Flavors of oddness

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UCL Linguistics Seminar talk

When and why do sentences feel off?

- Sentences can feel “off” for many reasons, stemming from syntax, semantics or pragmatics.

(1) * Ed told Jo that he likes **herself**. Principle A violation

(2) a. # It’s raining and it’s **not** raining. Contradiction

b. # It’s raining or it’s **not** raining. Tautology

(3) a. # **A** sun is shining. Presupposing too little[1]

b. ?? Jo fed **her pet alligator**. Presupposing too much[2]

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What is oddness?

- Sentences sometimes feel **odd** despite being informative, and perfectly "reasonable" is terms of what they implicitly assume.

(4) Hurford Disjunction (**HD**; Hurford 1974)
Jo studied in Paris or in France.
Conveys: Jo studied in France.

- Descriptively, (4) seems to be odd because one disjunct (Paris) contextually entails the other (France).
- Oddness seems to come from **how** information is provided, rather than from its content.

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Redundancy

(4) # Jo studied in Paris or in France.

- A prominent approach to sentences like (4) is based on the concept of **Redundancy**–*Be Brief!*[3]
- Both of (4)'s disjuncts entail that *Jo studied in France*. In fact, the entire disjunction is contextually **equivalent** to (5), obtained by **deleting** (4)'s first disjunct!

(5) Jo studied ~~in Paris or~~ in France.

(6) **Non-Redundancy**. A felicitous sentence should not be equivalent to one of its formal simplifications.[4]

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Challenge 1: compatible Hurford Disjunctions

- Problem for NON-REDUNDANCY: oddness arises despite the non-existence of a simpler, equally informative alternative.

(7) "Compatible" Hurford Disjunction (**cHD**; Singh 2008)
?? Jo studied in France or the Basque country.
Conveys: Jo studied in France or the Spanish Basque country.

Challenge 2: Hurford Conditionals

- Logically **isomorphic** sentences may contrast in terms of oddness.

(8) Hurford Conditionals (**HC**; Mandelkern and Romoli 2018)

a. If Jo studied in France, she did **not** study in Paris.
$p \rightarrow \neg p^{+}$ where $p^{+} \vDash p$

b. # If Jo did **not** study in Paris, she studied in France.
$\neg p^{+} \rightarrow p \equiv \underbrace{(\neg p^{+})}_{q} \rightarrow \neg \underbrace{(\neg p)}_{q^{+}}$ where $q^{+} \vDash q$

- This is unexpected under a Non-Redundancy view, which is based on the deletion of logically useless material.
- Kalomoiros (2024) recently proposed an account of both HDs and HCs based on a more sophisticated formalization of Non-Redundancy, but still cannot cover the case of cHDs like (7).

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Flavors of Oddness

- I will argue that HDs, HCs, and cHDs, display **different flavors of oddness**.
- Nevertheless, I will show that all three cases can be reduced to a core, common issue: the odd variants are **not addressing "good" questions**.
  - With HDs (#Paris or France), the questions will be deemed REDUNDANT.
  - With HCs (#If not Paris then France), the questions will be deemed IRRELEVANT.
  - With cHDs (#France or Basque country), there will just be **no well-formed question** to begin with.
- Relocating oddness issues to the domain of addressed questions allows to cover all three cases (and more!) within the **same unified framework**, while still cashing how they "feel" distinctly odd.

Plan for today

1. Background on assertions and questions
2. Overview of the framework: pragmatically constraining implicit questions
3. HDs evoke “redundant” implicit questions
4. HCs evoke “irrelevant” implicit questions
5. cHDs evoke “non-questions” featuring irreconcilable specificity levels
6. Future directions: repairing bad questions makes for good sentences

Background on assertions and questions

Assertions and questions

- Assertions typically denotes propositions (**sets of worlds**).
- The set of worlds compatible with the premises of a conversation is called **Context Set** (**CS**).[5]
- Assertions update the CS by **intersection**.[6]

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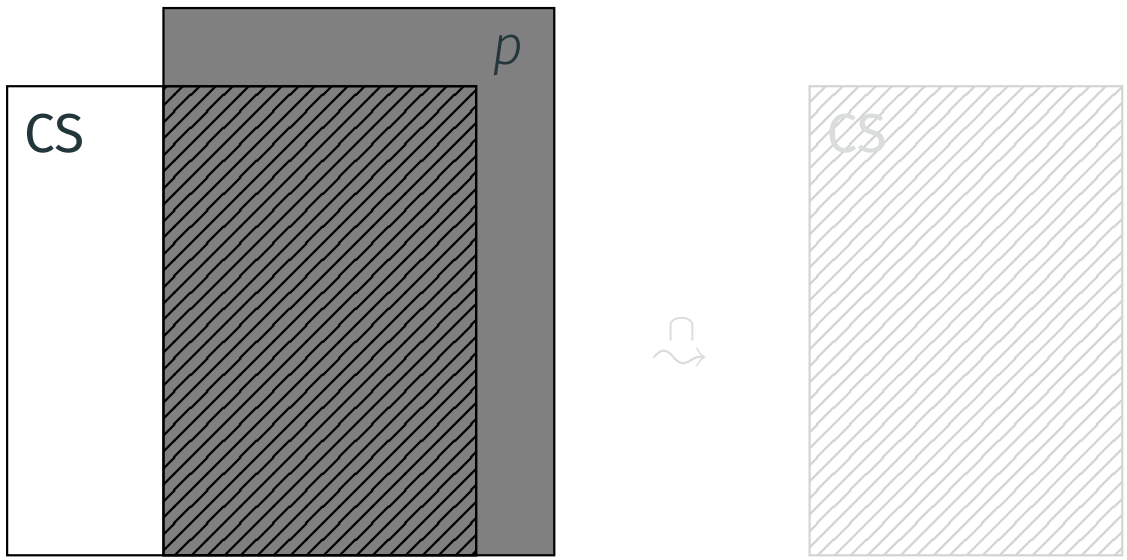

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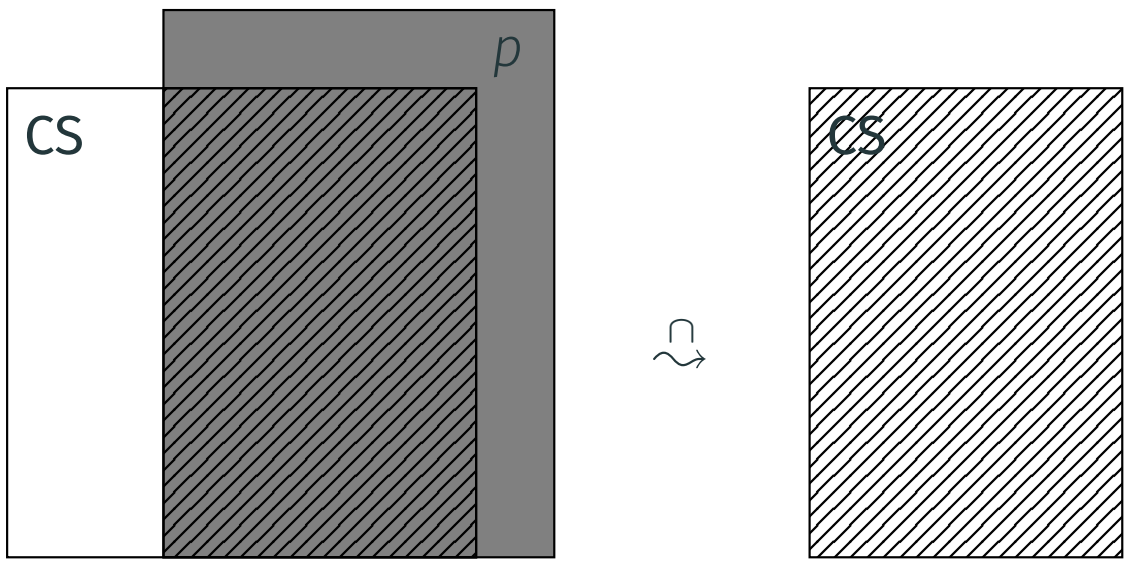

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Standard question semantics

- Questions have been traditionally understood as the **set of their possible answers, or "alternatives"**.[7]

(9) ⟦Who did the readings?⟧ = {Ed, Al, Ed and Al, ...}

- Alternatives are not necessarily exclusive: if Ed and Al did the readings then Ed did the readings.
- Stronger alternatives, intuitively correspond to "better" answers.
- Given that questions are sets of propositions, **how are they supposed to affect the CS?**

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Standard question pragmatics

- Questions induce a **partition of the CS**, i.e. a set of non-empty, disjoint subsets of the CS which together cover it.
- To get that partition, we just group together the worlds of the CS that agree on all of the question's alternatives.[8]
- The resulting groups are called **cells**: they tell us which distinctions "matter".
- I will consider exhaustive and mutually exclusive alternatives, s.t. question semantics and question pragmatics in fact coincide.

