; RCC[relative clause construction] --> RC[relative clause]; RCC --> RMC[relative matrix clause]; RC --> RMC; RRPH[relativized referring phrase] --> RMC; RCH[relative clause head] --> RMC;
```

Current graph: 10 nodes (of 355), 7 selected; 10 edges (of 488)

A more complex example:  
taxonomy of declaratives

## Visualization of the Comparative Concepts database

### ► Instructions

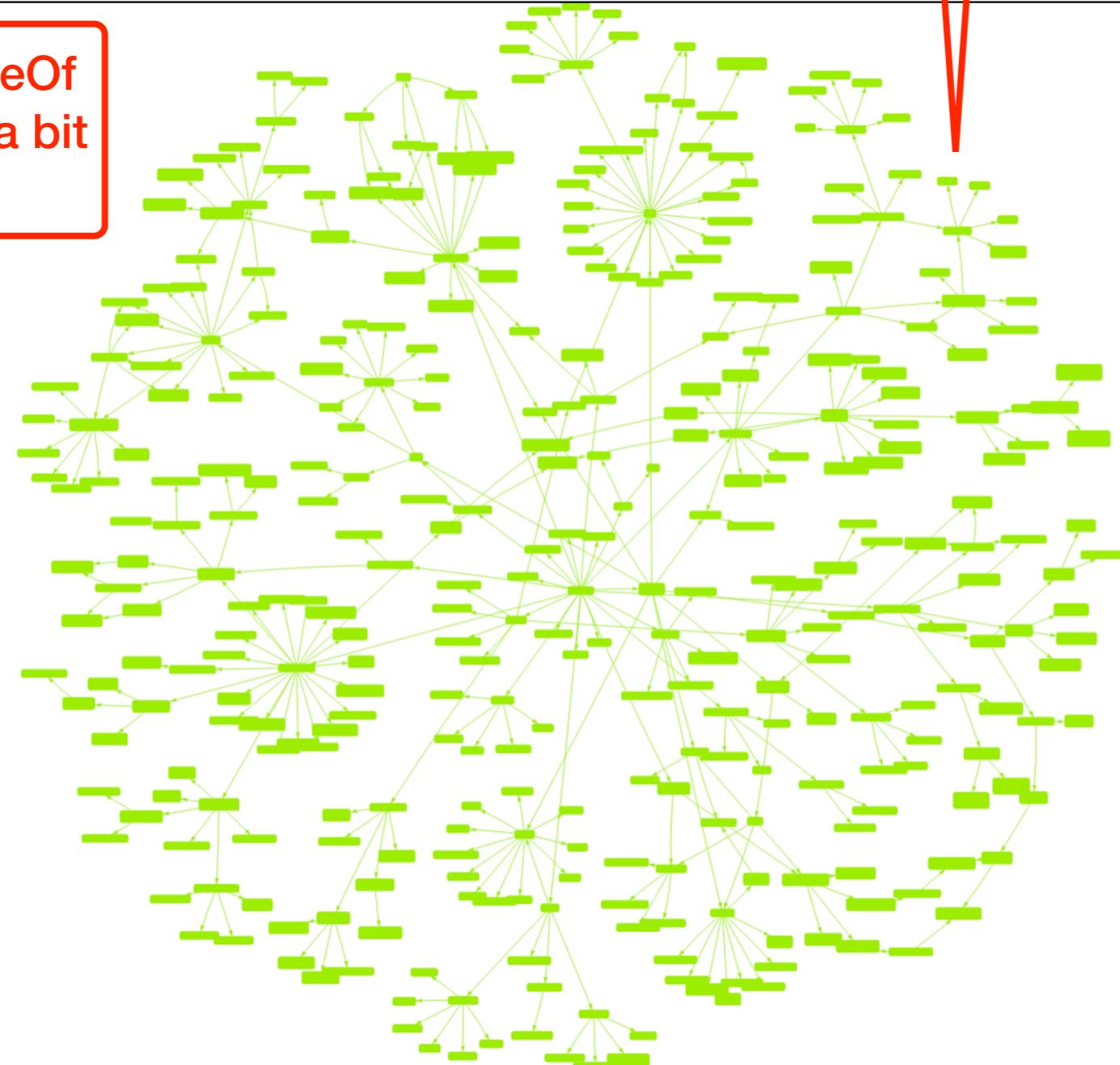
Graph:   SubtypeOf  ConstituentOf  HeadOf

Show:   **Stabilize:**  Atlas2   grow:    remove:

Selection:    expand:    search:

We select just SubtypeOf  
to make this example a bit  
simpler

For a more complex example, we'll  
replicate Tree 5 of the Construction  
Relations (only SubtypeOf relations)



Current graph: 354 nodes; 396 edges

# Visualization of the Comparative Concepts database

## ► Instructions

Search on “declarative construction”

This yields two nodes; we will select only the one we want

Graph: Constructions

SubtypeOf  ConstituentOf  HeadOf

Show: Names

Stabilize:

Atlas2

Subgraph: clear

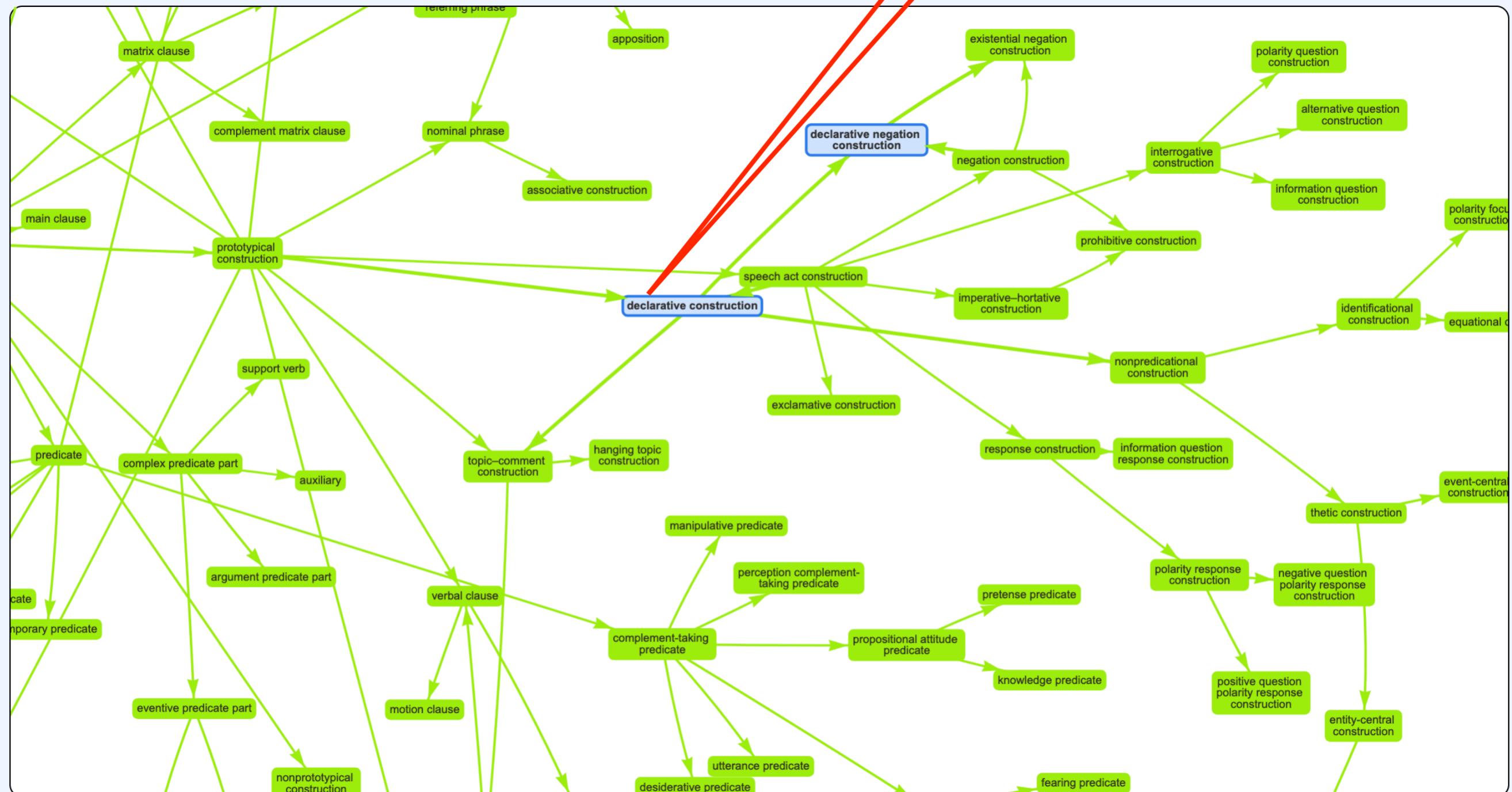
grow: upwards downwards outwards

remove: unselected selected

Selection: clear all visible unconnected

expand: upwards downwards outwards

search: declarative construction



Current graph: 354 nodes, 2 selected; 396 edges

Selected: declarative construction, declarative negation construction

## Visualization of the Comparative Concepts database

Clicking on remove: unselected gives us our starting point

### ► Instructions

Graph:   SubtypeOf  ConstituentOf  HeadOf

Show:   **Stabilize:**  **Atlas2**  clear grow:    remove:

Selection:    expand:    search:

declarative construction

Current graph: 1 nodes (of 354), 1 unconnected, 1 selected; 0 edges (of 396)

## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Constructions ▾

SubtypeOf

ConstituentOf

HeadOf

Show: Names ▾

Stabilize: Atlas2 ▾

Subgraph: clear

grow: upwards

downwards

outwards

remove: unselected

selected

Selection: clear

all visible

unconnected

expand: upwards

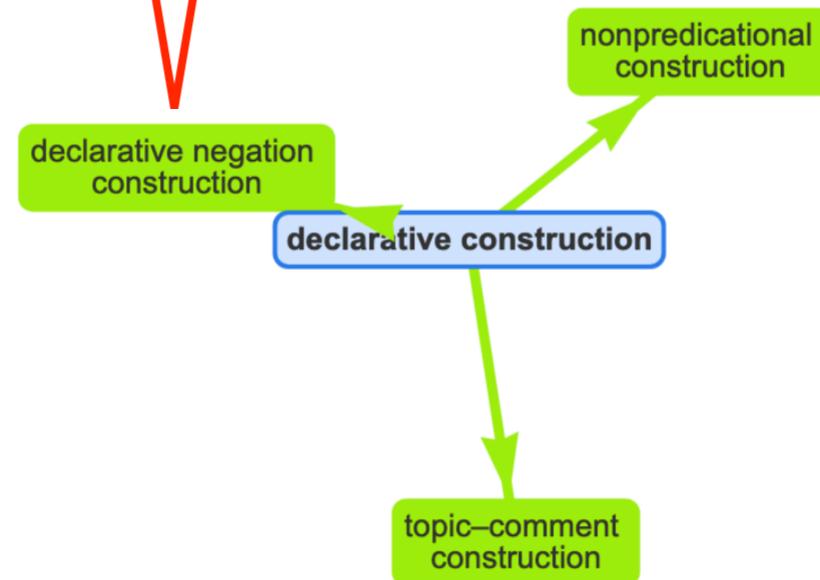
downwards

outwards

search: declarative construction

Clicking on grow: downwards  
grows the taxonomy one step

There's a branch we aren't interested in, but we'll grow another step or two first; it's easier to "prune" a branch after we've grown the subgraph most or all of the way



# Visualization of the Comparative Concepts database

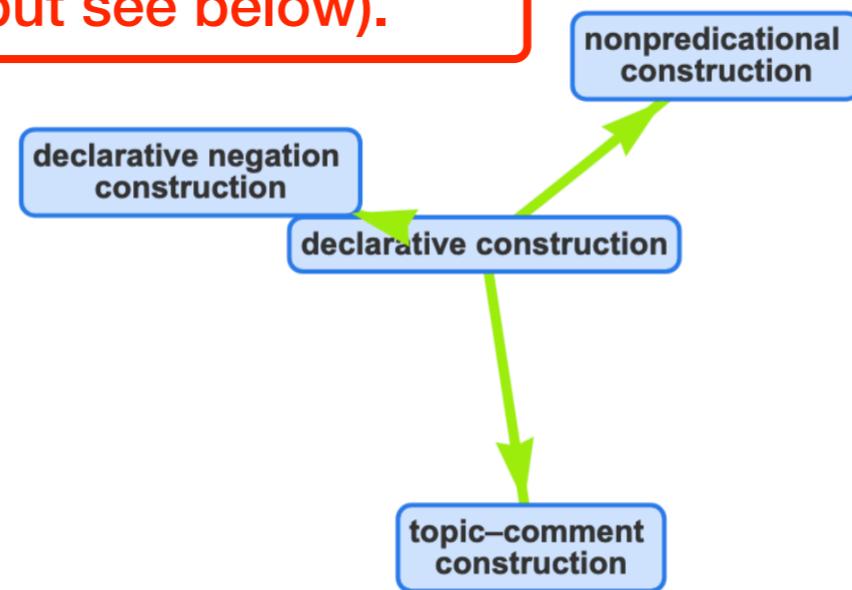
## ► Instructions

Graph:   [SubtypeOf](#)  [ConstituentOf](#)  [HeadOf](#)

Show:   [Stabilize](#):  [Atlas2](#) Subgraph:  grow:    remove:

Selection:    expand:    search:

To expand the subgraph from all nodes, click expand: downwards as before. The subgraph grows only from the selected nodes in the graph (but see below).



