Oddness, logical compatibility, and granularity[1]

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Introduction

The mutual incompatibility condition

- Disjunctions featuring **compatible disjuncts** are often disfavored (Singh, 2008).

(1) *Context: Russia is partly in Asia.*
Where did Jo study?
?? In Asia or in Russia.
Suggests: Russia does not overlap with Asia

(2) *Context: cars are of different types and colors.*
What is Jo's car like?
?? A blue car or a convertible.
Suggests: convertibles cannot be blue.

(3) *Context: Kundera wrote in Czech and French.*
What is Jo reading those days?
?? A Kundera novel or a novel in French.
Suggests: Kundera never wrote in French.

- We call these constructions Compatible Hurford Disjunctions (**CHD**s), and the condition they obey Mutual Incompatibility (**MI**).

Explaining Mutual Incompatibility (MI)

(1) ?? Jo studied in Asia or in Russia.

(2) ?? Jo drives a blue car or a convertible.

(3) ?? Jo is reading a Kundera novel or a novel in French.

- Ideally, MI should be derived from the meanings of the disjuncts, the properties of disjunction, and independently motivated pragmatic principles.
- But that's tricky, precisely because the disjuncts are "simplex" and their meanings are not logically related to each other by standard relations like entailment!
- Specifically, we can quickly show that MI cannot be captured by classic approaches to oddness–whether REDUNDANCY-based or TRIVIALITY-based.

MI is not Redundancy

- One successful approach to oddness, specifically standard Hurford Disjunctions,[2] is based on Redundancy, building on Grice's **Sub-Maxim of Brevity**.[3]

(4) **Non-Redundancy**. *S* is odd if *S* is contextually equivalent to *S′*, obtained from *S* by constituent to subconstituents substitutions.

- In the case of CHDs, the only two subconstituents are the individual disjuncts, each of them being strictly stronger than the entire CHD. So CHDs are not redundant.
- Therefore, **MI is not a matter of Redundancy**.[4]

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[2] Hurford, 1974.

[3] Grice, 1975.

[4] This extends to more sophisticated Redundancy-based approaches (Katzir & Singh, 2014; Kalomoiros, 2024), due to the structural opacity of CHDs.

MI is not Triviality

- Another prominent approach to oddness builds on **Local Contexts**.[5]

(5) **Non-Triviality** (Mayr & Romoli, 2016). *S* is odd if *S* contains a constituent entailed or contradicted by its Local Context.

- In disjunctions, a disjunct's Local Context is standardly taken to be the negation of the other disjunct.[6]
- But in CHDs, interpreting either disjunct granted the negation of the other is not trivial, given the tw disjuncts merely overlap.
- So **MI is not a matter of local triviality**.

[5] Schlenker (2009) i.a.

[6] Whether Local Contexts are computed symmetrically in disjunctions is debated; assuming symmetry to give Non-Triviality its best shot does not help.

Additional challenge: conditionals

- "Changing" disjunctions into conditionals via the or-to-if tautology ($A \vee B \equiv \neg A \rightarrow B \equiv \neg B \rightarrow A$), à la Mandelkern and Romoli (2018) modifies the judgments in unexpected ways.[7]

(6) a. ? If Jo didn't study in Asia they studied in Russia.

b. ?? If Jo didn't study in Russia they studied in Asia.

- We call these conditionals Compatible Hurford Conditionals (**CHC**s).
- We only see an improvement when the consequent conveys an intuitively "finer-grained" idea than the antecedent. We call this condition **Increasing Granularity (IG)**.
- IG is also a challenge for REDUNDANCY and TRIVIALITY-based approaches to oddness, essentially because *Asia* and *Russia* play symmetric roles at a strictly logical level.

[7] Even if conditionals are not seen as material, the contrasts here require an independent explanation.

IG is not Redundancy

- Let's focus on (6a).

(6a) ? If Jo didn't study in Asia they studied in Russia.

- Potential simplifications of (6a) are *Jo studied in Asia*, *Jo didn't study in Asia*, *Jo studied in Russia*, and *If Jo studied in Asia they studied in Russia*.
- None of these sentences are equivalent to (6a), so (6a) should be felicitous...so far so good.
- But because *Russia* and *Asia* play completely symmetric roles, (6b) should be equally felicitous...no good!
- This problem extends to more sophisticated REDUNDANCY-based approaches.[8]

[8] Kalomoiros (2024) i.a.

IG is not Triviality

- Let's focus on (6a).

(6a) ? If Jo didn't study in Asia they studied in Russia.