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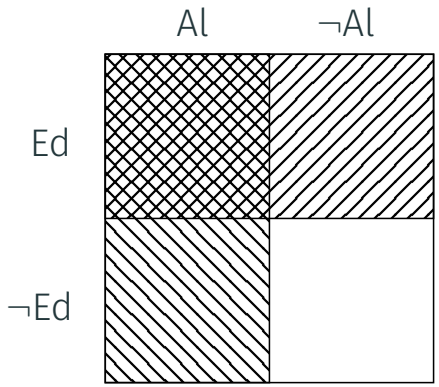

Step 1: Check how each world deals with the alternatives: ▨ defines *Al did the readings* and ▨ defines *Ed did the readings*.

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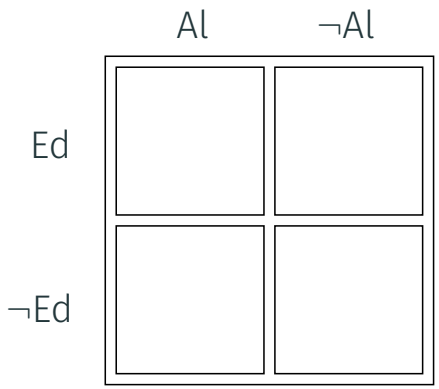

Step 2: Partition the CS by grouping worlds that pattern the same.

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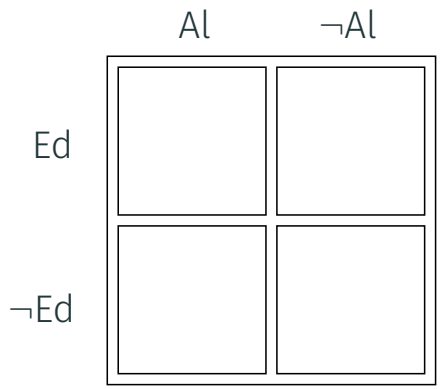

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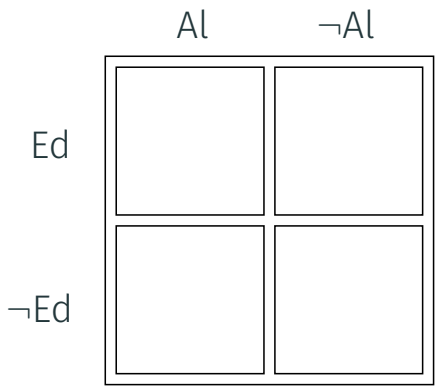

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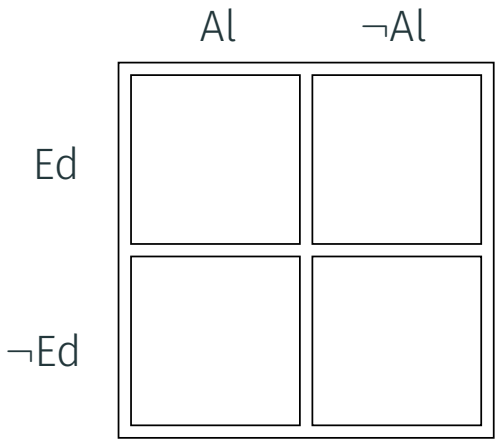
Answering questions

- Here the cells are *only Ed did the readings*, *only Al*, *Ed an Al*, and *neither*. Those are **maximal answers**.
- Union of cells, e.g. *Ed did the readings* (including *only Ed*, and *Ed and Al*), are **non-maximal answers**.



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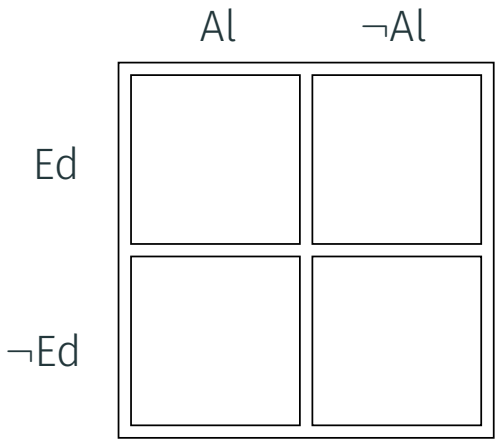

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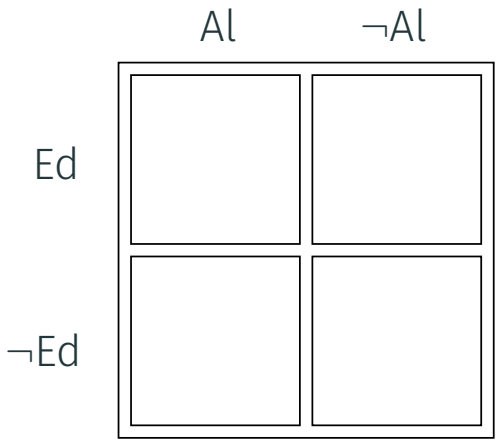

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- Question-answer pairs are subject to **constraints**.
- For instance, an answer better be "congruent" with the corresponding question. This explains the pattern in (10).

(10) **Who** did the readings?

a. **ED** did the readings.

b. # Ed did the **READINGS**.

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- Relevance spells out the intuition that **the cells of a question drive what needs to be addressed**.

  (12) **Relevance** (Križ & Spector, 2020's version). An answer is relevant to a question if it corresponds to a non-maximal union of cells.

- But what if there's no clear question?
- Although the idea that similar constraints are at play beyond overt question-answer pairs has been around for a while,[9] **the systematic link between assertions and implicit questions is still poorly understood.**

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[9] Lewis, 1988; Roberts, 1996; Riester, 2019, i.a.

Implicit Questions

Preview of the framework

- Core intuition: **a good sentence has to be a good answer to a good question**.[10]
- I formalize this longstanding intuition by proposing a **compositional model of implicit questions**, which is:
  - directly sensitive to the **degree of specificity** conveyed by sentences;
  - and constrained by generalizations of **familiar pragmatic principles**, including RELEVANCE and REDUNDANCY.

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A desideratum to guide our framework

- Overt question answer-pairs match in terms of **specificity**. This should be a desideratum for implicit questions, too.

(13) a. Where did Jo study? –{Paris, France}.

b. In which country did Jo study? –{#Paris, France}

c. In which city did Jo study? –{Paris, #France}

- Basic alternative semantics does not fully capture this: generating a question from a proposition by replacing its focused material with same-type alternatives does not guarantee that the outputs will have same specificity.[11]
- For instance, alternatives like Paris and France, may be mixed together, giving rise to a weird partition.

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Additional motivations for a specificity constraint

- Does question-answer RELEVANCE help achieve the specificity desideratum? Not quite: both answer in (14) are unions of cells and as such RELEVANT, yet only (14b) seems to match the question's degree of specificity.

(14) In which country did Jo study?

a. # Western Europe

b. France, the UK, or Germany

- Intuitively, (14a) evokes a *which area* question while (14b) evokes a *which country* question, and **the former question is coarser-grained than the latter.**
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Questions as nested partitions

- Question are modeled as **nested** partitions. Nesting is based on specificity:[12] nested partitions are finer-grained than nesting partitions, meaning, Paris and France cannot be mixed up.

(a) By-city partition.

(b) By-country partition

(c) Recursive partition.

- A "fine-grained" question may then contain coarser-grained questions, meaning, a *which city* question **structurally refines** a *which country* question.