We've grown the subgraph downward one step. The selected CCs remains the same. As before, we grow it another step by clicking expand: downwards and then grow: downwards

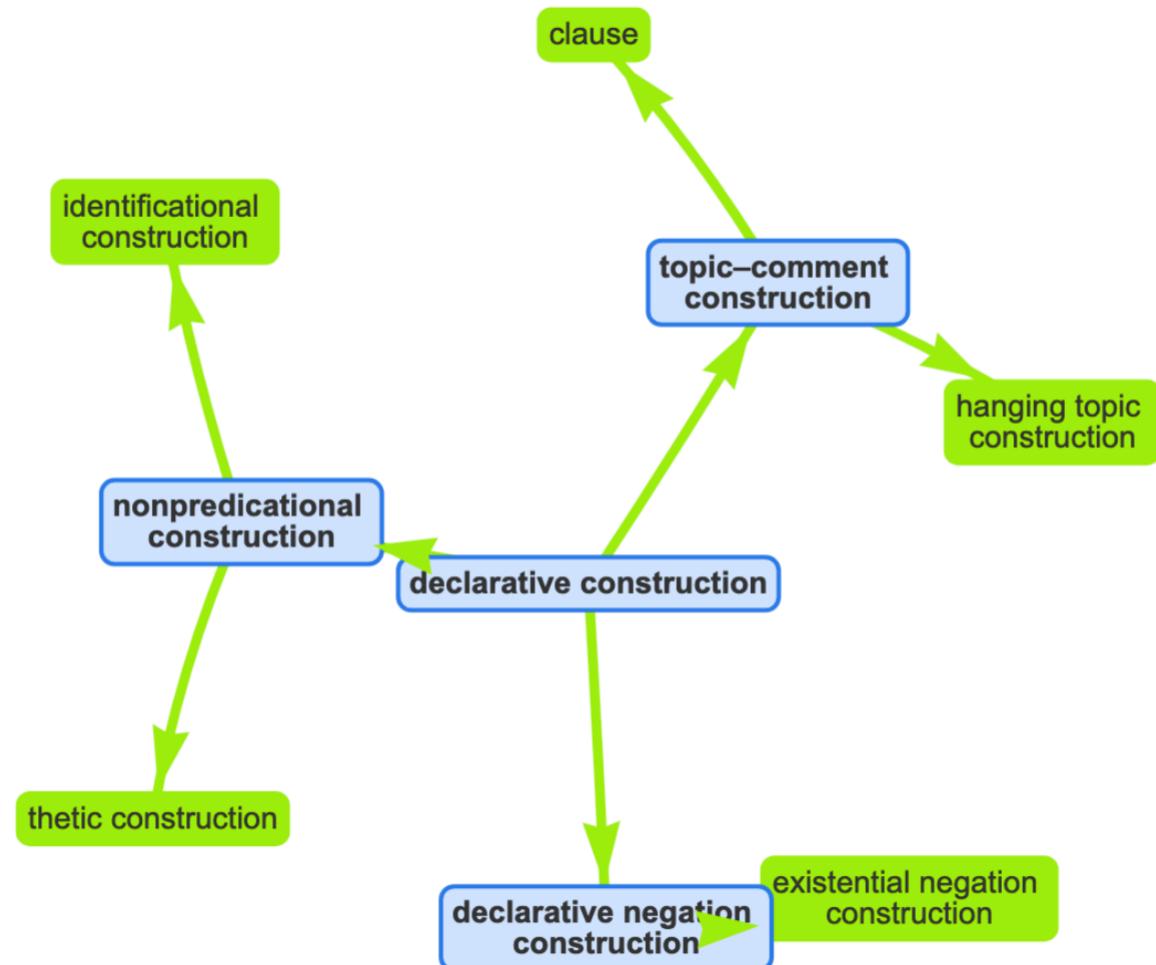
## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Constructions   SubtypeOf  ConstituentOf  HeadOf

Show: Names  Stabilize:  Atlas2  Subgraph: clear grow: upwards downwards outwards remove: unselected selected

Selection:    expand: upwards downwards outwards search: declarative construction



# Visualization of the Comparative Concepts database

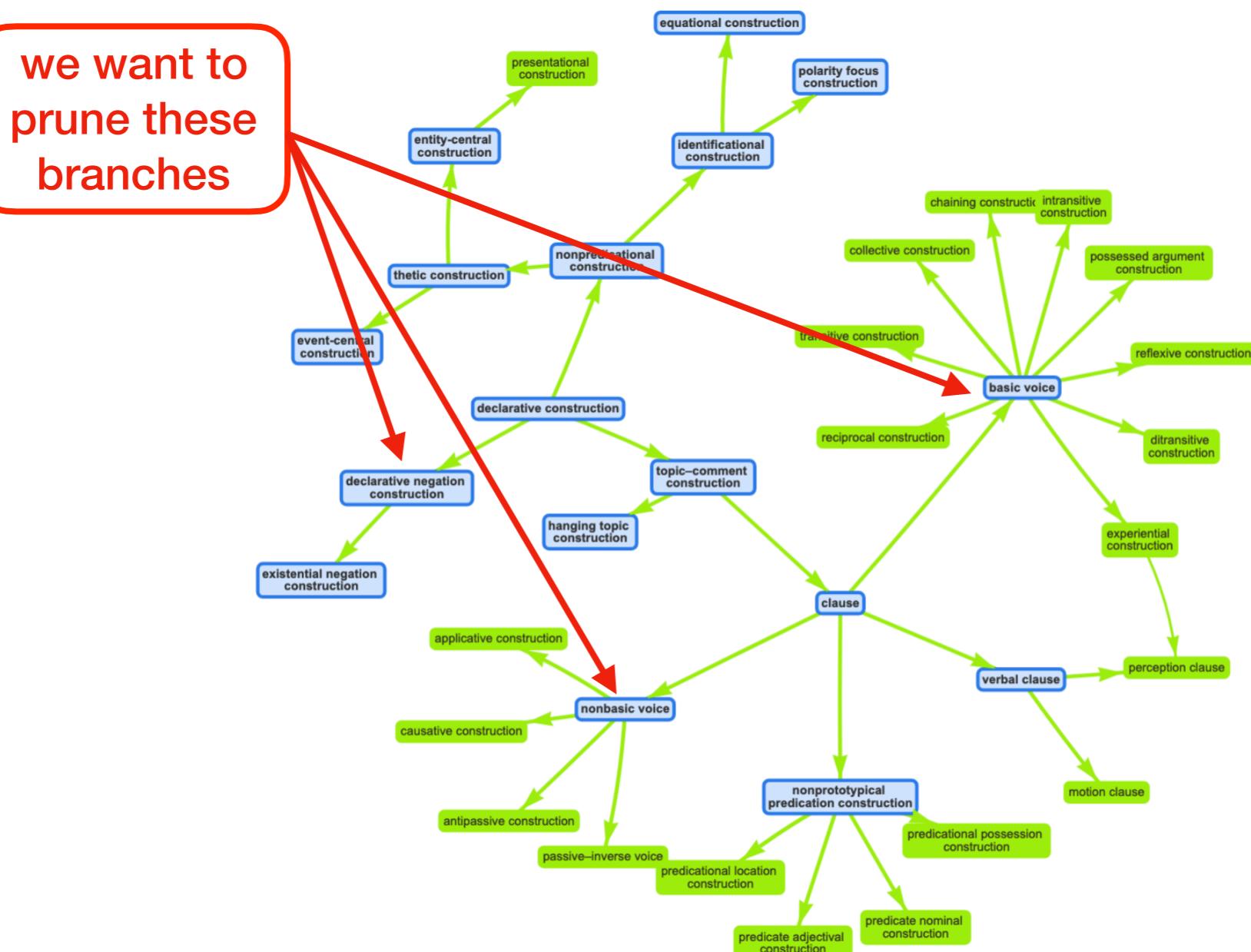
We've grown the subgraph downward two steps. But there are now a few branches we want to “prune”

## ► Instructions

**Graph:**   SubtypeOf  ConstituentOf  HeadOf

**Show:**  **Stabilize:**   **Subgraph:**  grow:    remove:

**Selection:**    expand:    search:



**Current graph:** 37 nodes (of 354), 17 selected; 37 edges (of 396)

# Visualization of the Comparative Concepts database

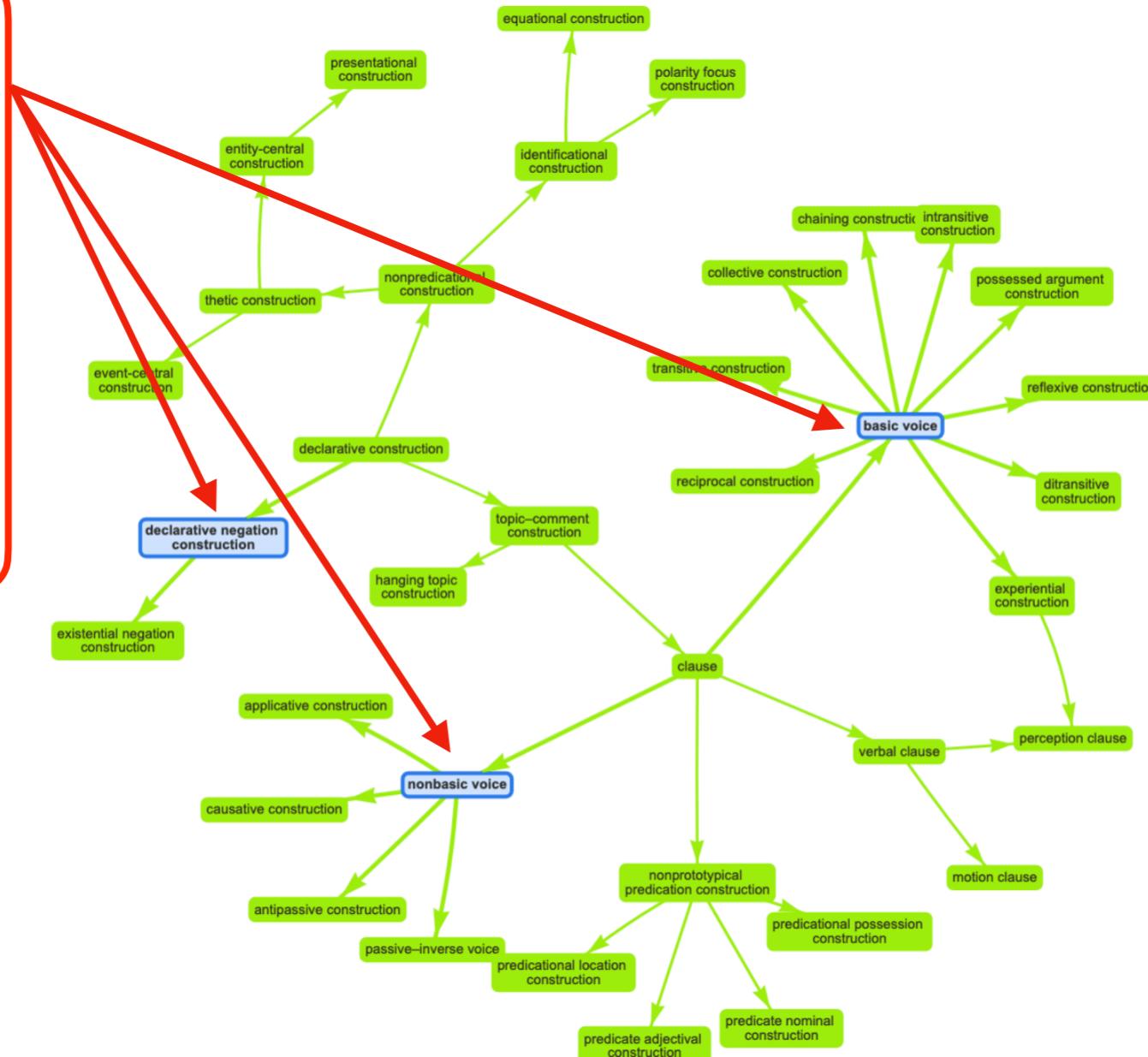
## ► Instructions

Graph:   SubtypeOf  ConstituentOf  HeadOf

Show:   Stabilize:  Atlas2  clear grow: upwards downwards outwards remove: unselected selected

Selection:    expand: upwards downwards outwards search: declarative construction

first, we select the top node of each branch we want to prune, by clicking and then holding briefly so as not to deselect the first nodes we clicked



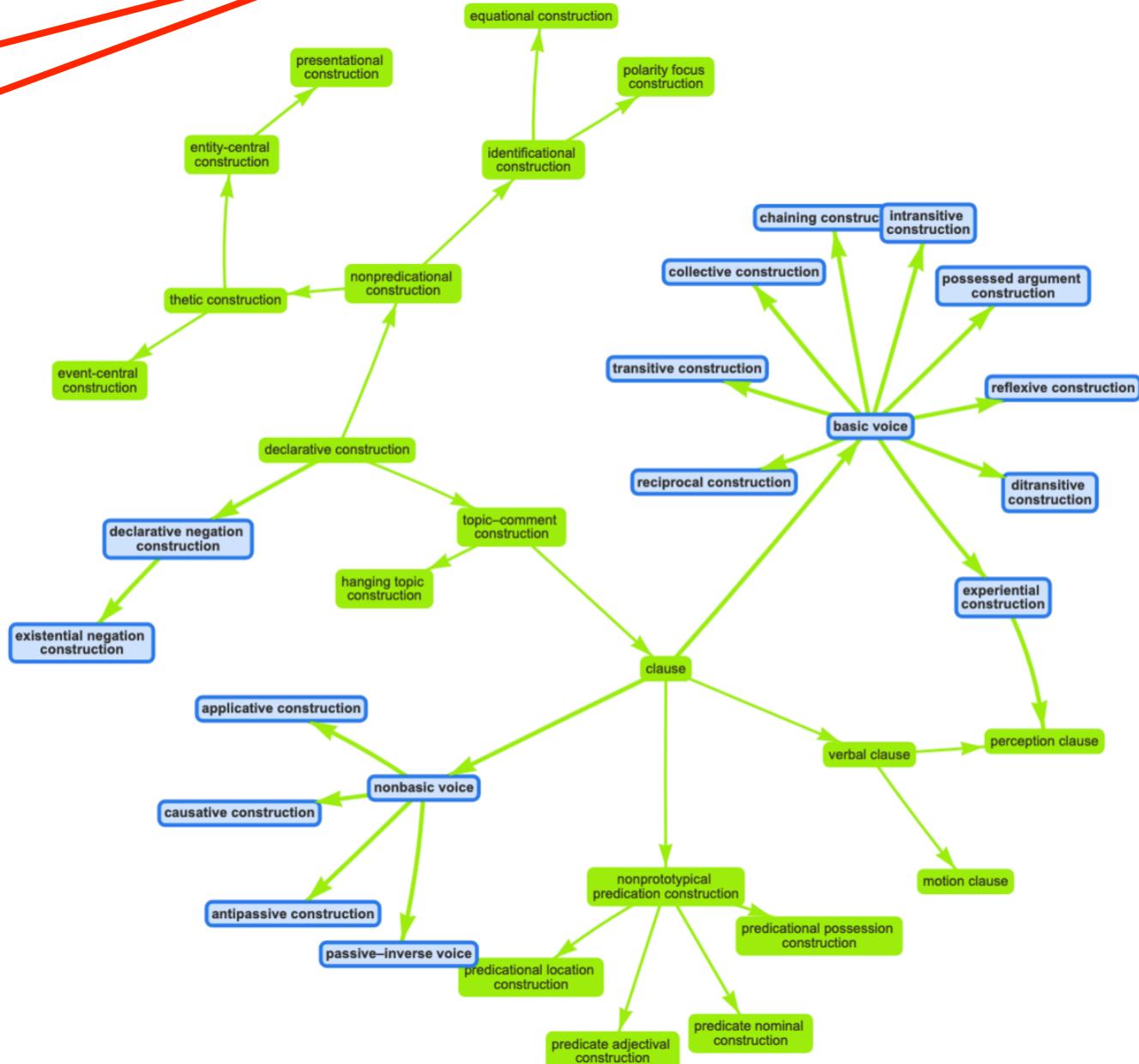
## Visualization of the Comparative Concepts database

Third, click on remove: selected to “prune” the unwanted branches (see next slide)

### ► Instructions

Graph: Constructions   SubtypeOf  ConstituentOf  HeadOf  
Show: Names  Stabilize:  Atlas2  Subgraph:  grow:    remove:    
Selection:    expand:    search: declarative construction

Second, click on expand: downwards to select the child nodes. (Click more than once to expand more steps down the branch if necessary.)



