Towards a Formal Description of NPI Licensing Patterns

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Negative Polarity Items

Based on Giannakidou and Zeijlstra's (2016) definition:

Definition 1 *An expression α is a negative polarity item, if it is not licensed in positive declarative clauses, but it is licensed in their negative counterpart.*

(1) a. * John has read anything.
  b. John hasn't read anything.

Cross-linguistic patterns

	Negation must c-command NPI	Local licensing required
English	yes	no
Hungarian	no	yes

Table 1: Summary of English and Hungarian NPI patterns.

English

(2) a. John didn't see anybody.
  b. *Anybody didn't see John.
  c. *Nobody's children saw anybody.
  d. [John didn't think [that Charlie saw [that Mary stole anything.]]]

(3) a. $\texttt{c-com}(x,y) \equiv \neg(x \triangleright^+ y) \wedge x \not\approx y \wedge \forall z[z \triangleright^+ x \rightarrow z \triangleright^+ y]$
  b. English NPI-licensing constraint:
  $\forall y[\texttt{NPI}_{\texttt{eng}}(y) \rightarrow \exists x[\texttt{c-com}(x,y) \wedge \texttt{neg}_{\texttt{eng}}(x)]]$

Hungarian

(4) a. Jancsi nem látott senkit.
  Jancsi NEG saw NPI.ACC
  'Jancsi didn't see anybody.'
  b. Senki nem akart el jönni.
  NPI NEG want.PST PRT come.INF
  'Nobody wanted to come.'
  c. * Jancsi nem tudta, hogy Mari semmit olvasott.
  Jancsi NEG knew that Mari NPI.ACC read
  'Jancsi didn't know that Mari read anything.'

(5) a. $\texttt{closest-CP}(x,y) \equiv \texttt{CP}(x) \wedge x \triangleright^* y \wedge \neg\exists z[\texttt{CP}(z) \wedge x \triangleright *+ z \wedge z \triangleright^* y]$
  b. Hungarian NPI-licensing constraint:
  $\forall(y)[\texttt{NPI}_{\texttt{hun}}(y) \rightarrow \exists(x,z)[\texttt{closest-CP}(x,y) \wedge \texttt{closest-CP}(x,z) \wedge \texttt{neg}_{hun}(z)]$

Generalized TSL-2 Trees

- Trees that are strictly 2-local over **dominance**: $TSL_2^{\triangleright}$

$G = \langle T, T_{Cat}, H, \gamma \rangle$, where:

- $T \subset \Sigma$ is the finite set of tier-nodes
- $T_{Cat} = (T \cap \Sigma_{Cat})$
- H is a set of string-based grammars
- $\gamma : T_{Cat} \times H$ is a bijection that maps every node labeled $\kappa \in T_{Cat}$ to a string-based grammar $h \in H$

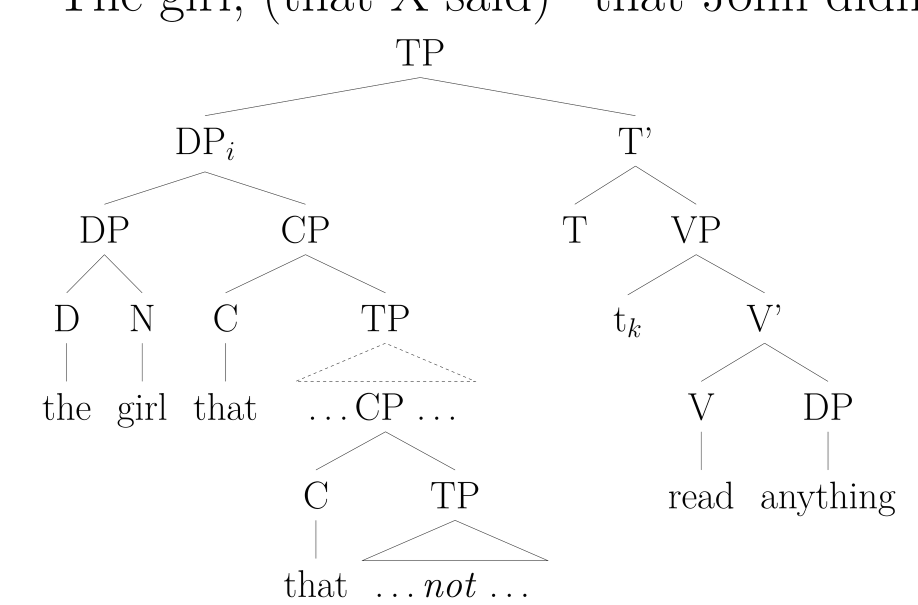
Figure 1: Grammar of tier-trees

- For definitions of subregular string languages, see Heinz et al. (2011), Rogers and Pullum (2011), and Rogers et al. (2013)