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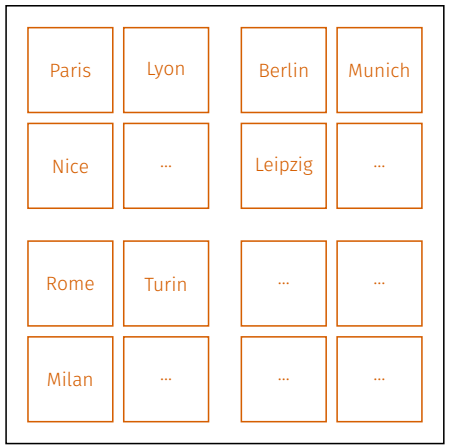

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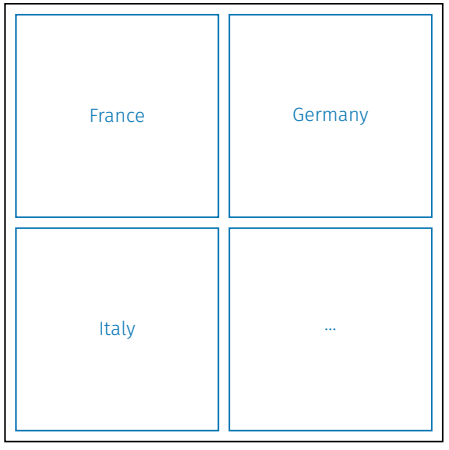

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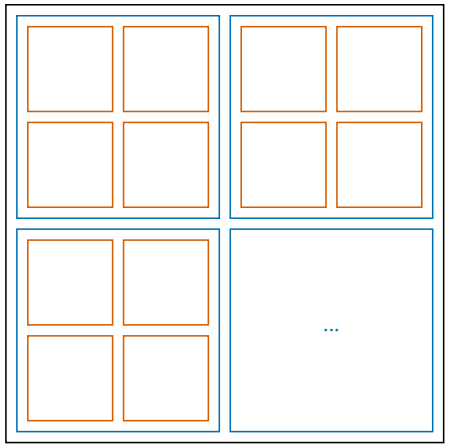

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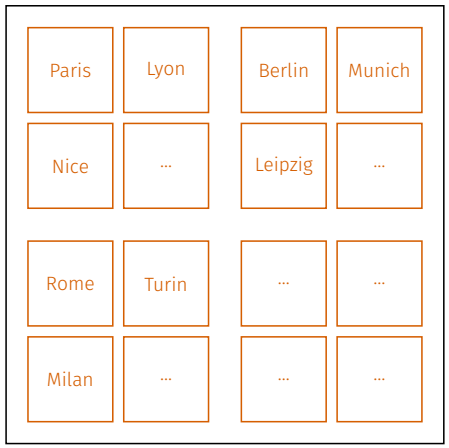

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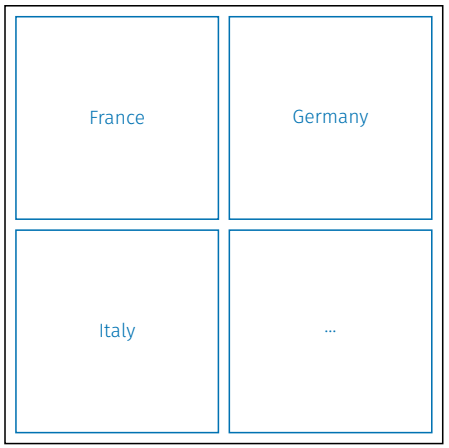

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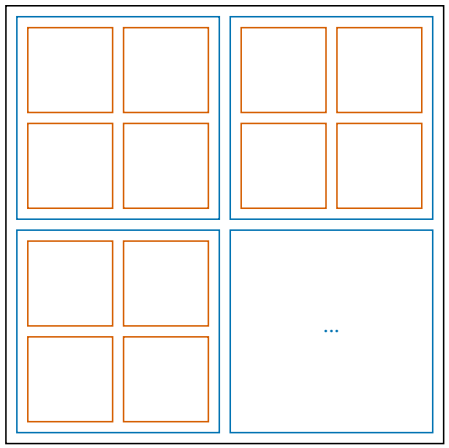

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Useful notational variant: questions as Trees

- Nested partitions will be represented as **trees** whose nodes are sets of worlds partitioned by their children. The **layers** of a question-tree have **same specificity**.
- Simple sentences like *Jo studied in Paris* may then evoke nested "*wh*" trees like Fig. 2a, or "polar" trees like Fig. 2b.

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Fig. 2: Trees evoked by *Jo studied in Paris*.

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Benefits of question trees beyond specificity encoding

- Implicit questions[13], and question trees[14] have been around for a while. Ippolito (2019) even discussed how specificity differences in trees could capture oddness.
- But none of the previous approaches leveraged the expressivity of a tree model, to render the idea that **the questions evoked by a sentence, are compositionally derived from its LF**.
- This is needed if one wants to make precise predictions about logically isomorphic, yet structurally distinct sentences (like HCs).
- We now introduce a set of rules for $\neg$, $\vee$, and conditionals, that apply to trees and **recycle longstanding intuitions about these operators.**

[13] Carlson, 1985; von Stutterheim and Klein, 1989; Kuppevelt, 1995; van Kuppevelt, 1995; Ginzburg, 1996, 2012.

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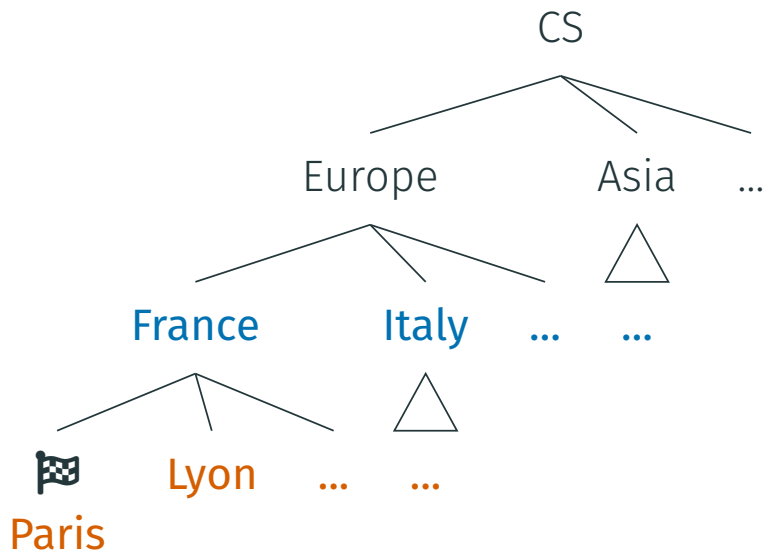
Flagging, and “negating” Questions Trees

- When a simple assertion evokes an implicit question tree, leaves entailing the assertion get flagged; **flags track “at-issue” meaning, and are compositionally derived**.
- Negating an assertion **flips the flags** on this assertion’s trees. Flag-flipping is a layerwise **complement set** operation, which **does not affect the specificity of the underlying question-tree**.



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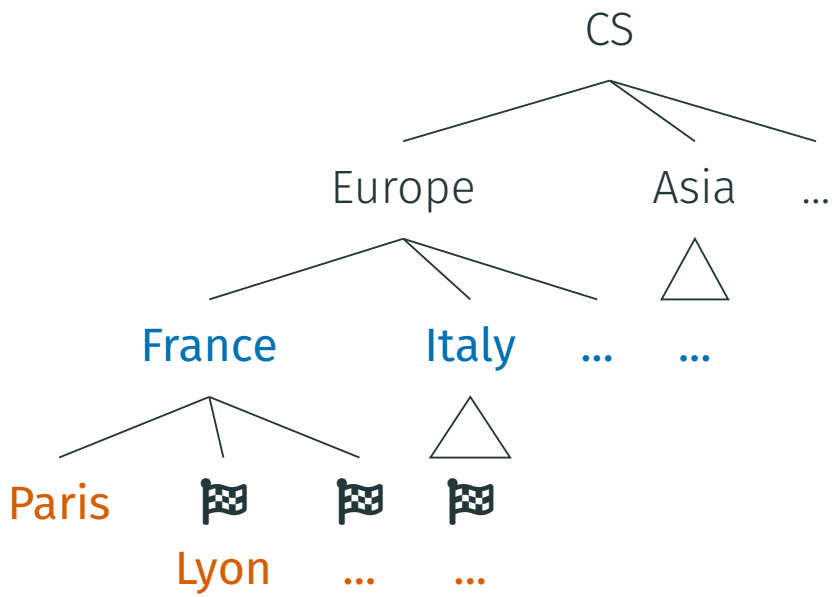

Fig. 4: A tree for *Jo did **not** study in Paris*.