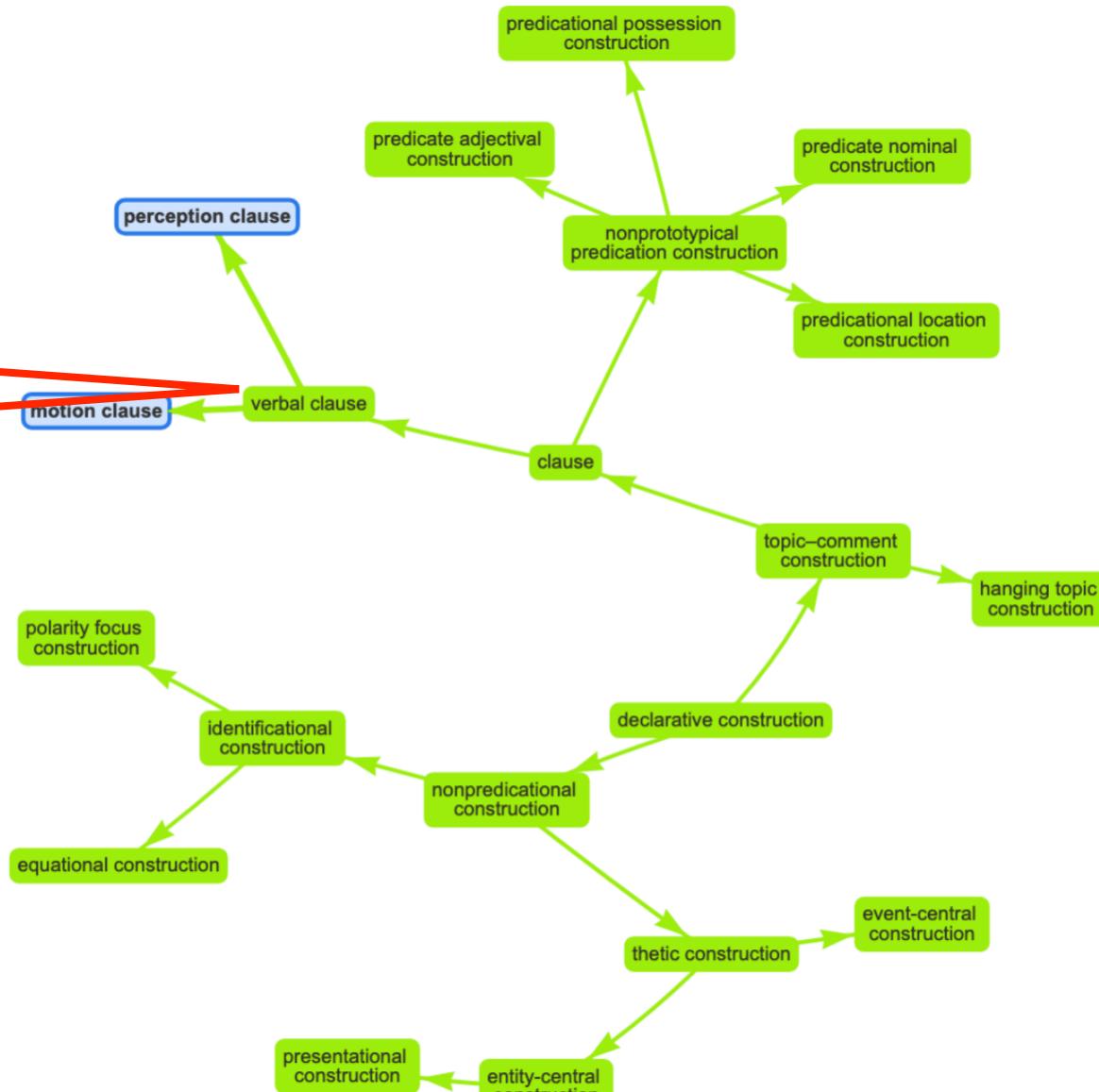
## Visualization of the Comparative Concepts database

### ► Instructions

Graph: **Constructions**  SubtypeOf  ConstituentOf  HeadOf  
Show: Names  Stabilize:  Atlas2  Subgraph: clear grow: upwards downwards outwards remove: unselected selected  
Selection: clear all visible unconnected expand: upwards downwards outwards search: declarative construction

Then, click on remove: selected to “prune”  
the unwanted branches (see next slide)

We want to keep this top node, but not its branches. We can just select each child node. If there are a lot of child nodes, we can select the top node, click expand: downwards as many times as needed, then deselect the top node by click and holding down briefly. Then we remove: selected



We know that ‘presentational construction’ has subtypes, so we click on this node and then click grow: downwards to add those nodes

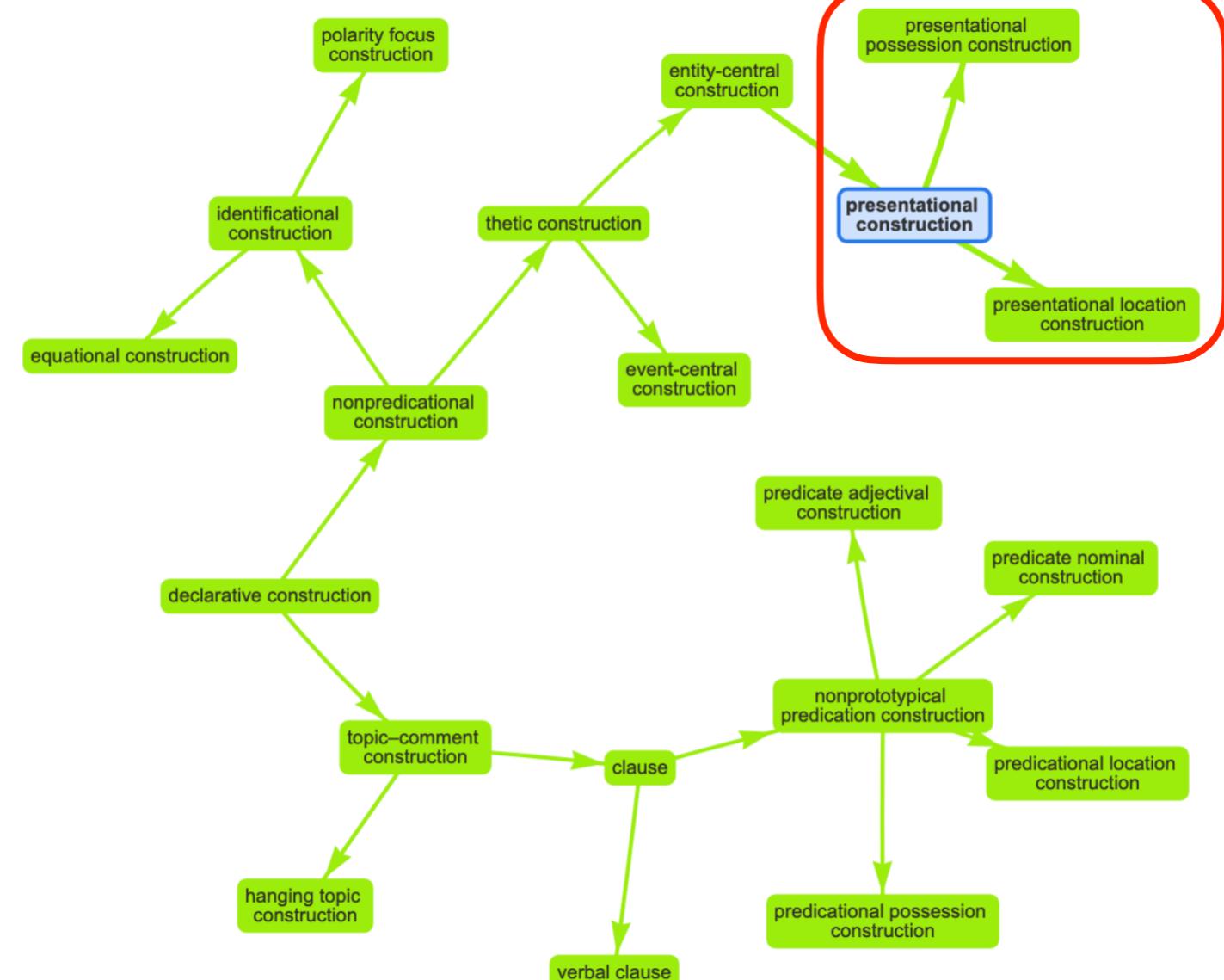
## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Constructions   SubtypeOf  ConstituentOf  HeadOf

Show: Names   Atlas2  clear grow: upwards downwards outwards remove: unselected selected

Selection:    expand: upwards downwards outwards search: declarative construction



We want to see what parts (heads and other constituents) these constructions have, but without adding in the subtypes we pruned. So we toggle on ConstituentOf and HeadOf, and toggle off SubtypeOf

## Visualization of the Comparative Concepts database

### ► Instructions

Graph: **Constructions**  SubtypeOf  ConstituentOf  HeadOf

Show: **Names**  **Stabilize:**  **Atlas2**  **Subgraph:** **clear** grow: **upwards** **downwards** **outwards** remove: **unselected** **selected**

**Selection:** **clear** **all visible** **unconnected** expand: **upwards** **downwards** **outwards** search: **declarative construction**



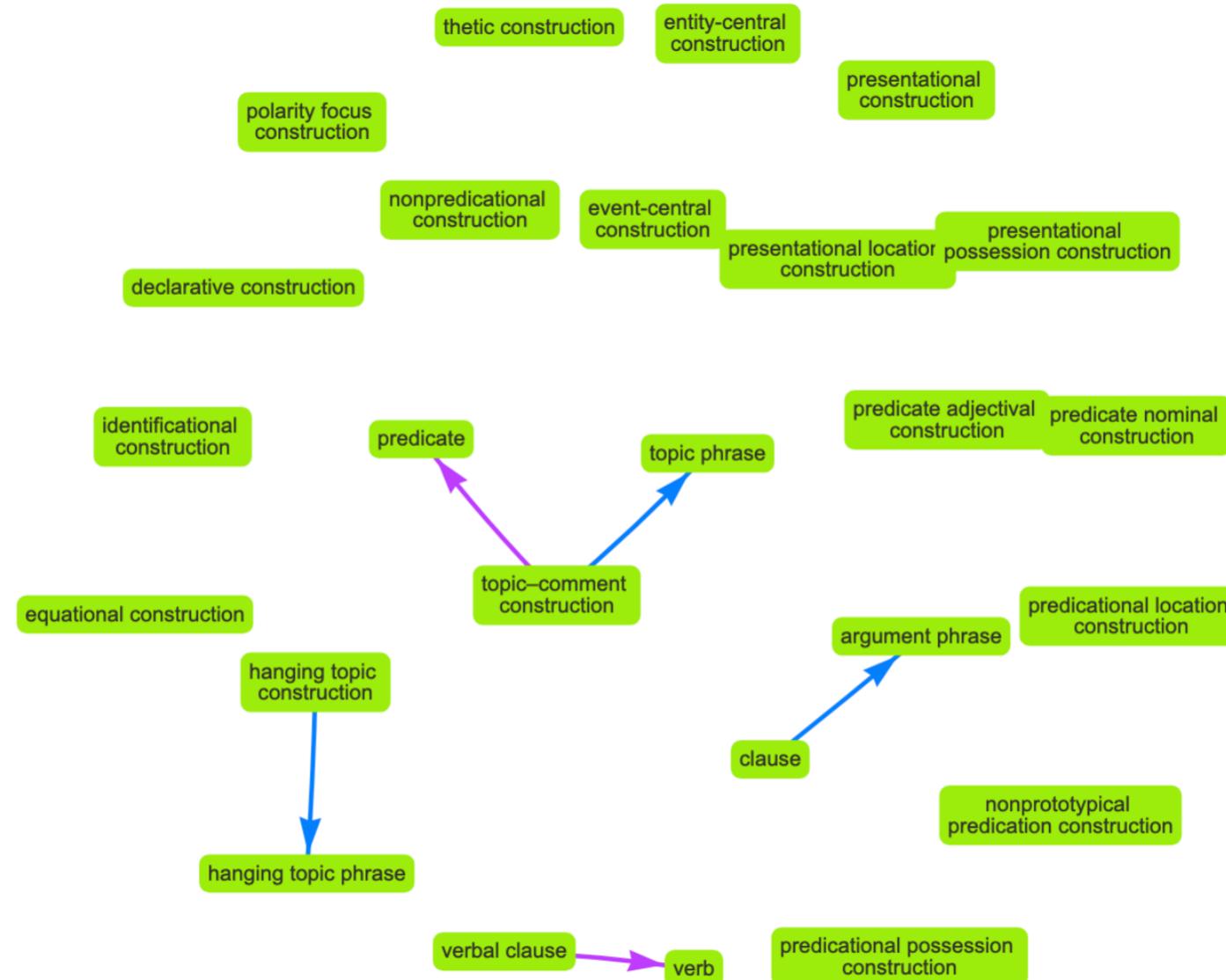
Current graph: 20 nodes (of 354), 20 unconnected; 0 edges (of 92)

# Visualization of the Comparative Concepts database

Then we grow: downwards (if no node is selected at all, the entire graph is grown)

## ► Instructions

**Graph:**   [SubtypeOf](#)  [ConstituentOf](#)  [HeadOf](#)  
**Show:**   **Stabilize:**    grow:    remove:    
**Selection:**    expand:    search:



**Current graph:** 25 nodes (of 354), 16 unconnected; 5 edges (of 92)

Then we toggle back on SubtypeOf to see the taxonomy again

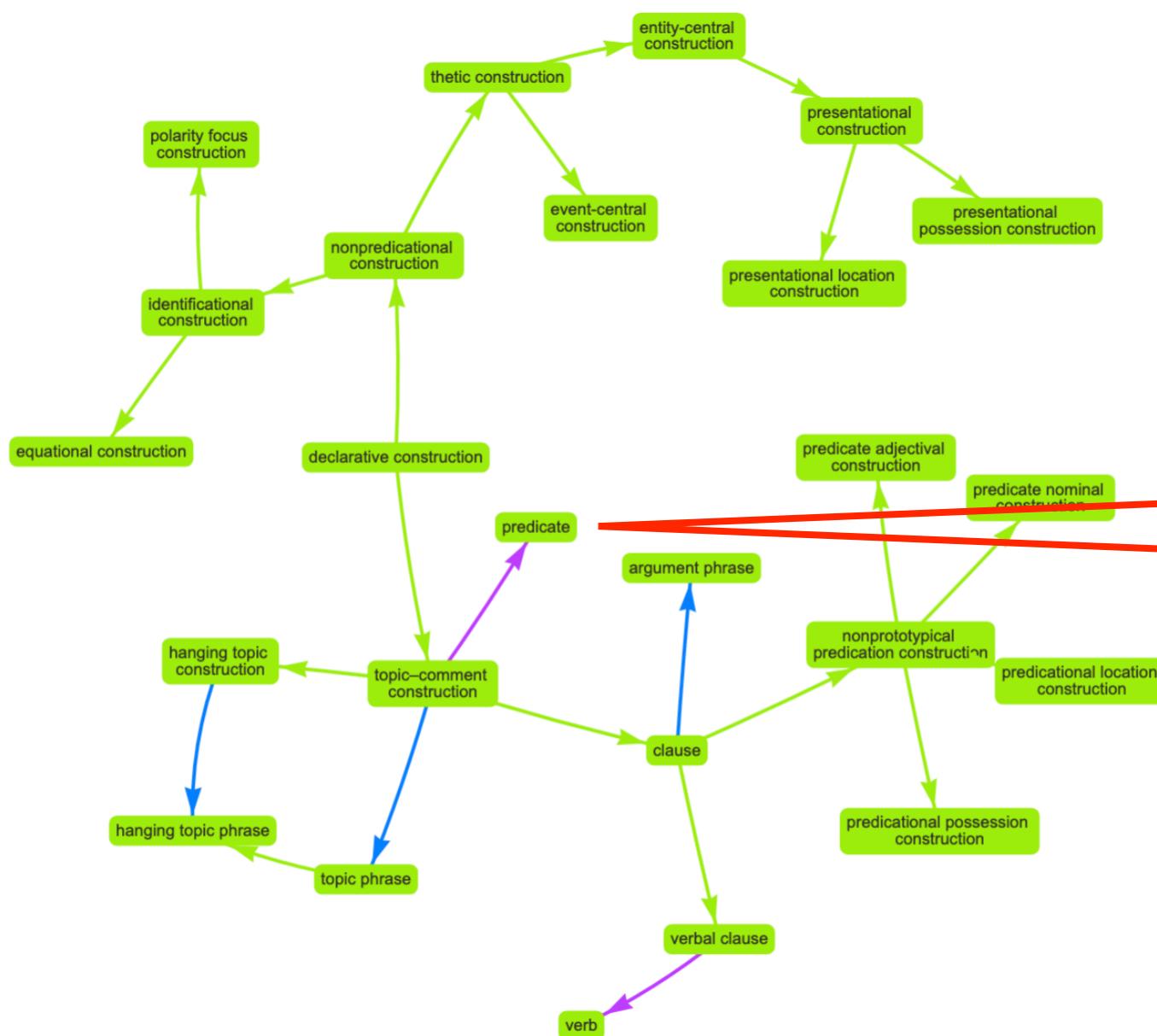
## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Constructions  SubtypeOf  ConstituentOf  HeadOf

Show: Names  Stabilize:  Atlas2  Subgraph:  grow:    remove:

Selection:    expand:    search:



You can “prune” nodes joined by only a subset of relations without losing the nodes joined by other relations:

- (i) toggle relations on or off to get only the relations you want to prune;
- (ii) prune those branches by selecting, expanding, remove: selected;
- (iii) restore the relation(s) you want to keep

# Summary so far

- This will get you most of what you want to do, albeit sometimes with a fair number of clicks
- You can play around with the nodes selected, then remove either selected or unselected nodes
- You can turn relations on or off and grow or remove parts of the graph based on the selected relations; and then turn back on the unselected relations and those relations will be restored to your graph
- If your exploring leads to a few unconnected nodes you don't want, you can Select: unconnected and then remove: selected to get rid of them
- You can undo a change in the subgraph by using the back button on the browser, or redo an undone change by using the forward button.
- Sometimes you might want to, or have to, start all over again. Under Subgraph, click clear. You might also have to delete any term in the Selection:search box
- Once you've constructed the subgraph you're interested in, you can save it for future use by bookmarking or otherwise saving the URL of the subgraph

Construction strategies and  
functions

# Finding construction strategies and functions

- For the construction-strategy relations and the construction-function relations, the relevant relation is given only once in the construction taxonomy, and the strategy or function is "inherited" by constructions below that node in the construction taxonomy
- We have not (yet) implemented an “inherit” process that propagates strategies and functions down the construction taxonomy (sorry!)