- Conditionals are often assumed to give rise to Local Contexts left-to-right, s.t. the Local Context of the antecedent is the Global Context, and Local Context of the consequent entails the antecedent.
- Saying *Jo studied in Russia* given *Jo studied in Asia* is neither contradictory (most of Russia in in Asia!) nor trivial (not all of Asia is Russia!). So (6a) should be felicitous...so far so good.
- But because *Russia* and *Asia* play completely symmetric roles, (6b) should be equally felicitous...no good!

Taking stock

- Non-Redundancy and Non-Triviality fail to capture CHDs and CHCs, predicting felicity across the board.
- How to account for CHDs, and what's special about CHCs that causes a contrast between (6a) and (6b)?
- Let's discuss intuitive ways forward.

Core intuitions regarding disjunctions

- Merely overlapping propositions raise **orthogonal issues**: answering the first issue does not always answer the second one and vice versa.

(1) ?? Jo studied in Asia or Russia.

- Disjunction (set union) is a **unifying operation preventing orthogonal issues to be raised by their disjuncts**.[9] This will derive MI and across the board oddness in the disjunctions at stake.
- (1) for instance is odd because *Asia* and *Russia* cannot be seen as raising the same unified *where?* issue.

[9] Intuitions already entertained in e.g. Simons (2001) and Westera (2018).

Core intuitions regarding conditionals

(6) a. ? If Jo didn't study in Asia they studied in Russia.

b. ?? If Jo didn't study in Russia they studied in Asia.

- Conditionals are **restrictions**: their consequent is understood in the worlds compatible with the antecedent.
- As such, conditionals allow for orthogonal antecedent and consequent, as soon as **the restriction they induce on raised issues meets specific relevance constraints**.
- This will derive the contrast in (6).
- Essentially, (6a) is fine because *Russia* raises an issue (about countries) whose restriction to the *not Asia* worlds makes sense.
- And (6b) is out because their consequent (e.g. *Asia*) does not raise an issue whose intersection with the antecedent (e.g. *Russia*) makes sense.

Roadmap

- Evoked questions
- Deriving Mutual Incompatibility in disjunctions
- Deriving Increasing Granularity in conditionals
- Further discussions
- Conclusion

Evoked questions

TL;DR Merely overlapping propositions raise orthogonal questions

Questions

- Questions are standardly interpreted as the set of their possible answers (propositions called *alternatives*[10]). Alternatives are grouped by some notion of **specificity**.
- The Context Set (**CS**) refers to the set of worlds compatible with the premises of the conversation.[11]
- Alternatives induce a partition of the CS,[12] obtained by grouping into **cells** the worlds of the CS that agree on all the alternatives that the question denotes.
- We'll call **Question (under Discussion** [13]**)** a partition induced by a **maximal set of same-specificity alternatives**, e.g. continent- or country-level ones.

Which continent?	South America		Europe		**Asia**			Africa		...
Which country?	...	Brazil	France	...	**Russia**	Japan	...	Ghana	...	...

[10] Karttunen (1977) i.a.
[11] Stalnaker (1974) i.a.
[12] Groenendijk and Stokhof, 1984.
[13] van Kuppevelt (1995), Büring (2003), and Roberts (2012) i.a.

Answers to a question

- Given a question Q (partition of the CS), a proposition p is a **maximal answer** if its intersection with the CS coincides with a cell of Q.
- It is a **non-maximal answer** if its intersection with the CS corresponds with a proper union of cells (more than 1 cell).

Relevance to a question

- Given a question Q (partition of the CS) and a proposition p, one can assess how **relevant** p is to Q. Two prominent view:

(7) **Lewis's Relevance** (Lewis, 1988). p is relevant to Q if p is a union of some members of Q. Contextual contradictions and tautologies are Lewis-Relevant.

(8) **Roberts's Relevance** (Roberts, 2012). p is relevant to Q if intersecting each cell of Q with p produces at least one empty set (i.e. p rules out at least one cell of Q). Contextual contradictions and "sub-cells" are Roberts-Relevant.

- These two definitions agree on the fact that cells (maximal answers) and non-empty/non-trivial unions of cells (non-maximal answers) are relevant.

Accommodating questions from assertions

- When processing an assertion, one attempts to figure out **which exact question it's relevant to**.[14]
- If it's impossible to figure out a question (a proper partition of the CS), then the assertion is deemed odd.
- Core assumption: **assertions evoke questions induced by same-granularity alternatives**.
- As a result, two merely overlapping propositions will often evoke questions with at least a pair of merely overlapping cells. We call those **orthogonal questions**.