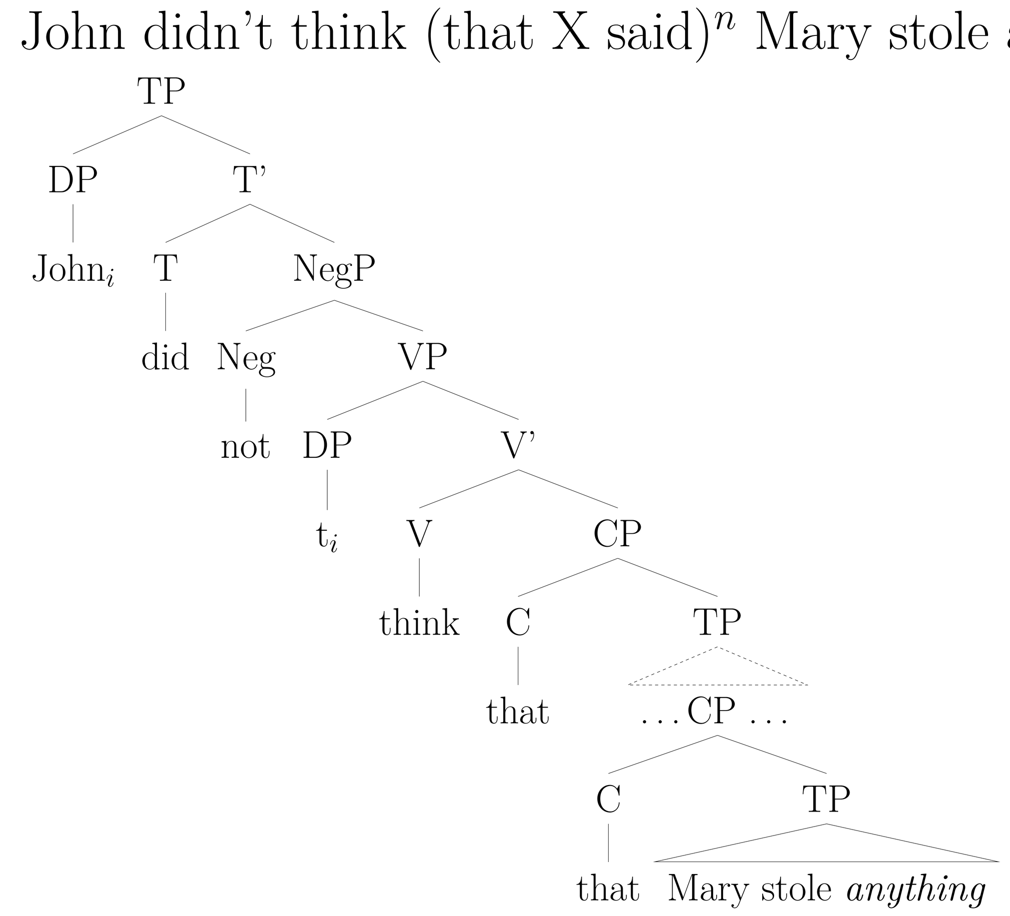
English NPI-licensing

- English NPI-licensing is NOT $TSL_2^{\triangleright}$, because c-command cannot be described with it. There is no definable tier that
  - Discriminates between (6) and (7), AND
  - Results in tier-tress of *finite* depth

(6) *The girl, (that X said)^n that John didn't see, read anything.



(7) John didn't think (that X said)^n Mary stole anything.



Hungarian NPI-licensing

- Hungarian NPI-licensing is $TSL_2^{\triangleright}$
  - T={$\texttt{neg}_{hun}$, $\texttt{NPI}_{hun}$, CP}
  - T_{Cat} = {CP}.
  - h_{CP} (the string-language dominated by CP) is Locally Testable, and NOT SL or TSL
    - It is NOT Strictly Local or Tier-based Strictly Local:
    If h_{CP} were SL, we would be able to ban a set of k-factors to successfully exclude the ill-formed trees. This is not possible for any k. For any k-factor that successfully bans a string of k-length that consists of only NPIs, there is a well-formed string of length $k+1$, whose $k+1$-th member is $\texttt{neg}$.
    - It is Locally Testable
    (8) $h_{CP} = (\forall x \exists y)[\texttt{NPI}_{hun}(x) \rightarrow \texttt{neg}_{hun}(y)]$

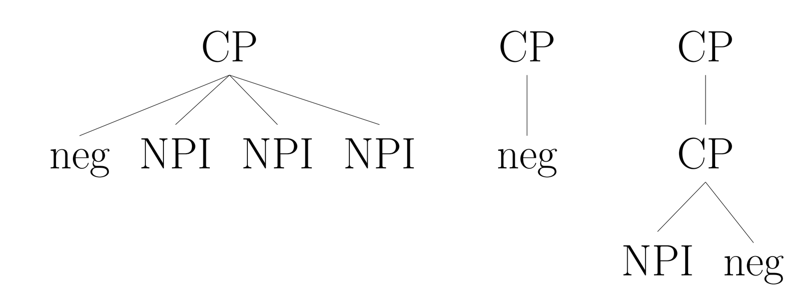


Figure 2: Well-formed tier-trees for Hungarian NPI-licensing

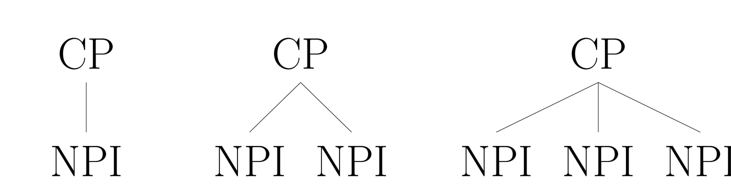


Figure 3: Ill-formed tier-trees for Hungarian NPI-licensing

Conclusions

- Defined $TSL_2^{\triangleright}$, a tree language that is TSL_2 over dominance, and undefined over precedence relations
- Implicational rules in syntax cannot be described with TSL tree-languages in the sense of Graf and Heinz (2015)
- Showed that Hungarian is $TSL_2^{\triangleright}$, with LT string-language over precedence relations in the tier-tree
- English is not $TSL_2^{\triangleright}$

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