- So you will have to use the commands described in the preceding slides to find strategies or functions that are associated only with a construction higher in the taxonomy but apply to the construction you’re interested in

Example: strategies for the  
transitive construction

# Finding strategies for constructions

- If you want to know all the strategies that are in the database for a particular construction, you will have to grow the construction taxonomy upwards from the construction you are interested in (NB: constructions may have multiple parents). Then you will be able to find other strategies that the construction could be expressed by
- Inheritance might produce possible strategies for a particular construction subtype that aren't actually attested. But the strategies in the database are defined in very general ways and are not intended to be comprehensive — just the more commonly occurring strategies across languages

Select the graph that displays constructions and their strategies

## Visualization of the Comparative Concepts database

### ► Instructions

Make sure just the ExpressionOf relation is toggled on

Graph: Cxn ⇄ Strategies

SubtypeOf

ExpressionOf

ModeledOn

RecruitedFrom

Show: Names

Stabilize:

Atlas2

Subgraph:

clear

grow: upwards

downwards

outwards

remove: unselected

selected

Selection:

clear

all visible

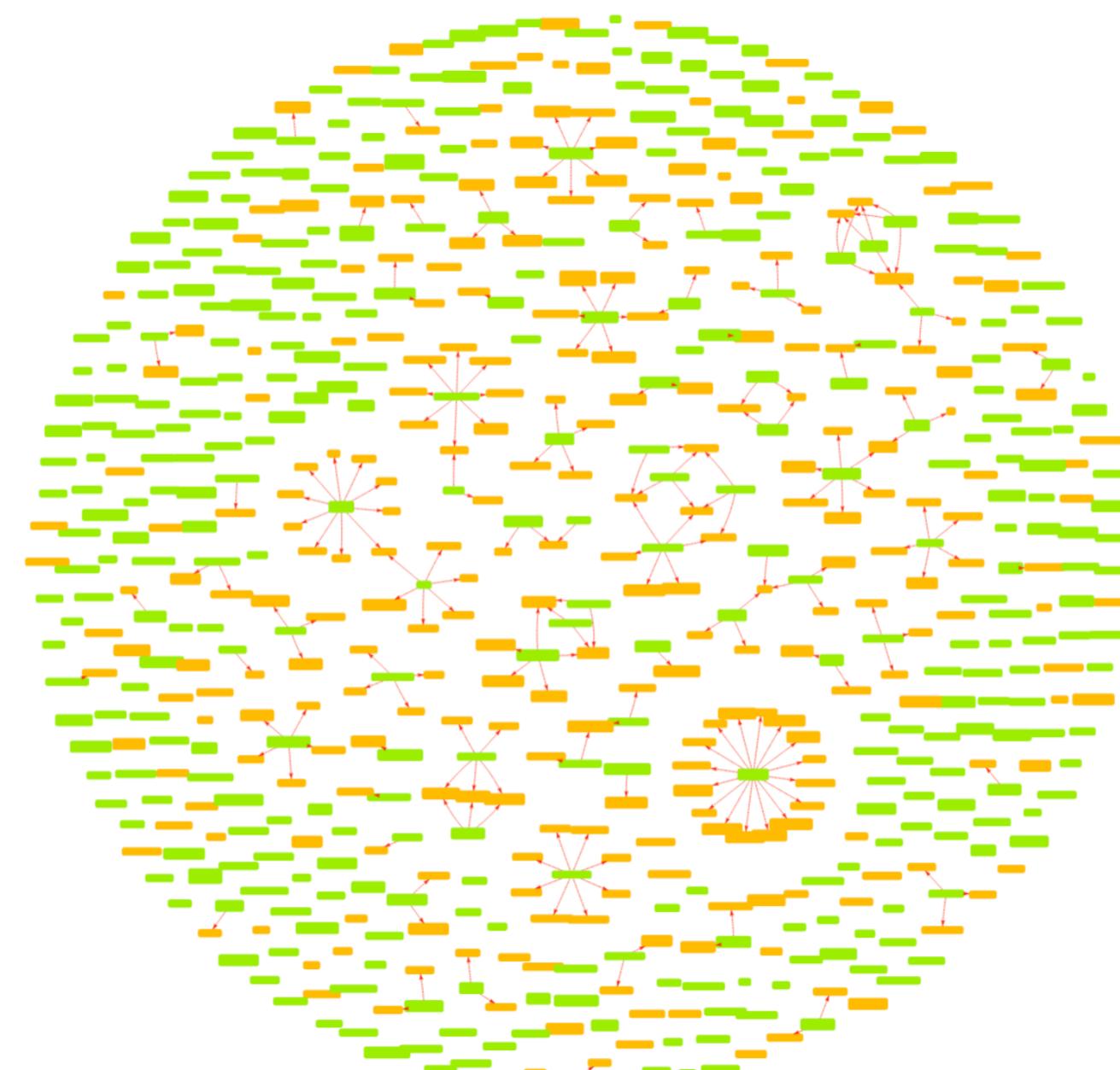
unconnected

expand: upwards

downwards

outwards

search: Type at least 3 characters



Current graph: 628 nodes, 366 unconnected; 217 edges

Search on the construction you're interested in and select it from the options

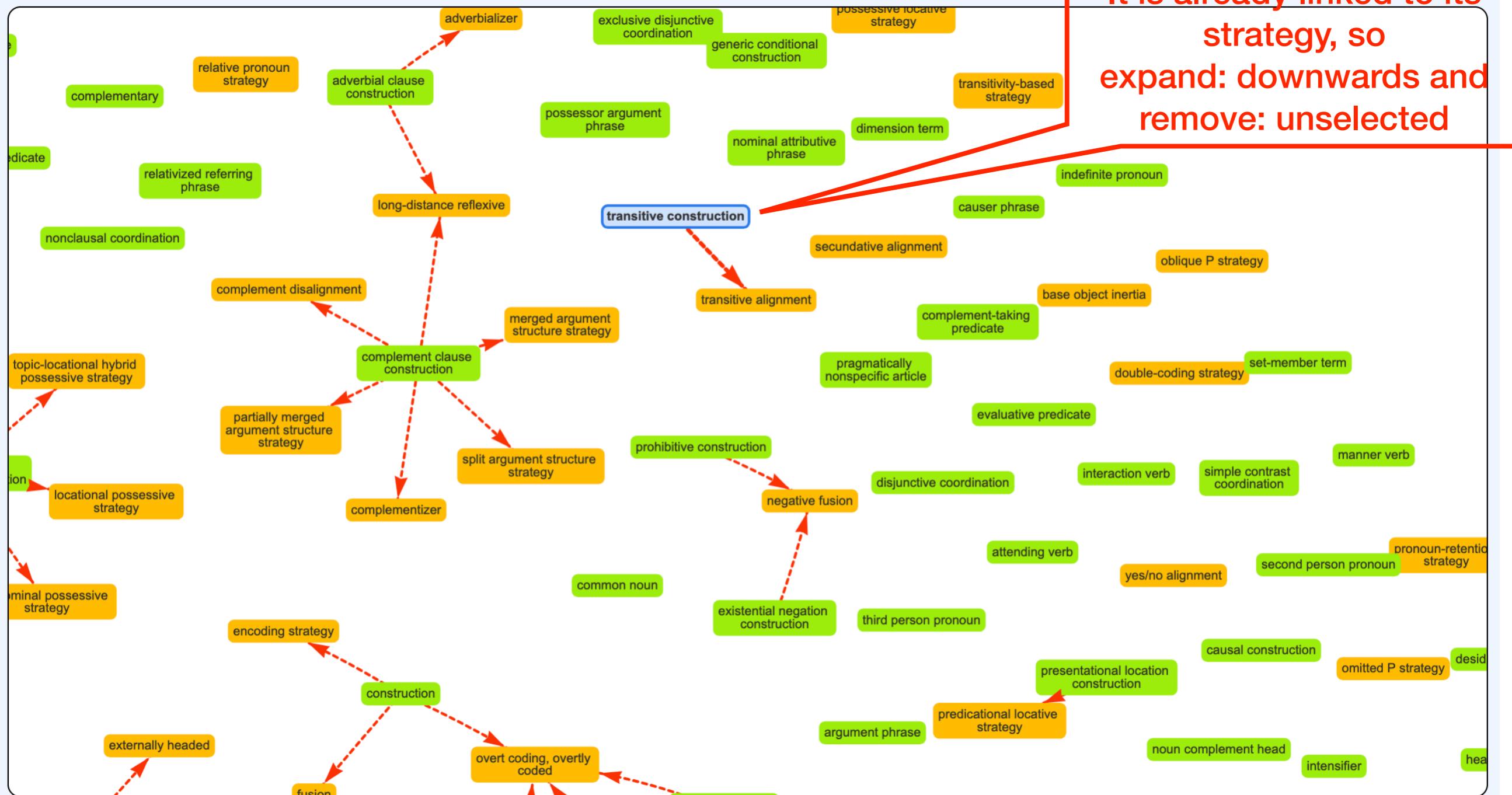
## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Cxn ↔ Strategies ▾  SubtypeOf  ExpressionOf  ModeledOn  RecruitedFrom

Show: Names ▾ Stabilize:  Atlas2 ▾ Subgraph: clear grow: upwards downwards outwards remove: unselected selected

Selection: clear all visible unconnected expand: upwards downwards outwards search: transitive construction



It is already linked to its strategy, so  
expand: downwards and  
remove: unselected

# Visualization of the Comparative Concepts database

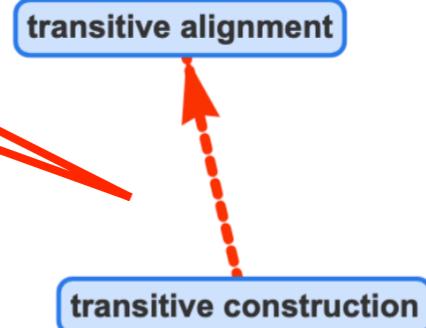
## ► Instructions

Graph: Cxn ↔ Strategies ▾  SubtypeOf  ExpressionOf  ModeledOn  RecruitedFrom

Show: Names ▾ Stabilize:  Atlas2 ▾ Subgraph: clear grow: upwards downwards outwards remove: unselected selected

Selection: clear all visible unconnected expand: upwards downwards outwards search: transitive construction

This is our starting point



We first want more information about the transitive alignment strategy. So we toggle on SubtypeOf, ModeledOn and RecruitedFrom and toggle off ExpressionOf

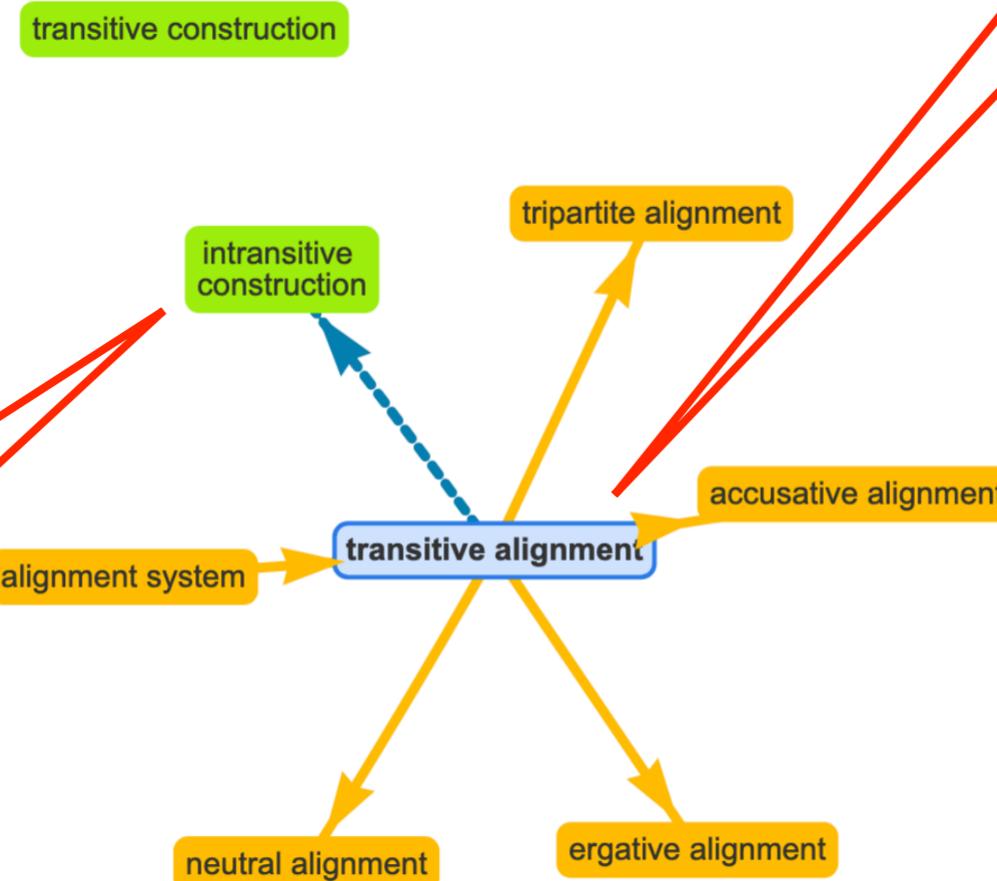
## Visualization of the Comparative Concepts database

### Instructions

Graph: Cxn ↔ Strategies     SubtypeOf     ExpressionOf     ModeledOn     RecruitedFrom

Show: Names    Stabilize:  Atlas2    Subgraph: clear    grow: upwards    downwards    outwards    remove: unselected    selected

Selection: clear    all visible    unconnected    expand: upwards    downwards    outwards    search: transitive construction



The strategies are modeled on the intransitive construction (i.e. how transitive A and P are encoded in comparison to how intransitive S is encoded)

Then we select just the transitive alignment node, and grow: outwards

The new strategy nodes enumerate the common alignment strategies for the transitive construction

Now we want to see what strategies might be inherited by the transitive construction. We toggle off ModeledOn and RecruitedFrom

## Visualization of the Comparative Concepts database

### ► Instructions

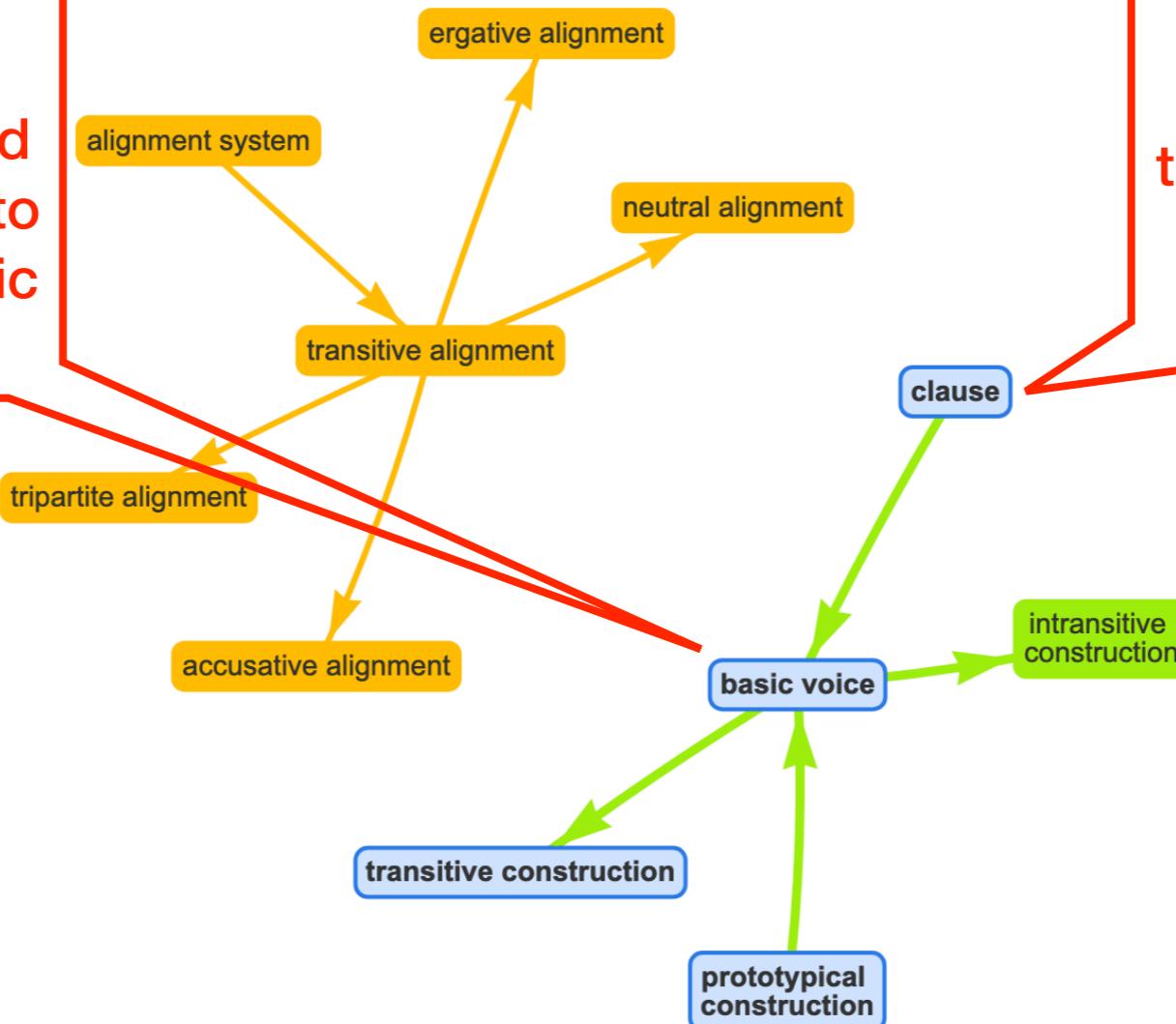
Graph: Cxn ↔ Strategies ▾  SubtypeOf  ExpressionOf  ModeledOn  RecruitedFrom

Show: Names ▾ Stabilize:  Atlas2 ▾ Subgraph: clear grow: upwards downwards outwards remove: unselected selected

Selection: clear all visible unconnected expand: upwards downwards outwards search: Type at least 3 characters

We selected transitive construction and grow: upwards and expand: upwards to get its parent, basic voice

