

Scope without Syntax

Towards a Game Theoretic Approach

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 - ▶ Many others – numerals, much, many, few, etc.
- For the purposes of sentence interpretation, quantifiers are quite a puzzle. Especially when there are multiple quantifiers in a sentence, a sentence may become ambiguous.

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- In the second, we say that the \exists takes wide scope over the \forall .

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 - ▶ Sensitive to linear order

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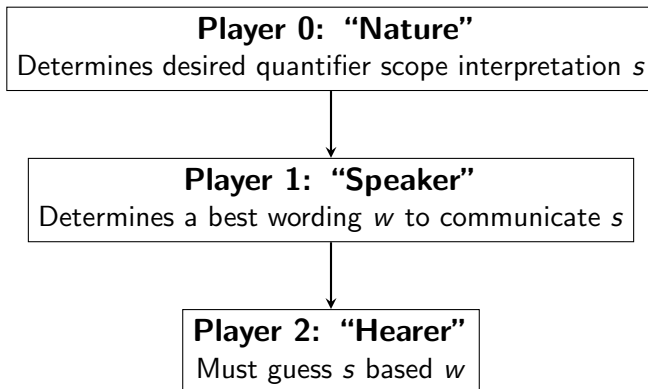
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- This can allow us to formally analyze an apparent “functional” alternation.

The Game



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(2) Billy ate most of the chocolates.

- Sentences like this in actual language are inferred to mean that Billy ate most *but not all* chocolates, although the sentence is logically still true if he did.
- However speakers *assume* Billy didn't eat *all* the chocolates because if that were true, a speaker probably would've said so.

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- Scrambling (to be discussed later), as opposed to transformations are not similarly costly.

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- Here, the strongly preferred reading is the one where there is a pair of men for each hole ($\forall > \exists$), while the case where there is two specific men for each hole is harder to get out of the blue.

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- If the Speaker employs passive voice, he suffers a slight loss p .
- $|p + i| < |x|$ That is, even if we have to passivize and get inverse scope interpretation, it's always most preferable to get the intended interpretation.

The Decision Tree

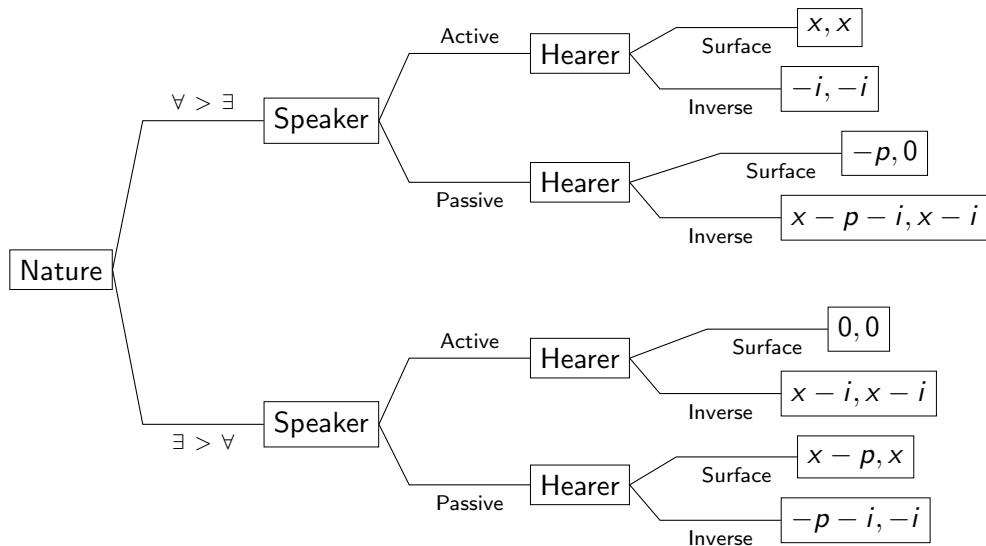


Figure: Decision Flow of the Game of "Everybody loves somebody"

Matrix for when Nature chooses $\forall > \exists$

		Speaker	
		Active	Passive
Hearer	Surface	x x	$-y$ 0
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- However, both of these sentences *must have* **surface scope**. They cannot be ambiguous.

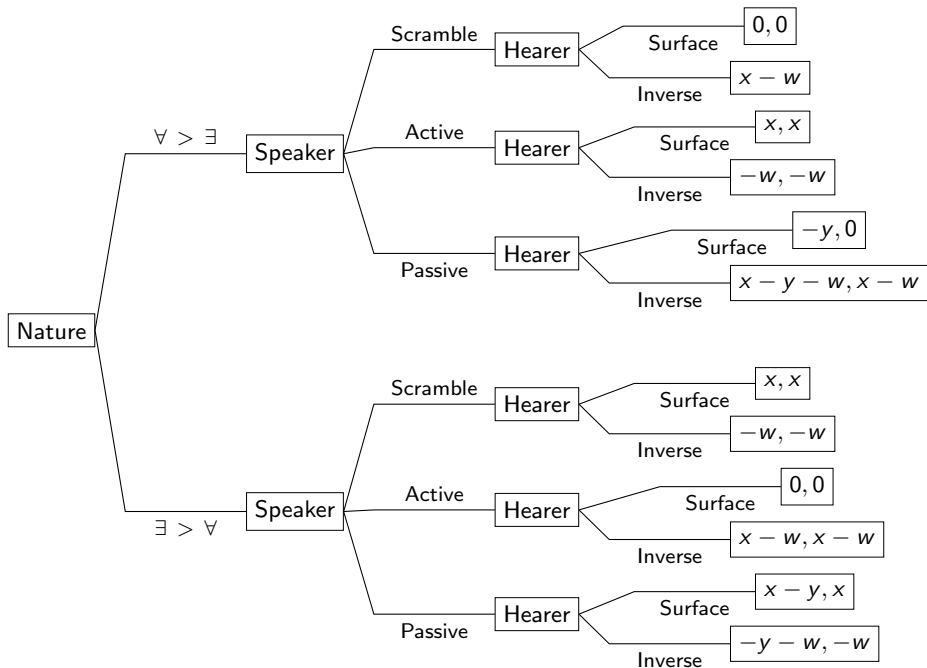
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- Remember, **surface scope** is preferred and **transformations** are costly.



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- These two possibilities produce scope ambiguity.

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- **Sidenote:** Potentially related, languages with scrambling/flexible word order, usually rely on things like passivization less often.

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- This holds in similar languages with scrambling and stable negation location (e.g. Korean).

Rigidity = Ambiguity; Flexibility = Unambiguousness

- The general theorem that arises from this analysis is that *wherever* we have syntactic flexibility, we have ambiguity (and *vice versa*.)
- This difference, in agreement with our theory, is true *across constructions*, not necessarily *across languages*.
- “Scrambling” languages are unambiguous in normal sentences, but are in more rigid constructions, ambiguity arises.
 - ▶ This is because the ambiguity is not a language-specific parameter, but a result of the strategies employable in any given context.

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Goals and Intuitions

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- Replace generative notions of syntactically-determined quantifier scope ambiguities with more plausible, externally-driven factors.
- Unify this account with other scope alternations (say, the unavailability of semantically implausible scope interpretations) into a general theory of scope where possible interpretations are *pruned*, rather than derived by some syntactic engine.