[14] If a clear overt question is provided and the proposition is relevant to it, this may not be needed. If the question is underspecificed (like *where*) or absent, this becomes crucial.

Questions accommodated from complex assertions

- When processing a complex assertion (involving operators/connectives) relevant questions are **accommodated compositionally**, based on the sentence's atomic components, and the semantics of the operators/connectives combining them.
- Disjunction unions the questions (sets of cells) evoked by its disjuncts (and **checks the result is also a question**, i.e. a partition of the CS!).
- Roughly, conditionals restrict the question evoked by the consequent to the local CS compatible with the antecedent. **This has to be done "relevantly"**.
- This difference between disjunctions and conditionals will help us derive Mutual Incompatibility in disjunction and Increasing Granularity in conditionals.

Deriving Mutual Incompatibility in disjunctions

TL;DR Disjunctions of merely overlapping proposition cannot evoke well-formed questions

MI as failure to form a partition

- For concreteness let's assume *Asia* and *Russia* evoke the *which continent?* and *which country?* questions below.

Which continent?	South America		Europe		**Asia**			Africa		...
Which country?	...	Brazil	Asia	...	**Russia**	Japan	...	Ghana	...	...

- Deriving a question for the disjunction amounts to forming the union of the above partitions (union of cells)...not a partition!

South America	Europe	**Asia**	Africa	...	Brazil	France	**Russia**	...
One Full Context Set					Another full Context Set			

- The problem persists if *Asia* and *Russia* are taken to evoke different partitions; as long as the partitions involve an *Asia* and a *Russia* cell, respectively.[15]
- This extends to the car and French novel scenarios.

[15] More generally even, the problem persists if disjunctions are thought to create "nested" partitions, i.e. allow for their disjuncts to raise questions that stand in relation of refinement.

Interim summary

- CHDs are out, due to the mere logical compatibility of the disjuncts, the semantics of disjunction, and the nature of well-formed questions.
- This may explain a specific pattern of repairs in CHDs.

(9) a. Jo studied in Russia or somewhere (else) in Asia.

b. # Jo studied in Asia or somewhere (else) in Russia.

- In (9a), *somewhere* presumably increases the degree of granularity of the *Asia*-related question, to match that of *Russia*, in turn making the two questions **properly disjoinable**.
- In (9b), *somewhere* increases the degree of granularity of the *Russia*-related question, which fails to reduce the partition mismatch with the *Asia*-related question.

Interim summary

- Under ur view, no extra pragmatic principle akin to Non-Redundancy or Non-Triviality is needed.
- This implies that, if the context of utterance forces the accommodation of specific questions, CHDs should improve.[16]

(10) *Scenario: linguistics students from Asia tend to have a good amount of experience with fieldwork, and students from Russia, extensive experience. Al needs help from a good fieldworker. We are not sure if Jo studied in Moscow, Novosibirsk, or Beijing.*
Jo studied in Asia or Russia.

- In (10), it seems the entire disjunction is understood as a felicitous answer to *Is Jo a good fieldworker?* I.e. the computation of an ill-formed partition is avoided.

[16] Example designed after discussions with Luisa Martí and Nina Haslinger.

Deriving Increasing granularity in conditionals

TL;DR Conditionals can recruit merely overlapping propositions as soon as the antecedent is somewhat relevant to the issue raised by the consequent.

Conditional questions

- Conditionals **restrict the question evoked by their consequent** using the cells evoked by their antecedent and verifying it.
- This amounts to intersecting each cell of the consequent's question with the cells of the antecedent's question verifying the antecedent, filtering out resulting empty cells.

(6) a. ? If Jo didn't study in Asia they studied in Russia.

South America			Europe				~~Asia~~	Africa		...
Brazil	...	South American French territories	European France	Germany	...	European Russia	~~Asia~~	Ghana	...	..

b. ?? If Jo didn't study in Russia they studied in Asia.

Brazil	France			Germany	~~Russia~~	Japan	Ghana	...
Brazil	European France	South American French territories	...	Germany	~~Russia~~	Japan	Ghana	...

- This intersection operation is quite similar to what happens when an overt question gets tentatively answered by a assertion.

Conditional questions are subject to Relevance

- Conditional questions are produced by intersection, **performed "relevantly" in a Lewis-Roberts hybrid sense**.

(11) **Incremental Q-Relevance**. The intersection operation forming conditional questions must be relevant in the following sense:
   - One cell of the consequent's question must be fully preserved (∼Lewis).
   - One cell of the consequent's question must be fully filtered (∼Roberts).