Then grow: upwards and expand: upwards to to get the grandparents of the transitive construction



Then toggle on ExpressionOf, and toggle off SubtypeOf in order to avoid getting sibling and cousin constructions to transitive construction

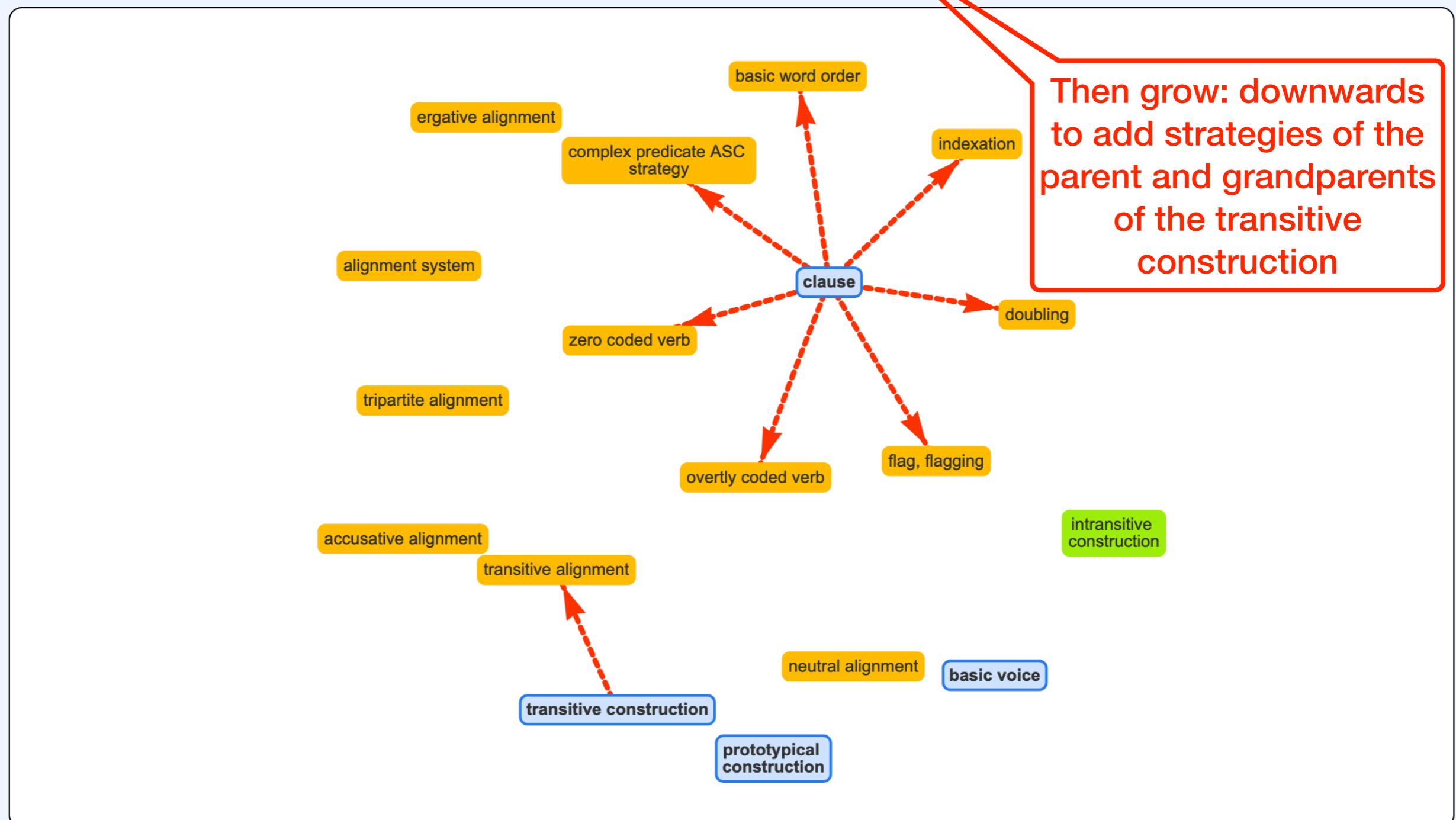
# Visualization of the Comparative Concepts database

## ► Instructions

**Graph:** Cxn  $\leftrightarrow$  Strategies   SubtypeOf  ExpressionOf  ModeledOn  RecruitedFrom

Show: Names ✓ Stabilize:  Atlas2 ✓ Subgraph: clear grow: upwards downwards outwards remove: unselected selected

**Selection:** clear all visible unconnected expand: upwards downwards outwards search: Type at least 3 characters



Then grow: downwards  
to add strategies of the  
parent and grandparents  
of the transitive  
construction

Then toggle on SubtypeOf, ModeledOn and RecruitedFrom again

## Visualization of the Comparative Concepts database

### Instructions

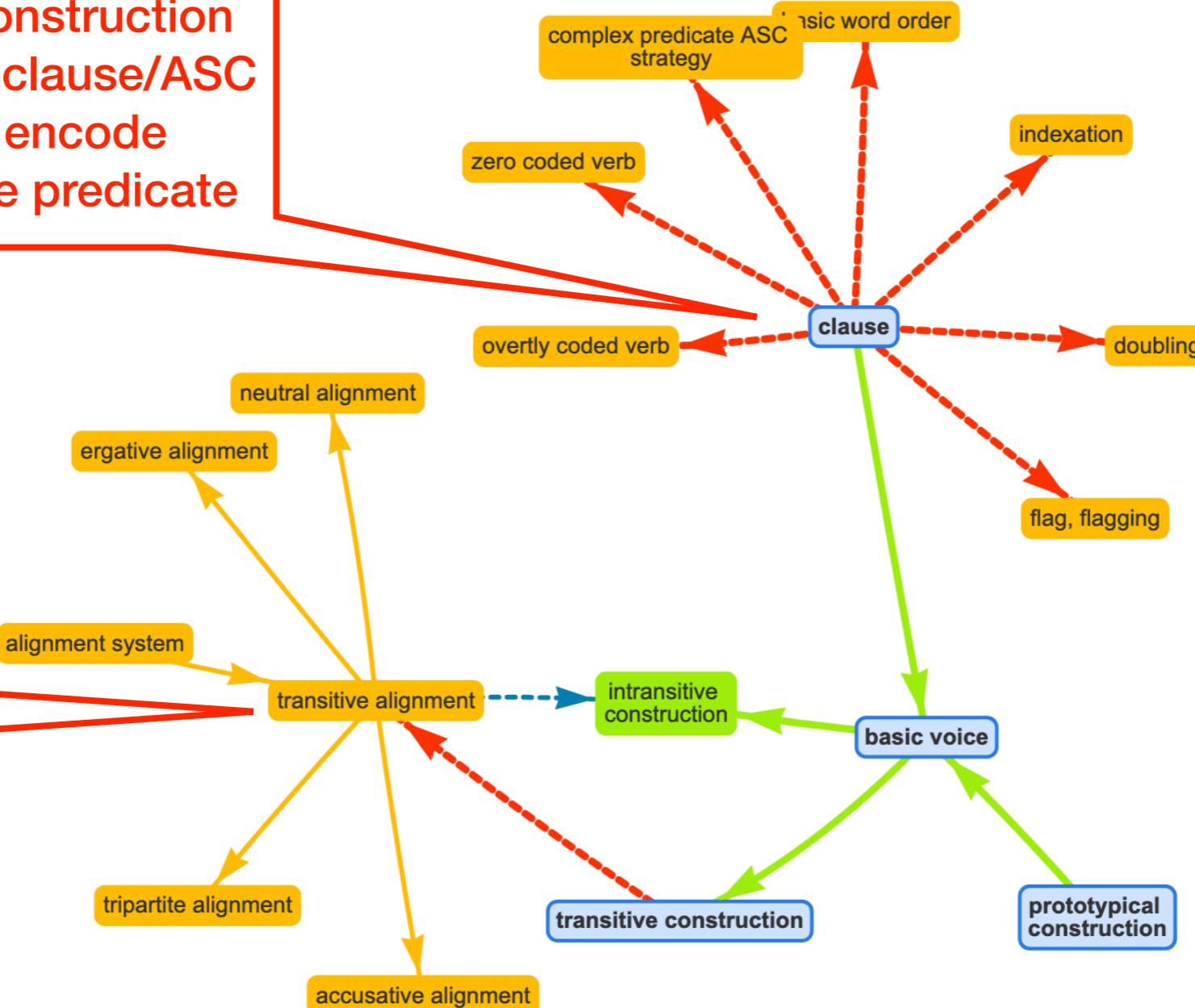
Graph: Cxn ↔ Strategies     SubtypeOf     ExpressionOf     ModeledOn     RecruitedFrom

Show: Names    Stabilize:     Atlas2    Subgraph: clear    grow: upwards    downwards    outwards    remove: unselected    selected

Selection: clear    all visible    unconnected    expand: upwards    downwards    outwards    search: Type at least 3 characters

The transitive construction uses the general clause/ASC strategies to encode arguments of the predicate

The specifically transitive alignment strategies are still listed here



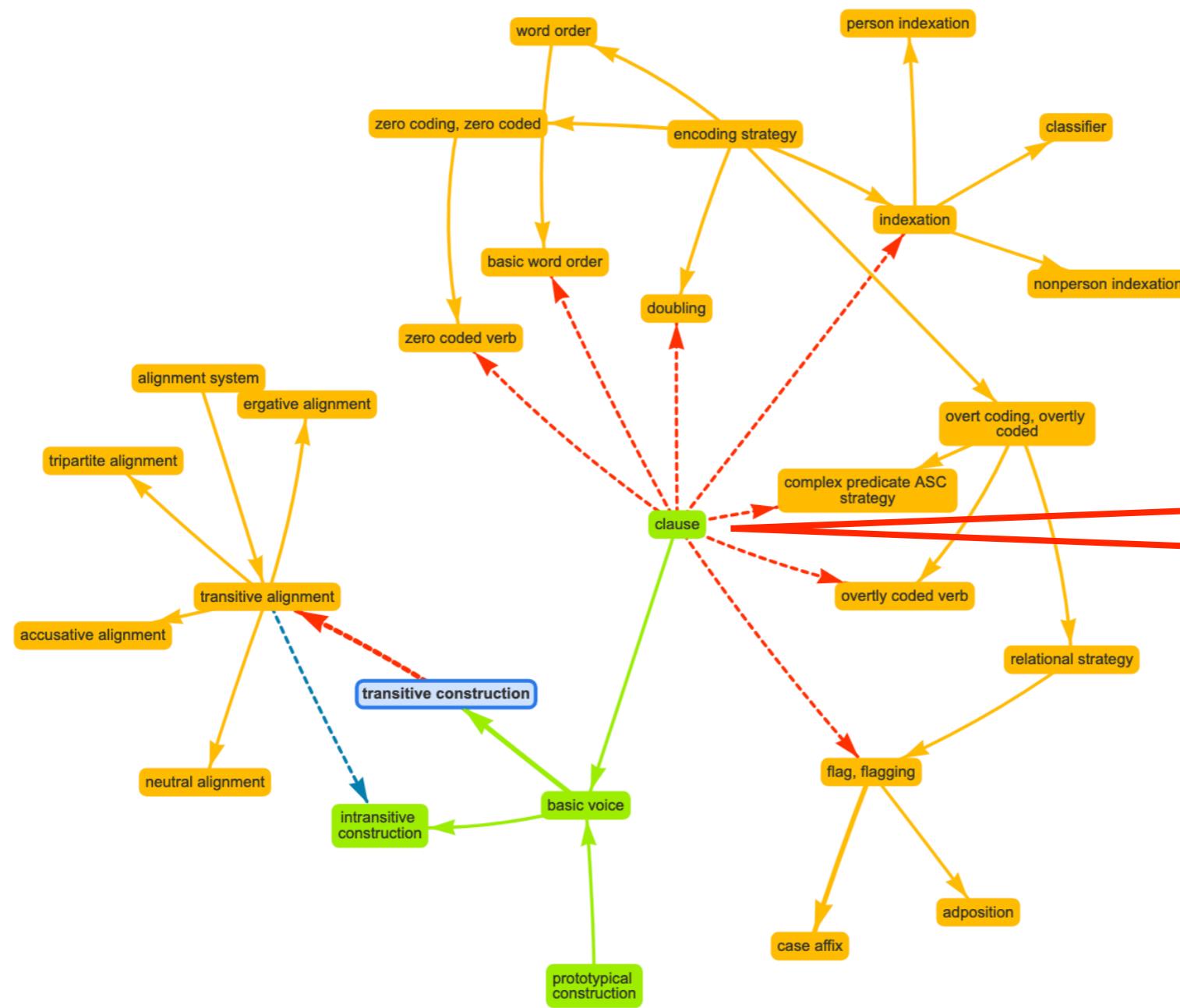
## Visualization of the Comparative Concepts database

## ► Instructions

**Graph:** Cxn ↔ Strategies ▾     SubtypeOf     ExpressionOf     ModeledOn     RecruitedFrom

**Show:** Names  **Stabilize:**  **Atlas2**  **Subgraph:**  grow:    remove:

**Selection:** [clear](#) [all visible](#) [unconnected](#)    **expand:** [upwards](#) [downwards](#) [outwards](#)    **search:** [transitive](#)



We can also flesh out the taxonomy of the clause strategies by selecting clause; expand: downwards; then deselect clause and basic voice; toggle off all relations except SubtypeOf; grow: outwards; and toggle on the other relations

Example: function of the  
ditransitive construction

# Finding functions of constructions

- For construction functions, it's a bit more complicated. Some functions are associated with the construction as a whole. These functions may also be inherited from a construction higher in the taxonomy. For example, noun phrases have the function of reference (inf) to objects (sem). However, noun phrases inherit the reference function from its parent, referring phrase. Finding these functional specifications works the same way as finding additional strategies just shown
- However, some functions of a construction are also associated with the construction parts. For example, the function of a quantification construction (quantifier + head noun) is primarily defined by the semantics of the modifying quantifier; the construction as a whole has only the function of reference to an entity (which is inherited from the function of referring phrases in general). We call this “pseudo-inheritance”
- In order to find the construction functions that are associated with its parts, you have to grow the ConstituentOf and HeadOf relations downward from the construction you are interested in -- and also downward from constructions higher in the taxonomy, since their parts may have functions inherited by the parts of the construction you are interested in

Select the graph that displays constructions and their functions

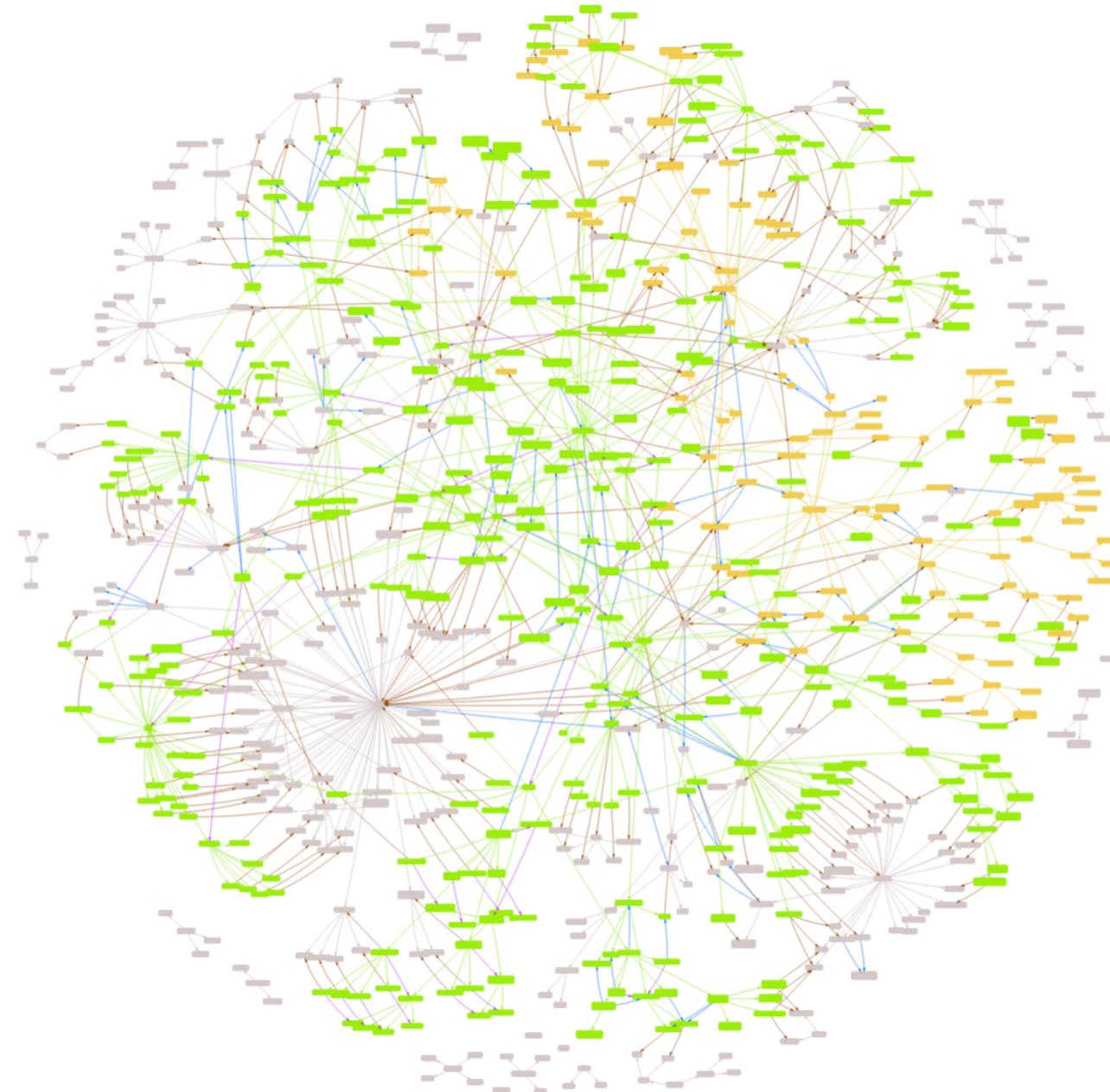
## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Cxn ↔ Sem. + Inf.  SubtypeOf  ConstituentOf  HeadOf  FunctionOf

Show: Names  Stabilize:  Atlas2  Subgraph:  grow:    remove:

Selection:    expand:    search:



Current graph: 769 nodes, 6 unconnected; 1256 edges

## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Cxn ↔ Sem. + Inf.   SubtypeOf  ConstituentOf  HeadOf  FunctionOf

Show: Names  Stabilize:  Atlas2  Subgraph:  grow:    remove:

Selection:    expand:    search: ditransitive construction

Select the construction you're interested in by searching on its name...