Disjoining Questions Trees

- Disjunction **fuses** the trees evoked by the disjuncts, retaining only unions that are well-formed nested partitions.
- Set of flagged nodes are also fused.

Fig. 5: A tree for *Jo studied in Paris*.

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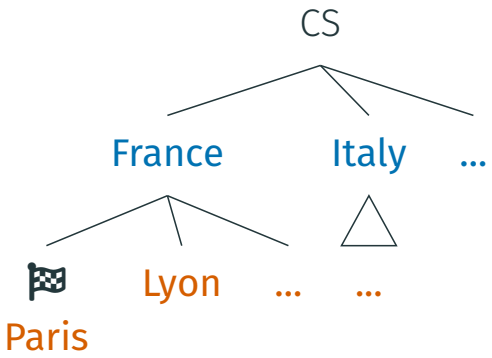

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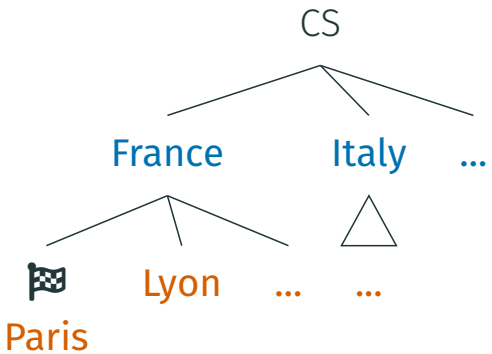

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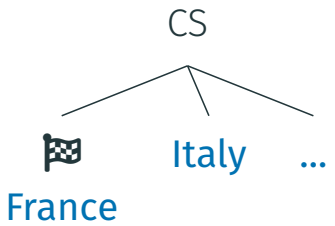

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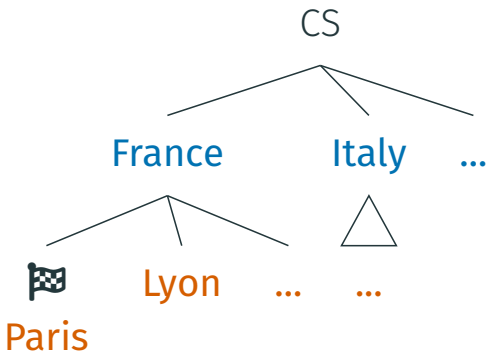

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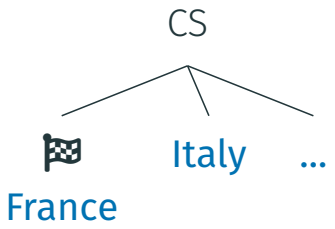

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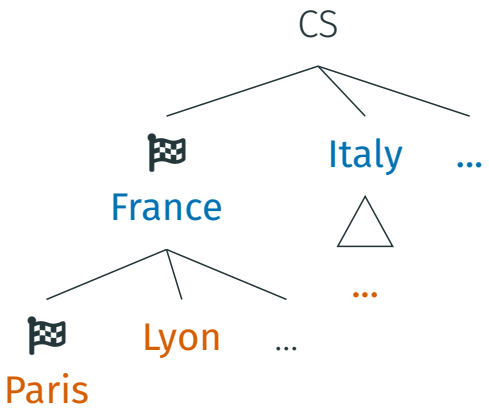

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Conditional Questions Trees

- Conditionals are often taken to **restrict the evaluation of the consequent** to the worlds in which the antecedent holds.[1]
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- Technically, conditionals "**plug**" **consequent trees, into the flagged leaves of the antecedent trees** – keeping only the consequent's flags.

Fig. 8: A tree for *If Jo studied in France, she did **not** study in Paris.*

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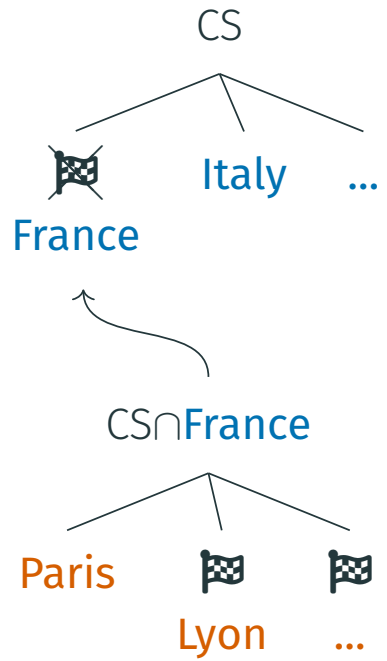

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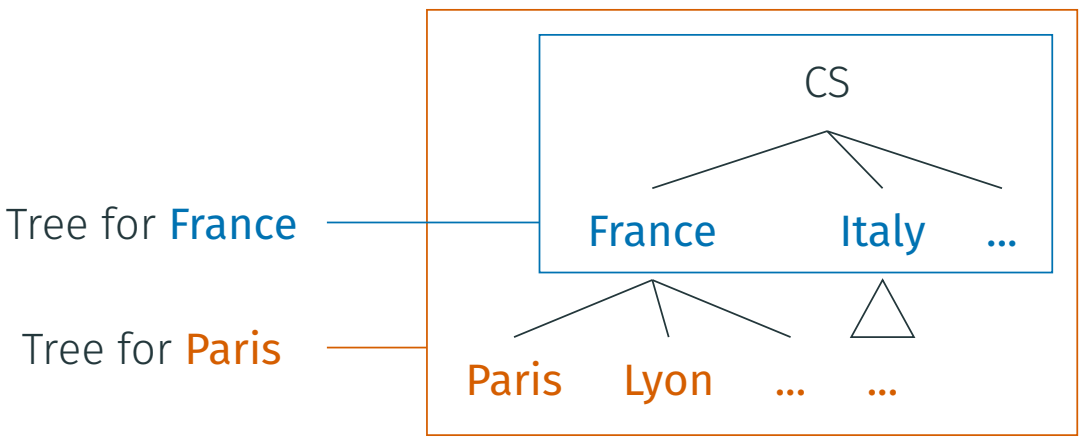

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- This will allow us to capture the challenging contrast in HCs (and the absence of such a contrast in HDs) in an intuitive way.

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cHDs for free

Back to “Compatible” Hurford Disjunctions

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(7) “Compatible” Hurford Disjunction (**cHD**)
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Conveys: Jo studied in France or the Spanish Basque country.

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- The leaves of question trees for France will necessarily include France.[17]

(a) "*Wh*-articulated" tree (b) "*Wh*" tree (c) "Polar" tree

Fig. 9: Trees evoked by *Jo studied in France*.

[17] Even relaxing this–e.g. assuming a France-tree (and a Basque-tree) could contain France $\wedge \neg$Basque and France $\wedge$ Basque leaves, we'd run into issues *later on* due to a violation of partition-by-*exh* Fox, 2018. But this argument is quite involved.

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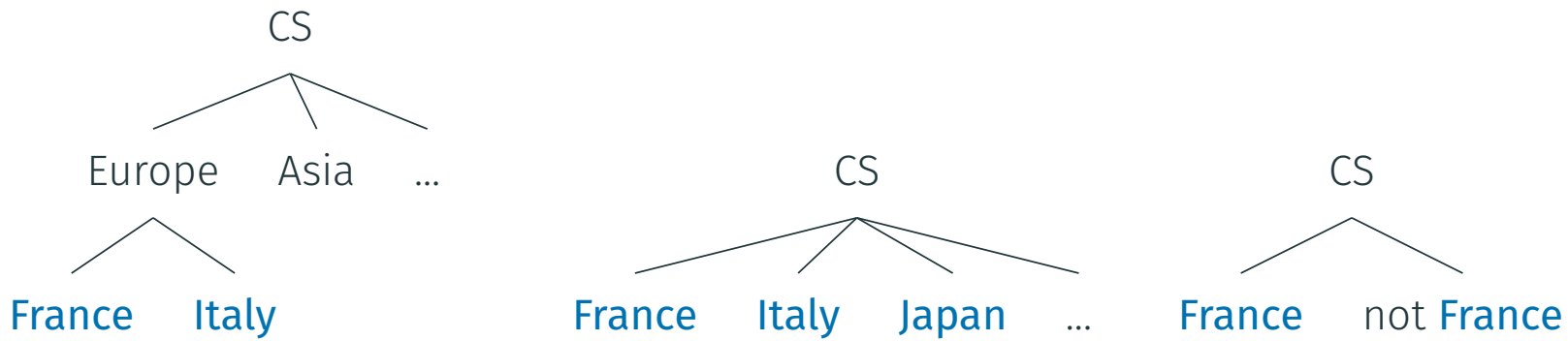

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Question trees for Jo studied in the Basque country

- Likewise, the leaves of a question tree for the the Basque country will necessarily include the Basque country.