- Key intuition: restricting the consequent's question based on the antecedent must **retain some original structure, but also be informative** (i.e. rule out one relevant eventuality).
- I used this constraint in previous work to capture Hurford Conditionals.[17]

[17] Mandelkern and Romoli, 2018.

Deriving IG: felicitous case

(12) Jo studied in **Russia**

Which country?	...	Brazil	Asia	...	**Russia**	Japan	...	Ghana	...	...

(6) a. ? If Jo didn't study in **Asia** they studied in **Russia**.

South America			Europe				~~Asia~~	Africa		...
Brazil	...	South American French territories	European France	Germany	...	European Russia	~~Asia~~	Ghana	...	..

- In the conditional question (second Table), the Germany cell (present in the first Table) is **fully preserved** (among others).
- In the conditional question (second Table), the Japan cell (present in the first Table) is **fully ruled out** (as Asia is fully ruled out).
- The conditional question in (6a) if thus formed *via* a relevant intersection/restriction operation.

Deriving IG: odd case

(13) Jo studied in **Asia**

Which continent?	South America	Europe	**Asia**	Africa	...

(6) b. ?? If Jo didn't study in **Russia** they studied in **Asia**.

Brazil	France			Germany	~~Russia~~	Japan	Ghana	...
Brazil	European France	South American French territories	...	Germany	~~Russia~~	Japan	Ghana	...

- In the conditional question (second Table), none of the cells present in the first Table are fully preserved–they were too coarse![18]
- The conditional question in (6b) is therefore not formed *via* a relevant intersection operation.

[18] Had *not Russia* been evoking a polar partition instead, the issue would have been that no cell of the *Asia*-partition gets filtered out by intersection–whether this partition is taken to be continent-level or polar.

Conclusions on IG

- Unlike CHDs, the asymmetric felicity profile of CHCs calls for an extra pragmatic principle, Incremental Q-Relevance.
- This principle derives the desired asymmetry by **"piggybacking" on the asymmetric behavior of conditional questions**, which restrict the consequent's question to a Context Set (i) intersected with the antecedent, and (ii) already partitioned by it.
- Again, the pattern of repairs in CHCs advocates for this kind of view: *somewhere in* leads to improvements only when it establishes IG.

(14) a. ? If Jo didn't study somewhere in Asia they studied in Russia.

b. ? If Jo didn't study in Russia they studied somewhere in Asia.

c. If Jo didn't study in Asia they studied in somewhere in Russia.

d. ?? If Jo didn't study in somewhere in Russia they studied in Asia.

Taking stock

- Compatibility is dispreferred in disjunctions because it **prevents the derivation of a unified question** whose granularity would somehow match those of the disjuncts.
- Compatibility can be fine in conditionals, as soon as **the antecedent evokes a question that relevantly restricts the consequent's question**, in a way that's reminiscent of how assertions should address overt questions.

Taking stock

- These conditions were derived from **key intuitions about disjunctive and conditional questions**. They are maintained when atomic propositions like *Jo studied in Russia* are taken to evoke different (e.g. polar) partitions.[19]
- These conditions may be suspended when disjunctions and conditionals answer fully specific overt questions, in which case the propositional content of these assertions may be simply checked for standard relevance.
- Let's now move on to investigate a few more related cases: flipped negation, fully orthogonal partitions.

[19] However, it's crucial that the issues raised by propositions are more structured than simply downward-closed, as proposed in Inquisitive Semantics (Ciardelli 2009; Ciardelli et al. 2018 i.a.)

Flipping negation in conditionals

Flipping negation in CHCs

- Flipping the position of negation in (6), again à la Mandelkern and Romoli (2018), somehow sharpens the original contrast.[20]

(6′) a. If Jo studied in Asia they did not study in Russia.

b. # If Jo studied in Russia they did not study in Asia.

- Put differently, IG seems active in CHCs, regardless of the positioning of negation.

[20] Note the resulting conditionals are no longer equivalent to plain CHDs *via* the *or*-to-*if* tautology; instead, the tautology makes them equivalent to disjunctwise-negated CHDs, of the form *not Asia or not Russia*.

Flipping negation in CHCs

(6′) a. If Jo studied in Asia they did **not** study in Russia.

b. # If Jo studied in Russia they did **not** study in Asia.

- The restricted partition obtained for (6′a) preserves the *Japan* cell and rules out e.g. the *Germany* cell from the consequent's original partition. (6′a) is thus felicitous.

Asian part of Russia	Japan	China	...

- The restricted partition obtained for (6′b) does not preserve any cell from the consequent's original partition! (6′b) is thus odd.