ditransitive  
construction

...selecting it, and  
remove: unselected

To add the construction's parents, toggle off all but SubtypeOf

## Visualization of the Comparative Concepts database

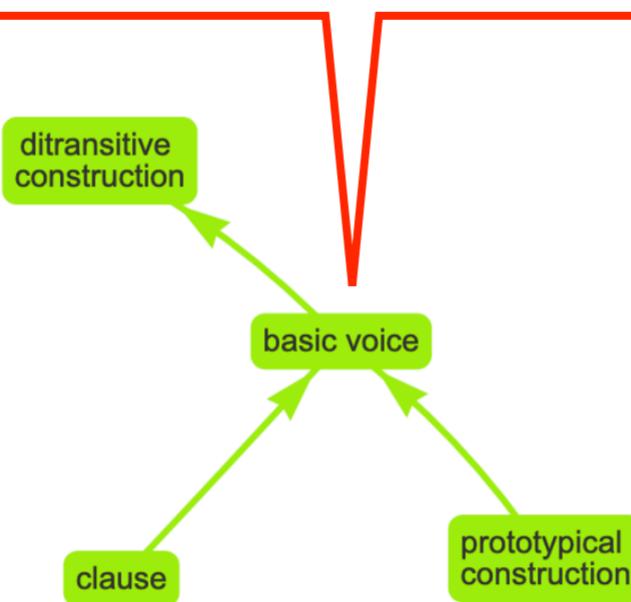
### ► Instructions

Graph: Cxn ↔ Sem. + Inf.  SubtypeOf  ConstituentOf  HeadOf  FunctionOf

Show: Names  Stabilize:  Atlas2  Subgraph: clear grow: upwards downwards outwards remove: unselected selected

Selection: clear all visible unconnected expand: upwards downwards outwards search: ditransitive construction

We added parents and grandparents, via grow: upwards,  
Selection: clear, and grow: upwards again (this may be  
repeated for higher nodes in the taxonomy)



Selection: clear is useful if you want to grow the entire graph, especially if there are unconnected nodes

Or you can use Selection: all visible, which allows you to “undo” by remove: unselected

To add functions, toggle on FunctionOf and toggle off SubtypeOf

## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Cxn ↔ Sem. + Inf. ▾

SubtypeOf

ConstituentOf

HeadOf

FunctionOf

Show: Names ▾

Stabilize: Atlas2 ▾

Subgraph: clear

grow: upwards downwards outwards

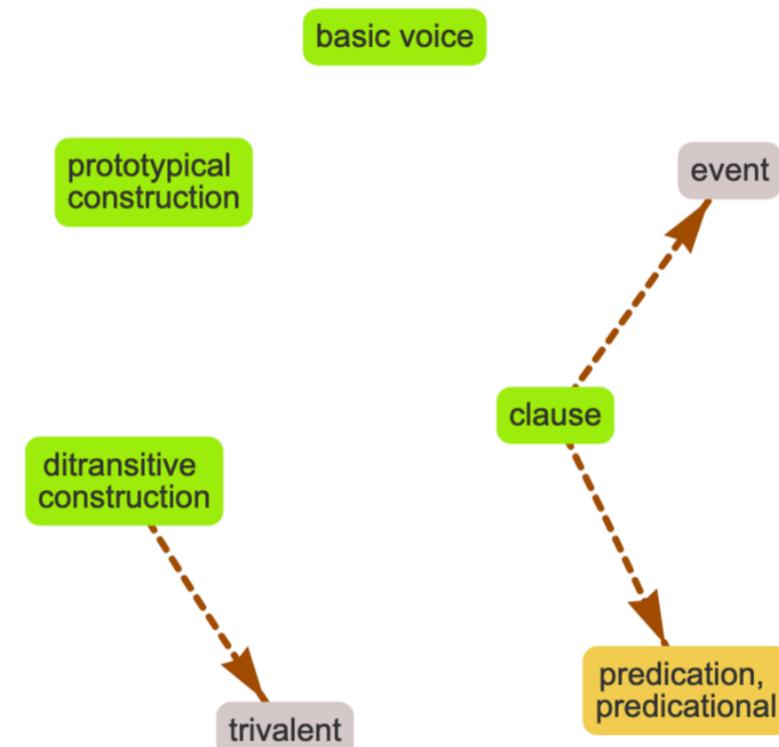
Then selection: clear if necessary,  
then grow: downwards (just once)

remove: unselected selected

Selection: clear all visible unconnected

expand: upwards downwards outwards

search: ditransitive construction



To add construction parts, toggle on ConstituentOf and HeadOf and toggle off FunctionOf

## Visualization of the Comparative Concepts database

### ► Instructions

Graph:

Cxn  $\leftrightarrow$  Sem. + Inf.

SubtypeOf

ConstituentOf

HeadOf

FunctionOf

Show:

Names

Stabilize: Atlas2

Subgraph:

clear

grow: upwards

downwards

outwards

remove: unselected

selected

Selection:

clear

all visible

unconnected

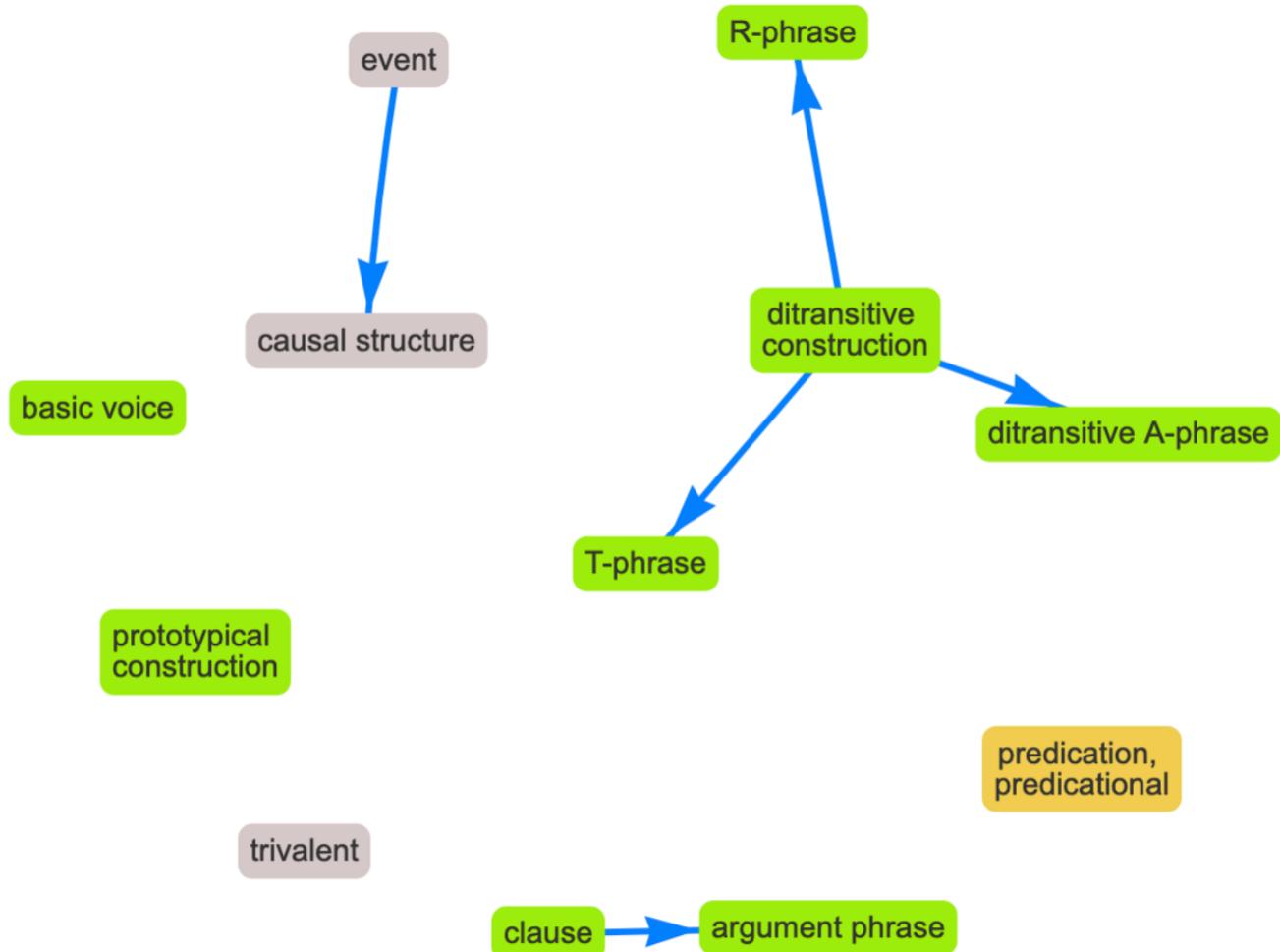
expand: upwards

downwards

outwards

search: ditransitive construction

Then selection: clear if necessary,  
then grow: downwards (just once)



To add functions of the parts, toggle on FunctionOf and toggle off ConstituentOf and HeadOf

## Visualization of the Comparative Concepts database

### ► Instructions

Graph:

Cxn ↔ Sem. + Inf. ▾

SubtypeOf

ConstituentOf

HeadOf

FunctionOf

Show:

Names ▾

Stabilize:

Atlas2 ▾

Subgraph:

clear

grow: upwards

downwards

outwards

remove: unselected

selected

Selection:

clear

all visible

unconnected

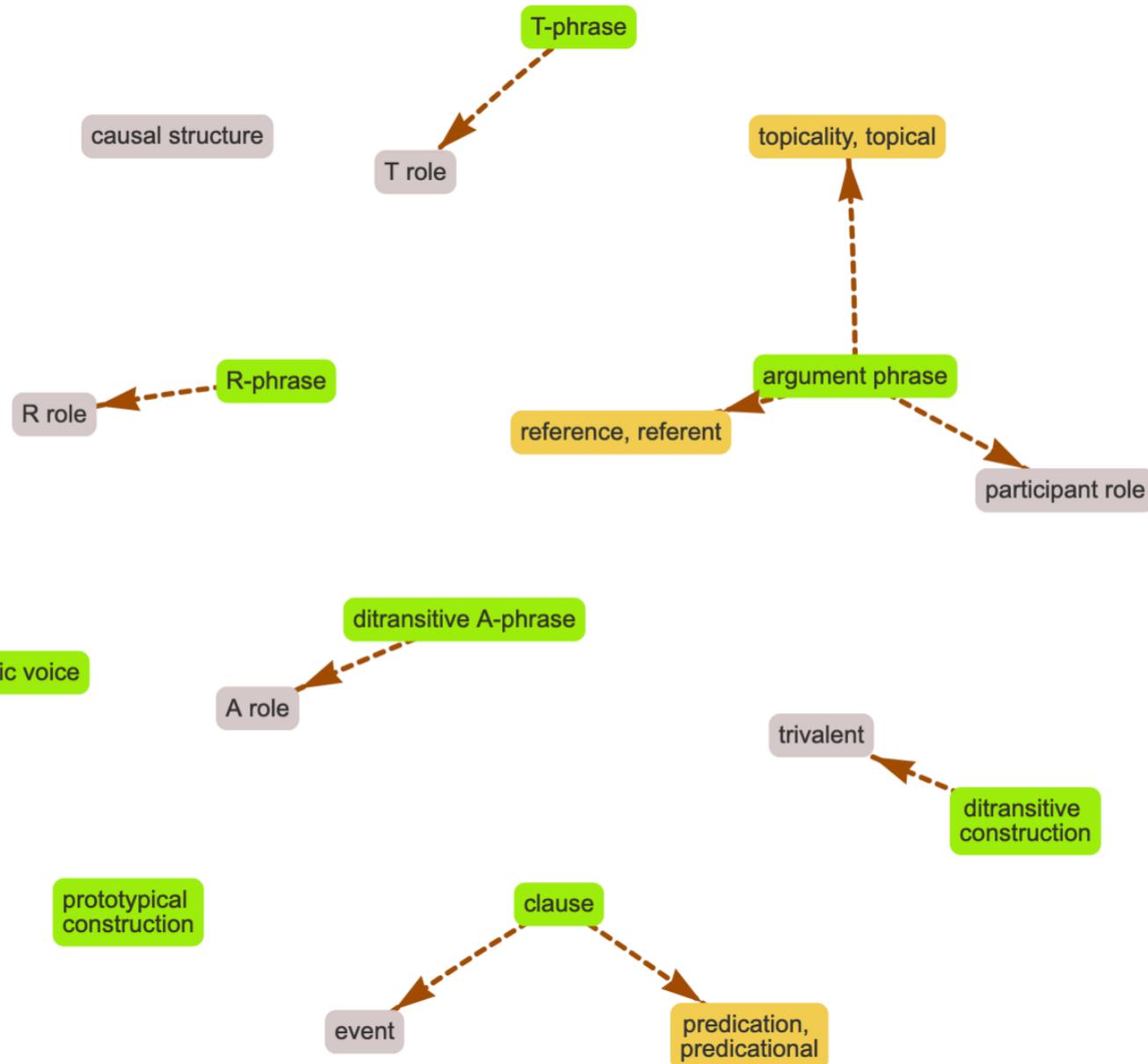
expand: upwards

downwards

outwards

search: ditransitive construction

Then selection: clear if necessary,  
then grow: downwards (just once)