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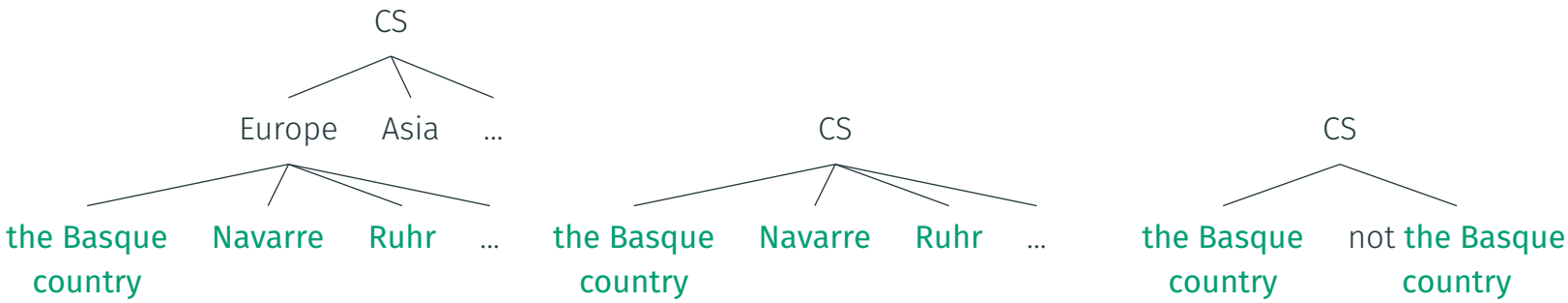

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Irreconcilable degrees of specificity

- Recall that disjuncts answer the same global question, so their question trees should be fused.
- Fusing a "France"-tree with a "Basque country"- tree always produces a tree with France and Basque country nodes: **not a well-formed nested partition!**

(a) Violates containment: France cannot be contained in anything disjoint from the Basque country.

(b) Violates containment: the Basque country cannot be contained in anything disjoint from France.

(c) Violates disjointness: the Basque country and France are not disjoint.

Fig. 11: Trees evoked by *#Jo studied in France or the Basque country*.

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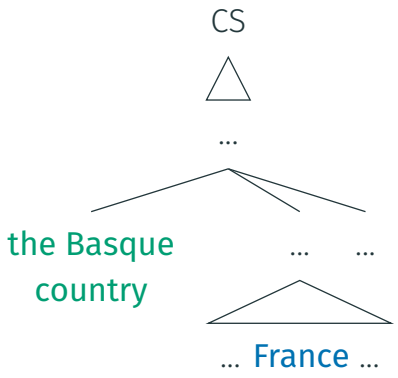

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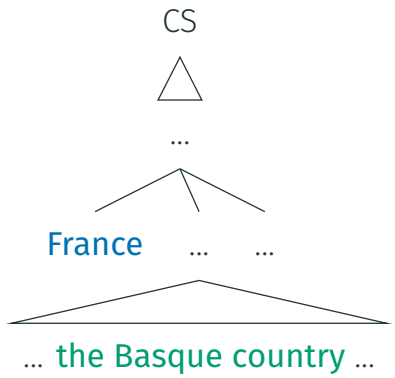

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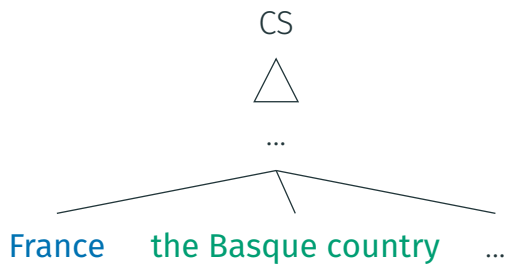

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Taking stock and moving on

- The fact France and the Basque country, when disjoined, cannot evoke a single well-formed question tree is interesting, because cHDs were a main challenge for most if not all past approaches to oddness; while for us their oddness is **at the core of the model**.
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Hurford Disjunctions and Redundancy

Back to Hurford Disjunctions

(4) Hurford Disjunction (**HD**)
Jo studied in Paris or in France.

- In our framework, HDs evoke well-formed unions of trees evoked by the disjuncts. We can show that there is only one possibility, the one we computed before, repeated below.

Fig. 12: A tree for *#Jo studied in Paris or France*.

- Descriptively, the issue seem to come from the fact the 🏁 are on the same path to the CS root – i.e. **inquiring about Paris, already settles France**.

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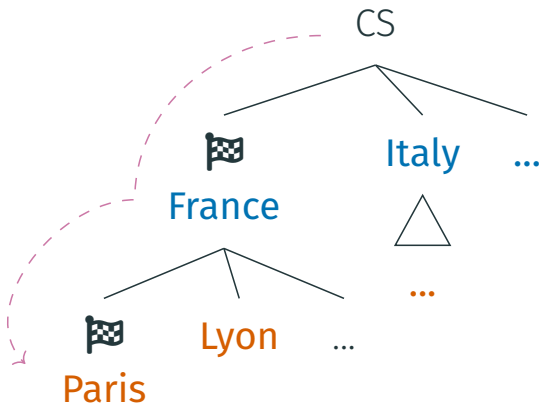

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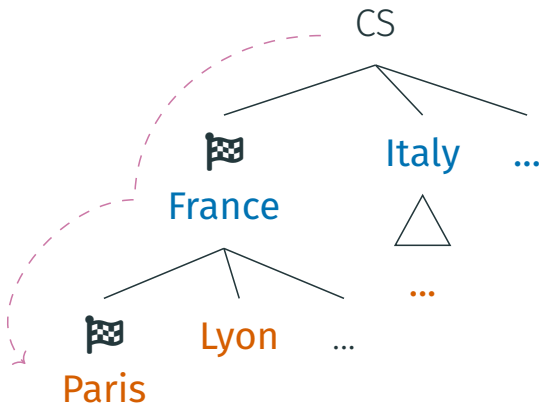

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Q-Non-Redundancy

- Recall Redundancy arises when a sentence has the same logical content as one of its simplifications.
- We generalize this to sentence-tree pairs: Q-Redundancy arises for a sentence-tree pair, if **a simplification of the sentence, yields an "equivalent" tree**.
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- The HD *Paris or France*, is then odd because its only implicit tree, is equivalent to a tree evoked by the Paris-disjunct.
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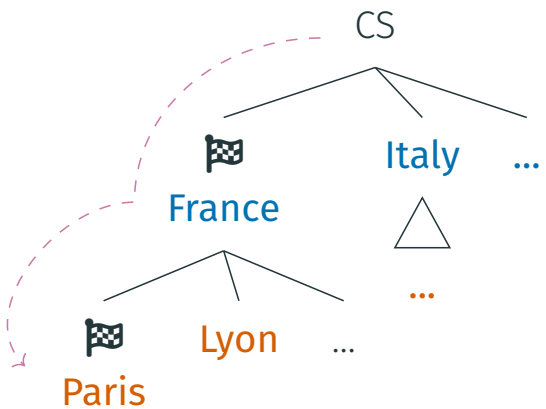

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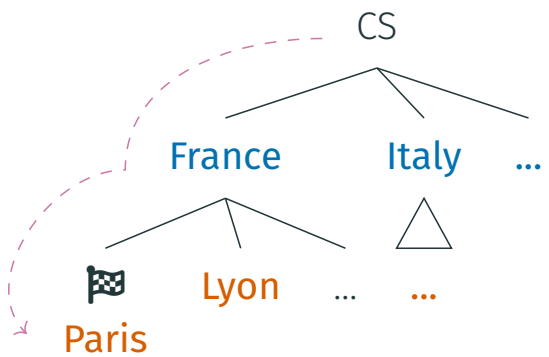

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Additional remarks about Q-Non-Redundancy

- Unlike standard Non-Redundancy approaches, Q-Non-Redundancy deems HDs odd due to their *stronger* disjunct.
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Hurford Conditionals and Relevance

The challenge of Hurford Conditionals

- HCs are logically isomorphic: both can be seen as $p \rightarrow \neg p^{+}$ with $p^{+} \vDash p$, modulo double ¬-introduction (Mandelkern & Romoli, 2018).