Russia

- The fact the contrast is amplified may be due to the obvious triviality of (6′b)'s final partition.

Orthogonal partitions

Deriving oddness when granularity is “non-monotonic”

- In the *Russia-Asia* example, intuitions regarding specificity are pretty crisp. Let’s come back to the car example, with a more defined scenario.

(15) Scenario: car manufacturer Drof sells vans, pickups, sedans and convertibles. There is a very restricted set of possible colors for each car. Vans can be white, green or blue; pickups, white, red or blue; sedans, white, red or green; and convertibles red, green or blue. We are wondering what kind of car Jo bought at Drof yesterday.

a. # If Jo didn’t buy a blue car, they bought a convertible.

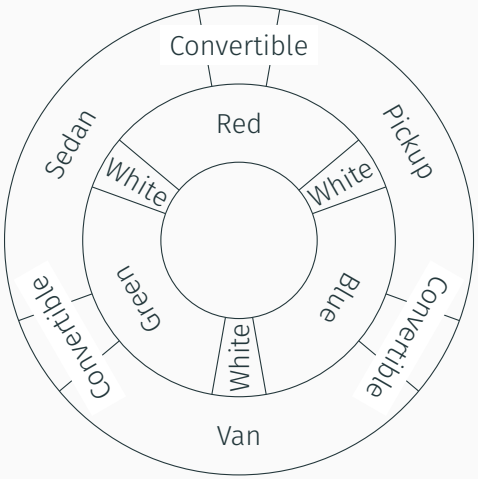
b. # If Jo didnt’ buy a convertible, they bought a blue car.

- In (15), it’s unclear whether color raises an intuitively more fine-grained question than type of car or vice versa. The sentences are odd without further justifications.
- Does Incremental Q-Relevance derive oddness when the evoked partitions are completely orthogonal?

Deriving oddness when granularity is “non-monotonic”

- In line with the scenario, we consider the perfectly symmetric color and type “donut” partitions below and focus on (15a).

(15a) # If Jo didn’t buy a blue car, they bought a convertible.



- Intersecting the car type partition with the *not blue* cells yields the partition in the Table below.
- It’s easy to see that this partition does not fully preserve any of the consequent’s original car type cells, leading to oddness.
- Same holds for (15b) swapping the roles of the color and car type partitions (symmetric).

red convertible	red pickup	white pickup	white van	green van	green convertible	green sedan	white sedan	red sedan

Flipping negation when granularity is non-monotonic

- What happens when we attempt to “flip” the position of negation in te car example?
- Flipping the position of negation overall improves (15).

(15′) a. ? If Jo drives a **blue car**, they don’t drive a **convertible**.

b. ? If Jo drives a **convertible**, they don’t drive a **blue car**.

- The restricted partition obtained for (15′a) rules out the *sedan*-cell from the consequent’s original partition, but does not fully preserve any cell (since pickups, convertibles and vans can be other colors than blue). So Incremental Q-Relevance should be violated, and the conditional should be odd…

blue pickup	blue convertible	blue van

- I don’t have a good alternative explanation for (15′a) (and for (15′b), which behaves similarly by symmetry).

Another undergeneration issue

(15′) Scenario (same as (15)): car manufacturer Drof sells vans, pickups, sedans and convertibles. There is a very restricted set of possible colors for each car. Vans can be white, green or blue; pickups, white, red or blue; sedans, white, red or green; and convertibles red, green or blue. We are wondering what kind of car Jo bought from Drof yesterday.

a. If Jo didn't buy a **white car**, they bought a convertible.

b. If Jo didnt' buy a convertible, they bought a **white car**.

- In (15′) the questions are as orthogonal as before, but convertibles are never white, which seems to make (15a) and (15b) okay.
- This suggests that whatever constraint such conditionals obey should incorporate, not only evoked partitions, but also the actual meaning of the antecedent and consequent.

General conclusion

- Our account of Compatible Hurford Disjunctions and Conditionals **relocates oddness issues in the *partitions* (questions) evoked by these constructions**.
- In the disjunctive case, no well-formed partition can be produced, but context may help alleviate oddness by providing alternative "ready-to-use" partitions.
- In the conditional case, the *way* partitions are computed violates a new RELEVANCE constraint, typically when the consequent's question does not properly refine the antecedent's question.
- This extends to Hurford Conditionals featuring *entailing* proposition, like *Paris* and *France*, instead of *Russia* and *Asia*.
- Cases that we fail to capture suggest that **at-issue meanings may interact with partitions in subtle ways** to create (or alleviate) oddness.

Thank you!

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