Finally to display all of the relations, toggle on SubtypeOf, ConstituentOf and HeadOf

## Visualization of the Comparative Concepts database

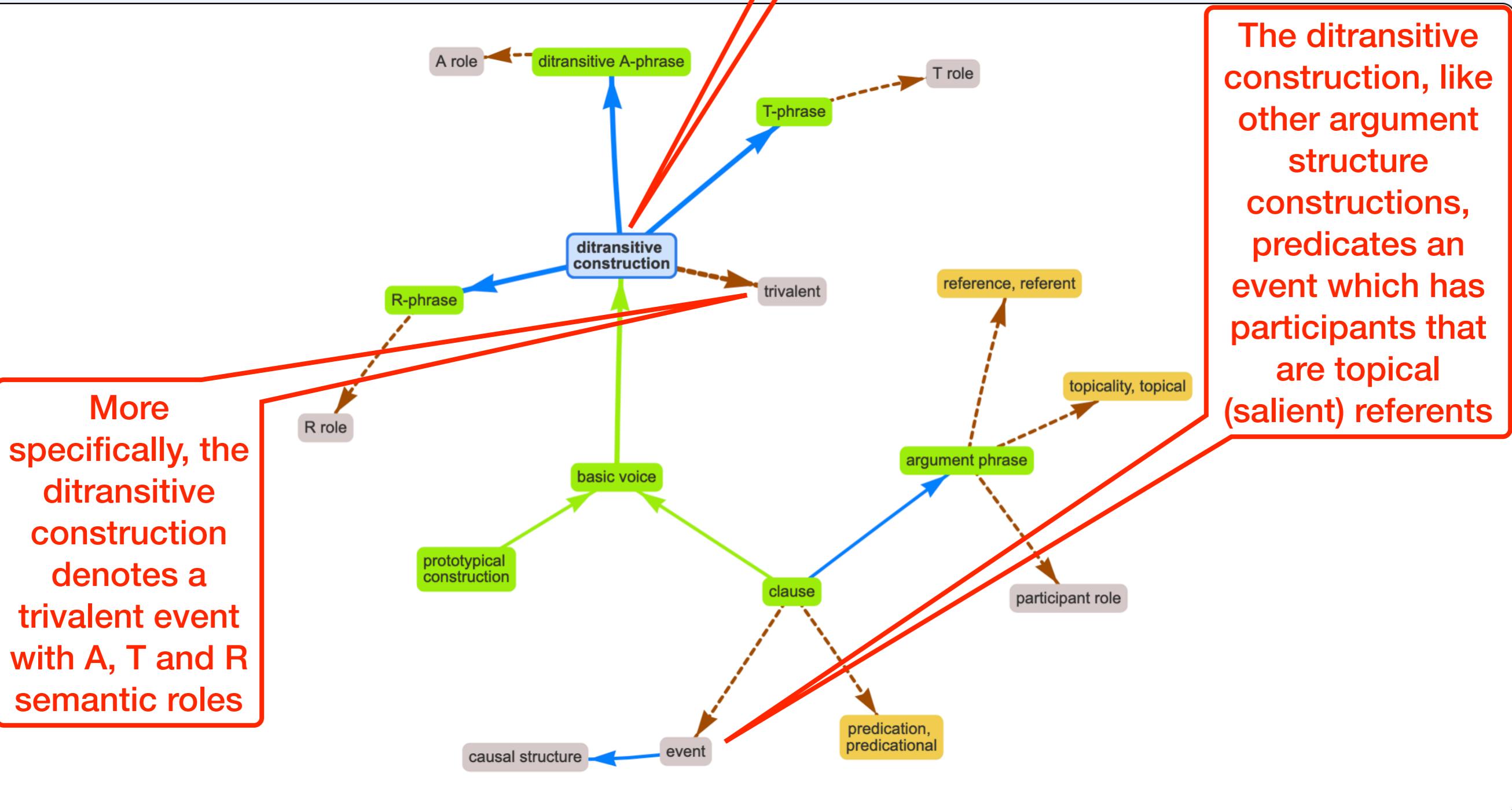
### Instructions

Graph: Cxn ↔ Sem. + Inf.  SubtypeOf  ConstituentOf  HeadOf  FunctionOf

Show: Names  Stabilize:  Atlas2  Subgraph: clear grow: upwards downwards outwards remove: unselected selected

Selection: clear all visible unconnected expand: upwards downwards outwards search: ditransitive construction

You can select the node of the construction you're interested in for clarity



# Taxonomies of events and semantic roles

# Events and semantic roles

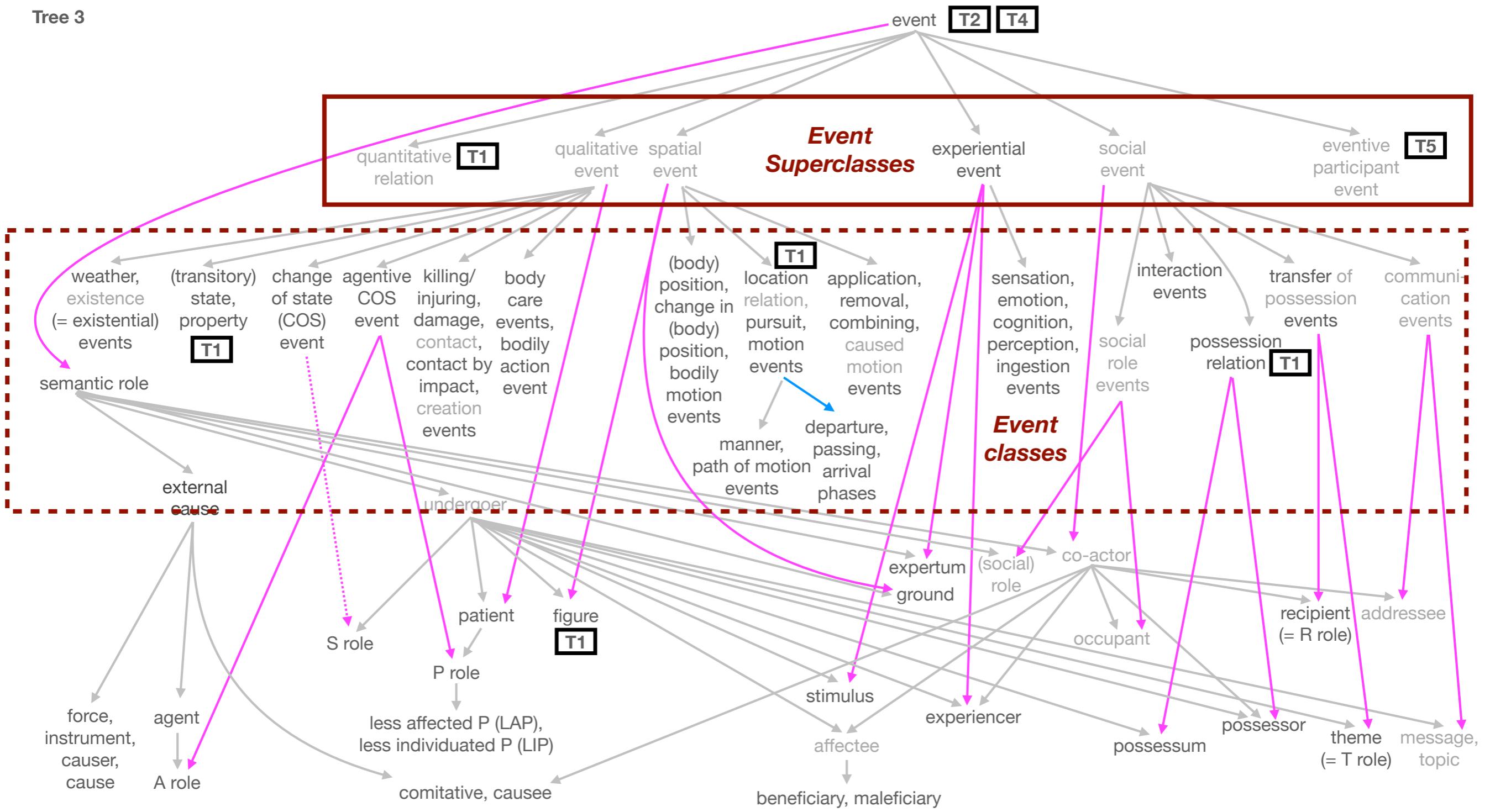
- There are many different ways to analyze events
- They can be classified by aspectual or causal (force-dynamic structure), by valency, and by semantic domain
- Events also have roles. These are also categorized in different ways
  - Semantic roles, defined across broad classes of events
  - Frame elements (FEs), defined by semantic frame
  - Participant roles (microroles), for each event

# Events and roles in the CC database

- Aspectual structure and causal structure are parts of (=ConstituentOf) events
- Valency is an attribute (=AttributeOf) events
- aspectual and causal properties are attributes of aspectual structure and causal structure respectively
- Semantic roles and participant roles are separate classifications of roles of (=RoleOf) events
- Frame Elements are represented in MoCCA FrameNet
- Semantic roles and events by semantic domain are organized hierarchically

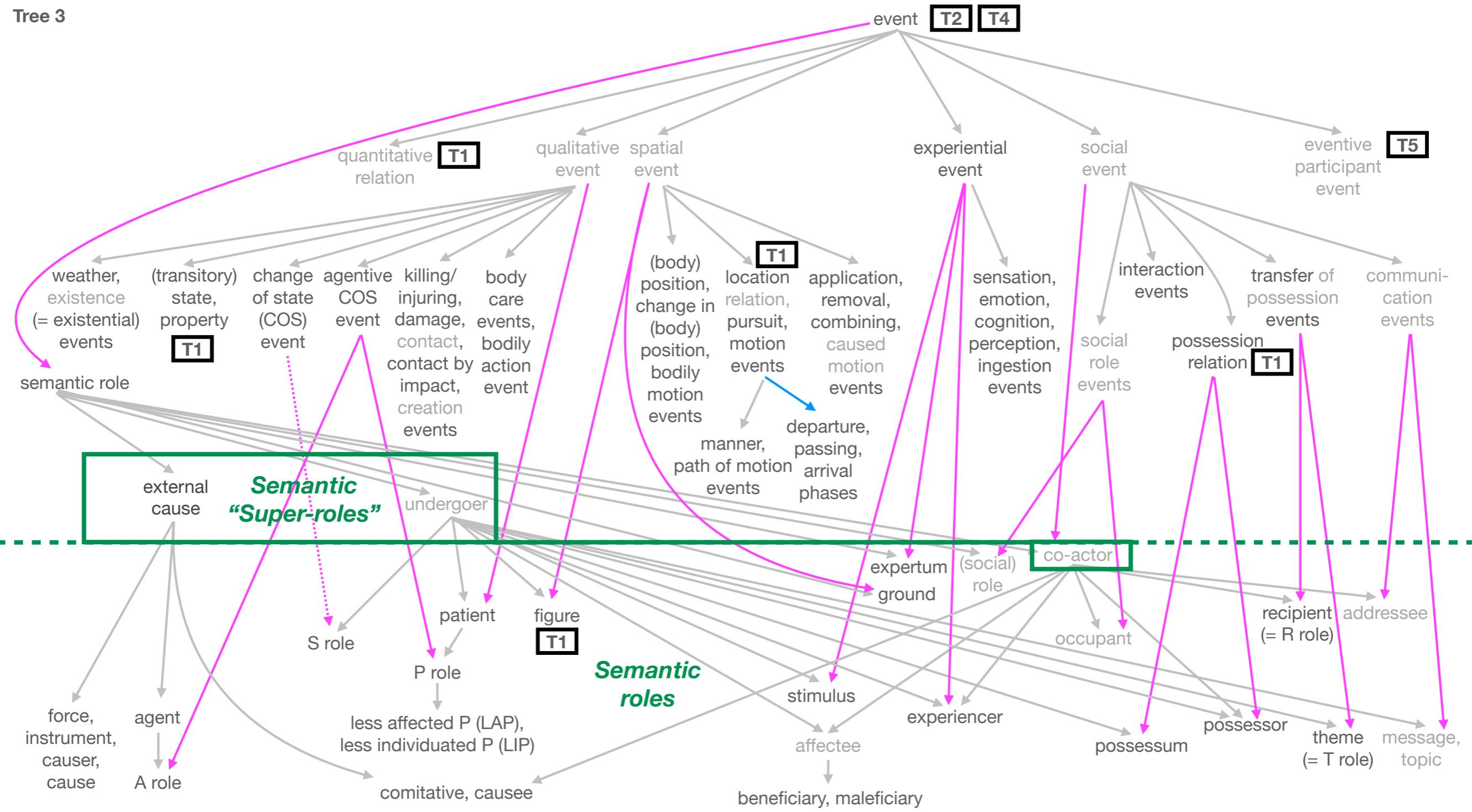
# Construction Relations Tree 3

Tree 3



# Construction Relations Tree 3

Tree 3



Taxonomy of events by  
semantic domain

Event superclasses are straightforward to display; toggle on SubtypeOf, select event, and grow downwards

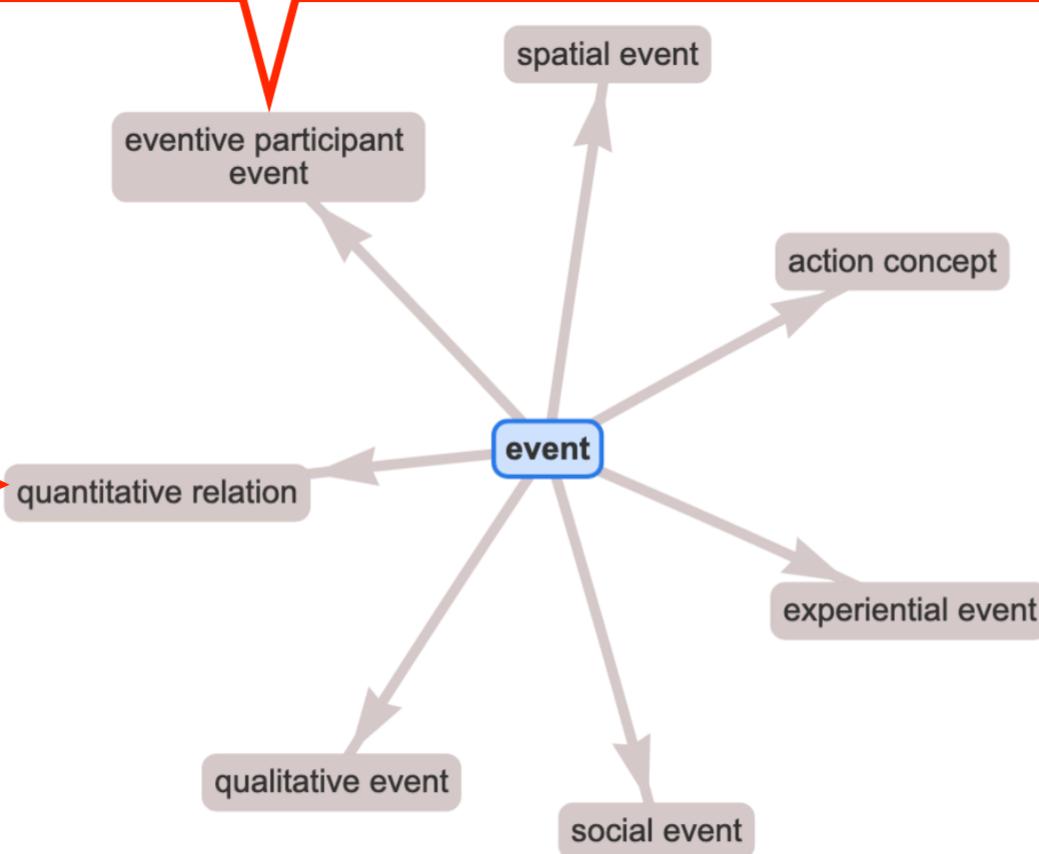
## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Semantic CCs  SubtypeOf  ConstituentOf  AttributeOf  RoleOf  
Show: Names  Stabilize:  Atlas2  Subgraph: clear grow: upwards downwards outwards remove: unselected selected  
Selection: clear all visible unconnected expand: upwards downwards outwards search: Type at least 3 characters

Superclass for events that have other events as participants  
(usually expressed by complement clause constructions)

Superclass for events  
that express  
quantitative relations  
(quantifiers,  
numerals, measures,  
etc.) that are rarely  
predicated (usually  
expressed as  
modification  
constructions)



Subtype in taxonomy  
of basic ontological  
categories (objects,  
properties, actions).  