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a. If Jo studied in France, she did **not** study in Paris.
$p \rightarrow \neg p^{+}$ where $p^{+} \vDash p$

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$\neg p^{+} \rightarrow p \equiv \underbrace{(\neg p^{+})}_{q} \rightarrow \neg \underbrace{(\neg p)}_{q^{+}}$ where $q^{+} \vDash q$

- Put differently, *not Paris* and France play **symmetric roles**.

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Describing the contrast in HCs

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- Descriptively, (8a) and #(8b) only differ in:
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  - (ii) how antecedents and consequents are **ordered in terms of specificity**: fine-to-coarse progressions are #.
- To capture HCs, Kalomoiros (2024)'s SUPER REDUNDANCY constraint exploited (i); I exploit (ii).
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An account based on specificity: core intuition

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- (8a) talks about cities, in the France-domain defined by the antecedent. This domain fully rules out some cities, and rules in others. **Nice cut!**

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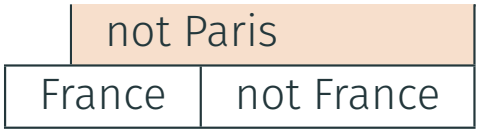

Incremental Q-Relevance

- In the current framework, conditionals "plug" a tree evoked by the consequent into the flagged leaves of the antecedent's tree.
- This operation **intersects** all nodes of the consequent's tree, with the leaf it gets plugged into.
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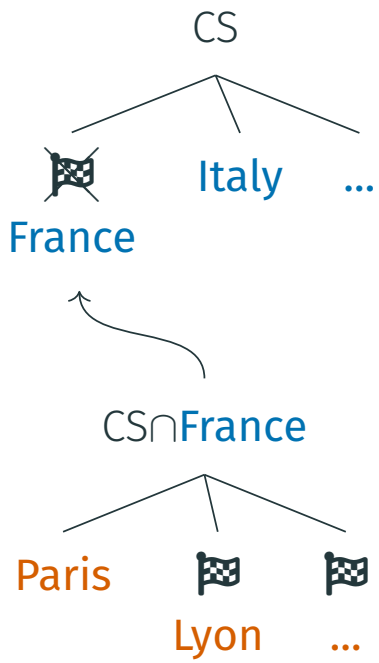

Fig. 16: A tree for *If Jo studied in France, she did **not** study in Paris.*

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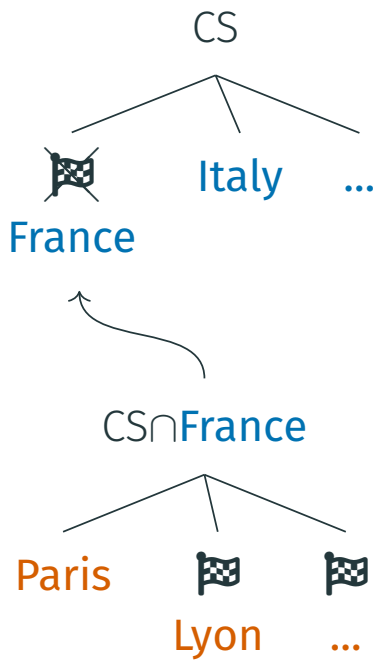

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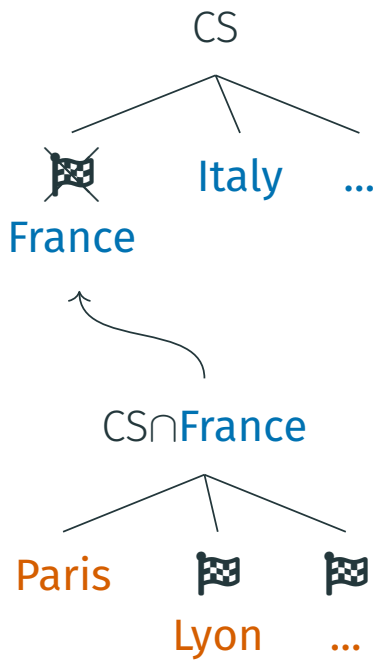

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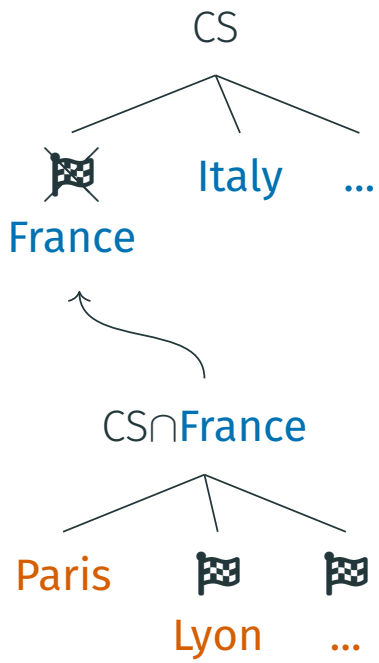

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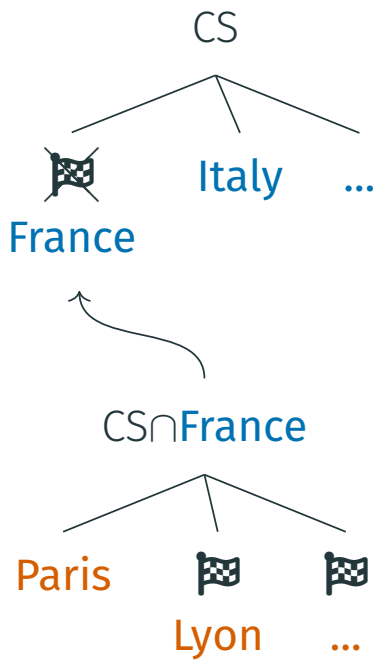

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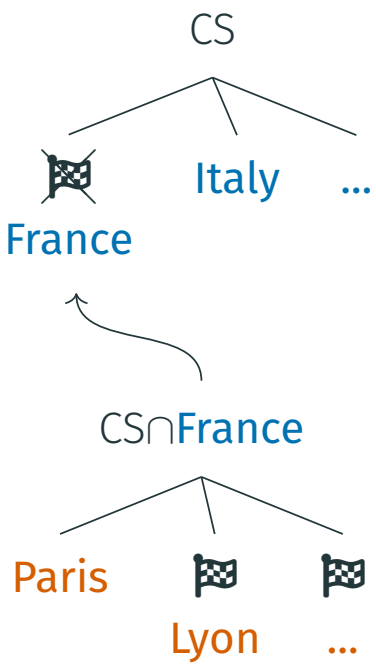

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- A city-level tree gets plugged into a France-leaf.
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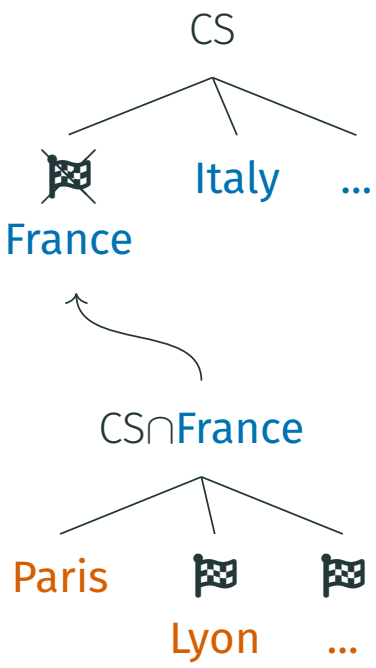