We'll remove this  
node when we're  
done

Event classes are added by expand downwards, then grow downwards; “action concept” was selected and removed

## Visualization of the Comparative Concepts database

### ► Instructions

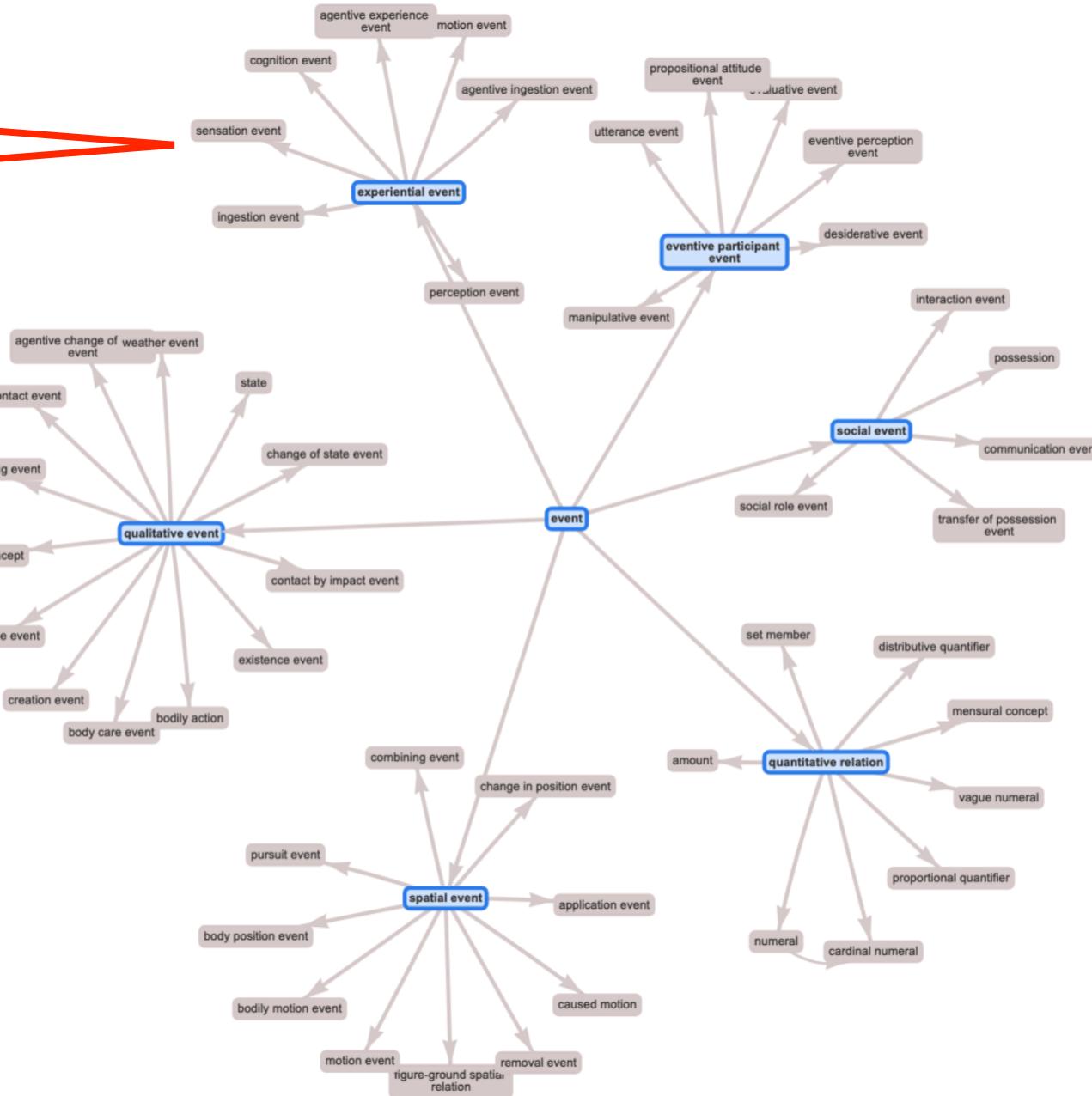
Graph: Semantic CCs  SubtypeOf  ConstituentOf  AttributeOf  RoleOf

Show: Names  Stabilize:  Atlas2  Subgraph: clear grow: upwards downwards outwards remove: unselected selected

Selection: clear all visible unconnected expand: upwards downwards outwards search: Type at least 3 characters

Hard to read here but can be enlarged to view the traditional event classes by semantic domain

Expand and grow downwards produces more subtypes, such as property concept classes



# Taxonomy of semantic roles

Semantic “super-roles” are also straightforward to display; toggle on SubtypeOf, select semantic role, and grow downwards

## Visualization of the Comparative Concepts database

### ► Instructions

Graph: Semantic CCs

SubtypeOf

ConstituentOf

AttributeOf

RoleOf

Show: Names

Stabilize: Atlas2

Subgraph: clear

grow: upwards

downwards

outwards

remove: unselected selected

Selection: clear

all visible

unconnected

expand: upwards

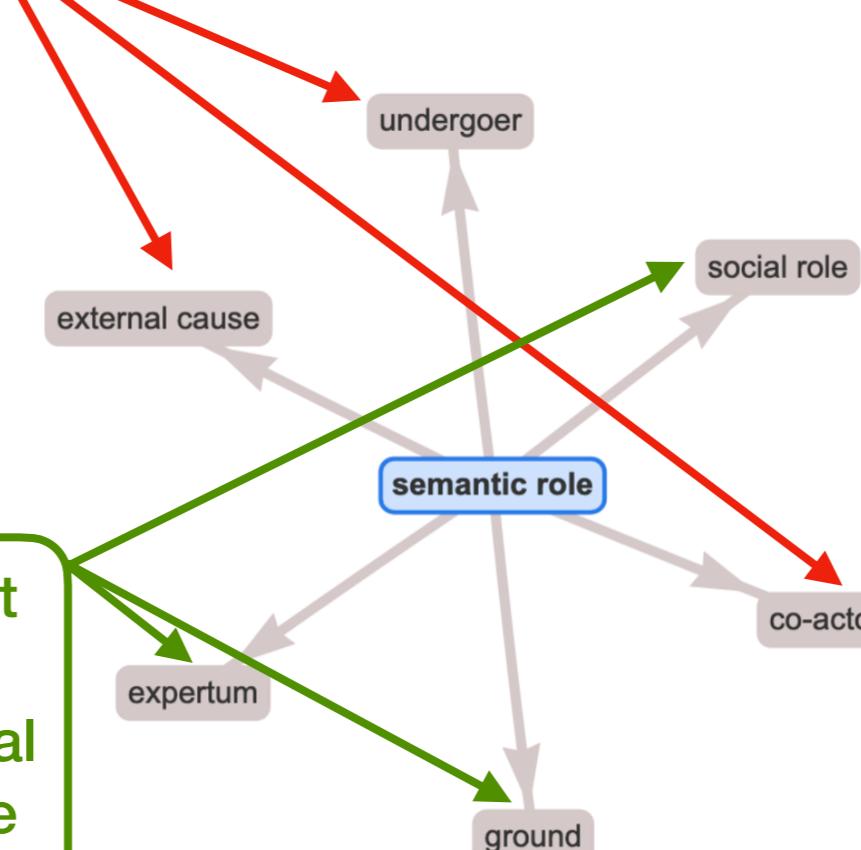
downwards

outwards

search: semantic role

Children of semantic role include the three “super-roles”: external cause, undergoer and co-actor (a general role for the second human participant in social events)

Three semantic roles don't fit in the “super-roles”: ground is an inactive spatial participant, and social role and expertum are reifications of events (cf. *She is a violinist* vs. *She plays the violin*)



The traditional semantic roles are added by expand downwards, then grow downwards

## Visualization of the Comparative Concepts database

### ► Instructions

Graph:

Semantic CCs

SubtypeOf

ConstituentOf

AttributeOf

RoleOf

Show:

Names

Stabilize:

Atlas2

Subgraph:

clear

grow: upwards

downwards

outwards

remove: unselected selected

Selection:

clear

all visible

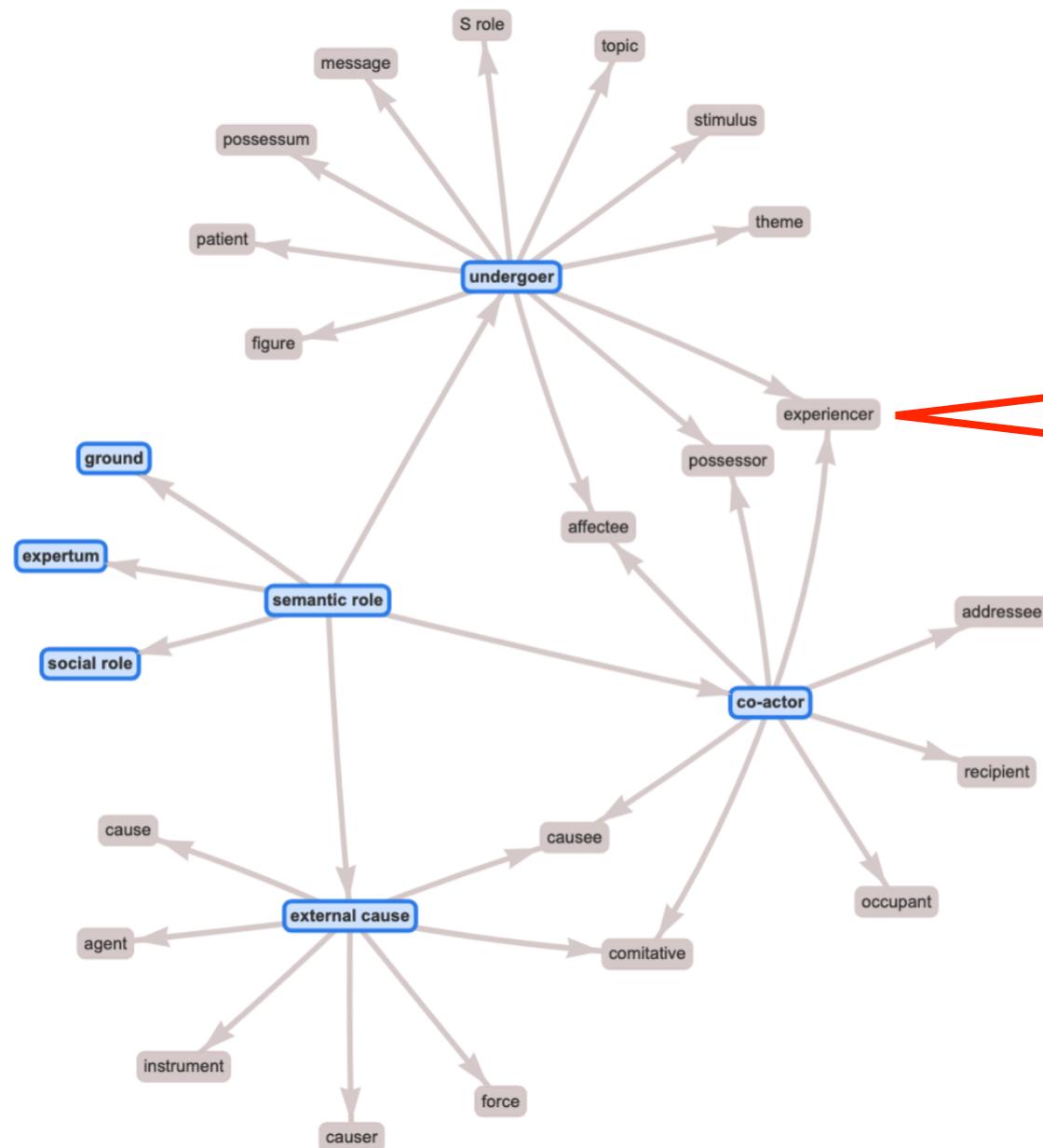
unconnected

expand: upwards

downwards

outwards

search: semantic role



Here the taxonomy is more of a lattice: some semantic roles are categorized under multiple “super-roles”, not unlike Dowty’s (1991) proto-roles

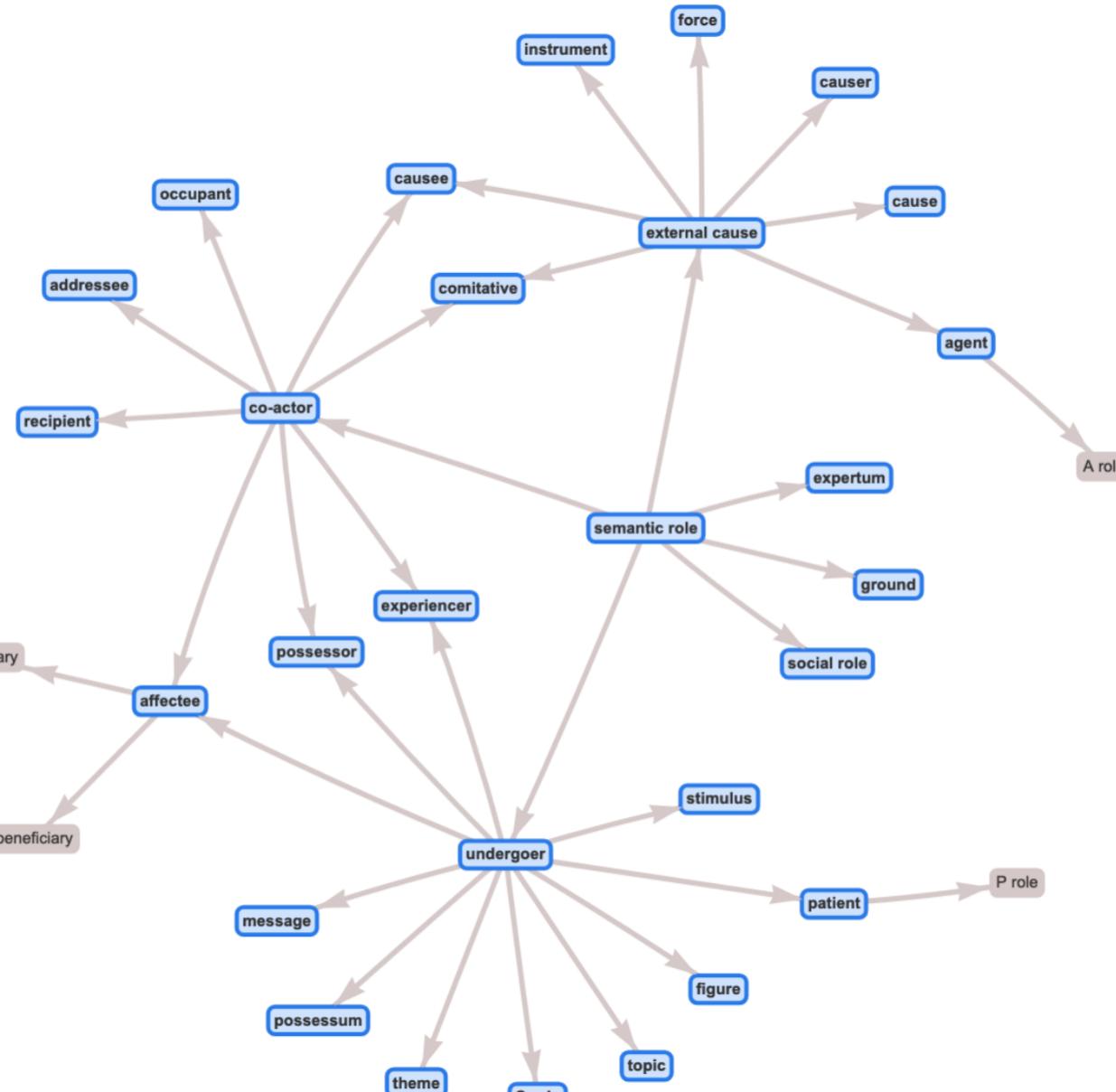
# Visualization of the Comparative Concepts database

## ► Instructions

Graph: Semantic CCs   SubtypeOf  ConstituentOf  AttributeOf  RoleOf

Show: Names  Stabilize:  Atlas2  Subgraph:  grow:    remove:

Selection:    expand:    search: semantic role



Expand and  
grow downwards  
displays the  
remaining  
semantic roles

# Summary

- These suggestions apply to Version 1.0 of the CC database (14 February 2025)
- High priority to add: definitions of CCs not in *Morphosyntax* (changes will be incorporated in a planned second edition)
- All feedback very welcome!! This is a resource for your use!