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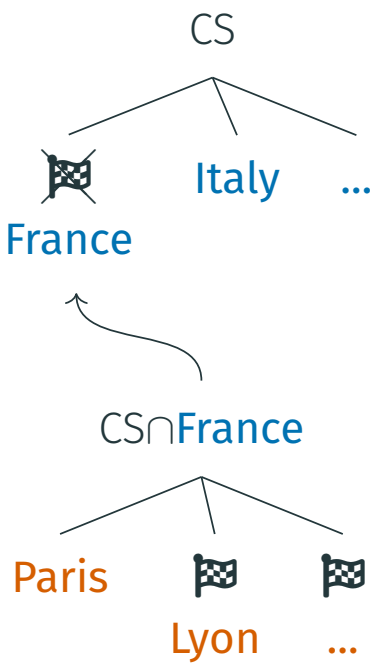

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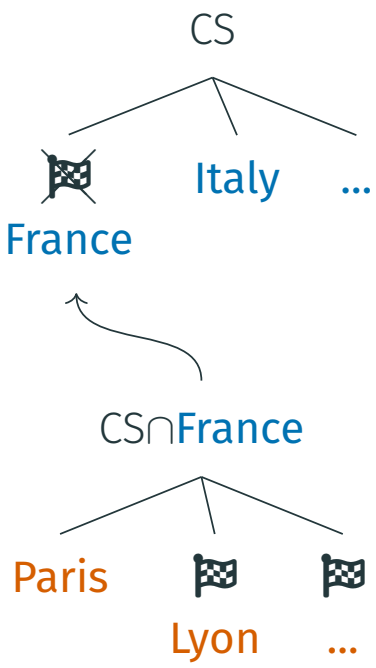

Fig. 17: A tree for *If Jo studied in France, she did **not** study in Paris*.

- A city-level tree gets plugged into a France-leaf.
- The leaves that remains are all French cities; this satisfies Incremental Q-Relevance:
  - An original leaf, e.g. Paris, is **fully retained**;
  - An original leaf e.g. Rome, is **fully excluded**.
- (8a) is correctly predicted to be good.[1]

[1] It can be shown that Q-Redundancy doesn't get in the way.

Capturing felicitous HCs

(8a) If Jo studied in France, she did **not** study in Paris.

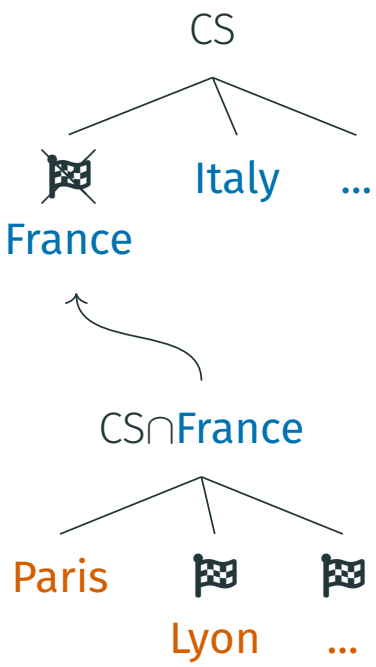

Fig. 17: A tree for *If Jo studied in France, she did **not** study in Paris*.

- A city-level tree gets plugged into a France-leaf.
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Capturing odd HCs: case 1

(8b) If Jo did **not** study in Paris, she studied in France.

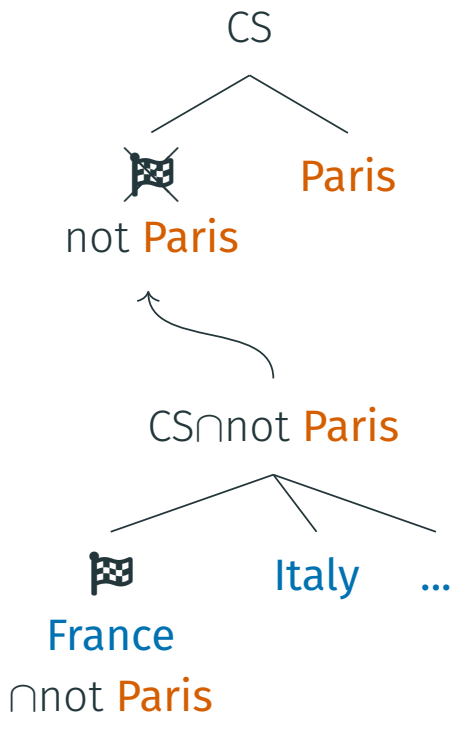
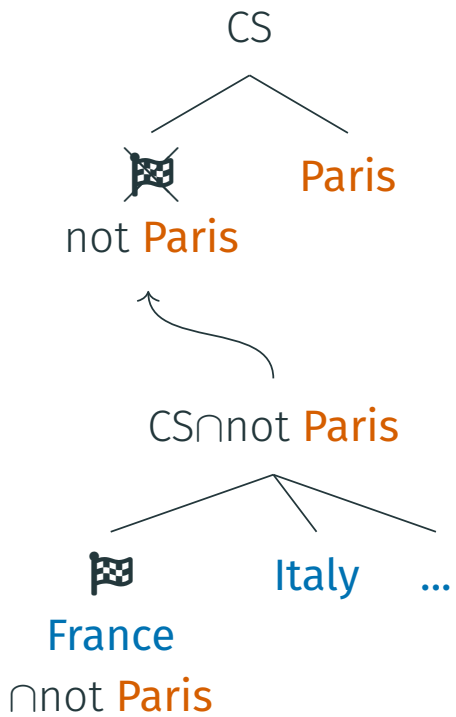


Fig. 18: A tree for *If Jo did **not** study in **Paris**, she studied in **France***.

- A country-level tree gets plugged into a *not Paris*-leaf.
- The leaves that remains are all countries, but France is intersected with *not Paris*.
- This violates INCREMENTAL Q-RELEVANCE, because none of the original leaves is **fully excluded**.
- What if we consider a by-city, "*wh*" tree for the antecedent instead?

Capturing odd HCs: case 1

(8b) If Jo did **not** study in Paris, she studied in France.



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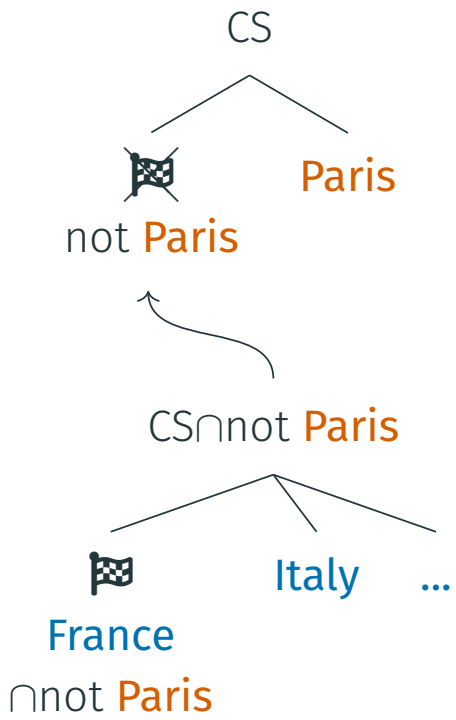

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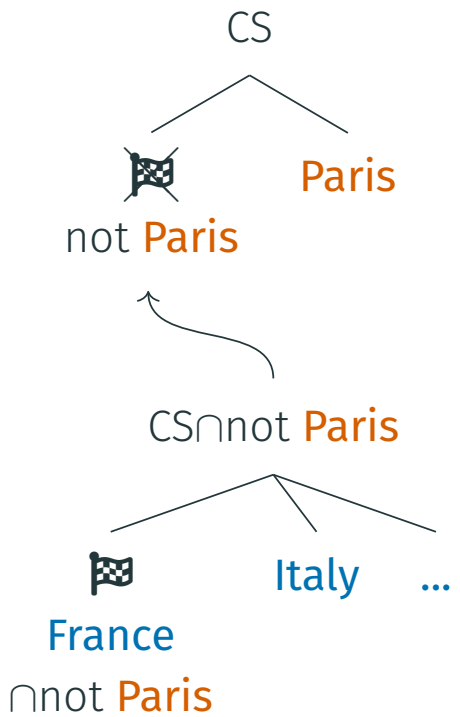

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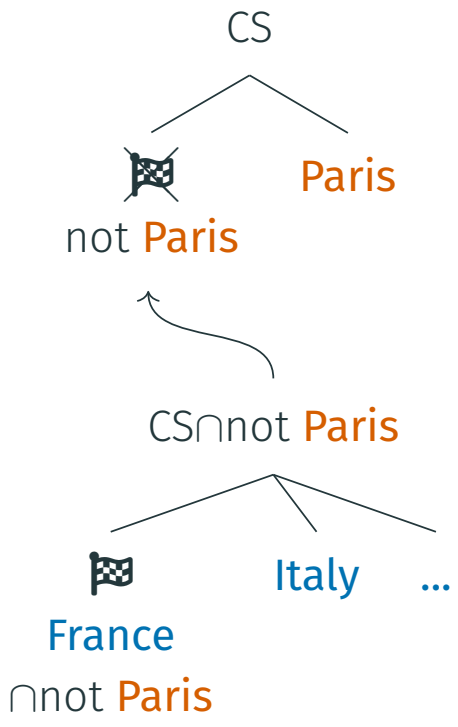

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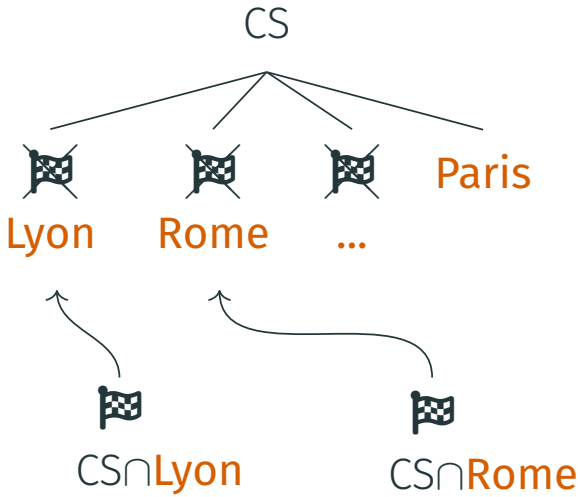

Fig. 19: A tree for *If Jo did **not** study in **Paris**, she studied in **France***.

- A country-level tree gets plugged into a *not Paris*-leaf.
- The leaves that remains are all smaller than countries – in fact they get shrunk into city-leaves.
- This violates INCREMENTAL Q-RELEVANCE, because no original leaf is **fully retained**.
- In sum (8b) is correctly predicted to be odd.[1]

[1] Considering "*wh*" trees for *not Paris* and/or polar trees for France, gets us back into Case 1 (previous slide) or Case 2 (this slide).

Capturing odd HCs: case 2

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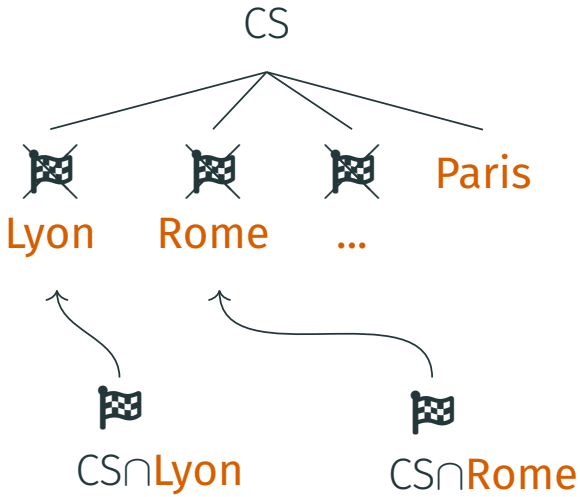

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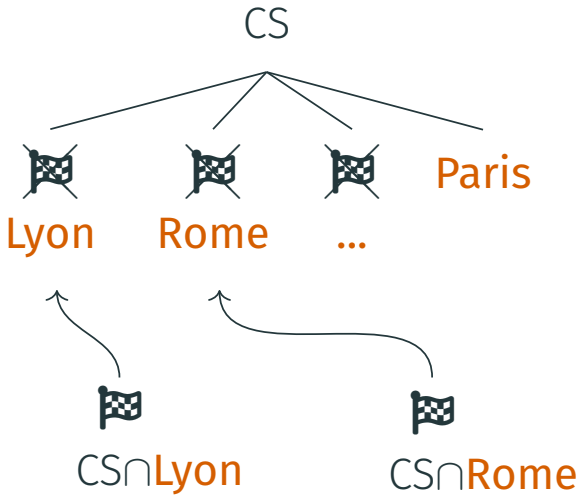

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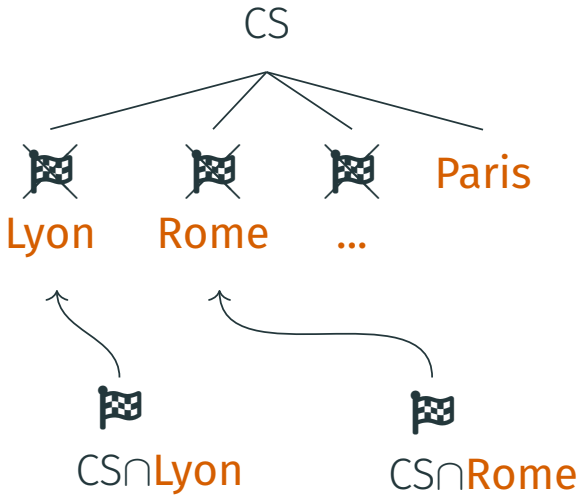

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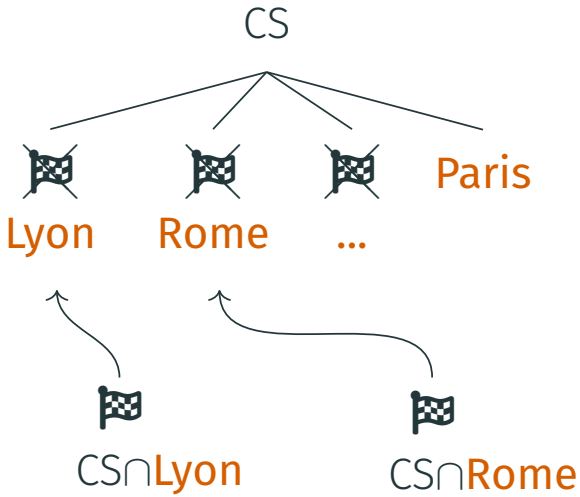

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Additional remarks about Incremental Q-Relevance

- Incremental Q-Relevance imposes that some, but not all distinctions introduced by the question being restricted, are retained; domain restrictions must be **faithful to the specificity** of the original question, but also **relevantly informative**.
- Antecedents (i.e. restrictors) that are too specific will not allow the leaves of the consequent to properly "fit" in the domain(s) they define.
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Further teasing apart specificity vs. overt negation

- Incremental Q-Relevance ends up capturing subtle asymmetries in "compatible" variants of HCs, whose oddness seems **more specificity-sensitive (in a weaker sense) than negation-sensitive**.

(16) a. # If Jo did **not** study in the Basque country, she studied in France.

b. ? If Jo did **not** study in France, she studied in the Basque country.

c. # If Jo studied in the Basque country, he did **not** study in France.

d. If Jo studied in France, she did **not** study in the Basque country.

- This further supports the current view, against Kalomoiros (2024)'s earlier view of HCs.

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Conclusion and outlook

Where we are

- I sketched a compositional model of implicit questions, and of their degree of specificity.
- This in and of itself appears to be needed to reflect deep intuitions about the dynamics of conversation.
- Existing concepts (questions-as-partitions, REDUNDANCY, RELEVANCE) were **minimally "lifted"**:
  - Partitions were made **recursive** in the form of question-trees;
  - Pragmatic constraints were rephrased to apply to sentences **and their implicit trees**.
- From this framework, I derived **oddness contrasts between sentences that approaches solely based on LFs and propositional meanings were not powerful enough to capture.**[20]

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Future directions

- Beyond the cases discussed here, the framework interacts with embedded implicatures, and the overt exhaustifier *only* in interesting ways.
- Ongoing work on:
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  - How implicit question may drive **overtness asymmetries** between competing operators.[22]
- To be further explored/fleshed out:
  - Oddness in **conjunctions**;[23]
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Thank you!

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