Some formal conditions on logical syntax
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A. Evidence for an informationally encapsulated syntactic component (FLN) is usually attained by comparing the expressive power of all subcomponents of the system, followed by identifying features characteristic of natural language for which only FLN provides a model. Two of the strongest criteria establishing ontological grounding for FLN along these lines are based on the two hypotheses that (i) information is computed procedurally in terms of *derivations* (Hyp1) and that (ii) there are *purely formal restrictions* on the manipulation of symbols (Hyp2). I will present new evidence in support of these two hypotheses from phenomena that intersect at the syntax-semantic interface. The argument for Hyp1 comes from a radical case of rule opacity (**B**) while Hyp2 is supported by the observation that DP-interpretation is co-determined by conditions that are purely syntactic in nature and can therefore not be expressed by semantic rules (**C**). The two studies converge in that they present two possible continuations of a single syntactic environment, viz. subextraction out of displaced nodes.

B. *Duke of York* (DoY; Pullum 1976) constellations follow the tripartite format A → B → A: input A is mapped to B, some operation targets B, and the derivation returns to the initial state A, rendering all computations on B opaque. DoY conspiracies constitute one of the strongest known type of argument for derivations - but have proven elusive so far. It is submitted that the German relative clause (1) instantiates such a rare DoY. (1) involves three ingredients: (i) a relative pronoun (das_3/'which$_3$') which pied-pipes an infinitival CP and covertly raises to its scope position (von Stechow 1996); (ii) two interveners in the shape of a negative quantifier (*keiner*/'nobody'; Beck 1996) and the degree particle *genau*/'exactly' which have been shown to block silent pronoun movement (Sauerland and Heck 2003); and (iii) two safeguards (the NPI *auch nur NP*/'even a single NP' and the bound variable pronoun *his$_1$*) which secure reconstruction of CP below the negative intervener *nobody*.

(1) etwas [[$_{CP}$ [$_{PP}$ über (***genau**) das$_3$] [auch nur mit einem seiner$_1$ Freunde]$_{NPI}$ zu sprechen]]$_2$
something   about (exactly) which$_3$ [even only with a single of his$_1$ friends]$_{NPI}$ to speak
wohl **keiner$_1$** t$_{CP, 2}$ wagen würde
particle nobody   dare   would
"something that$_3$ nobody$_1$ would dare to talk about t$_3$ [to even a single one of his$_1$ friends]$_{NPI}$"

(2)   a.   [**nobody$_1$** ...   [[$_{CP}$ which$_3$ [...pron$_1$ ...]$_{NPI}$]]]
b.   [[$_{CP}$ which$_3$ [...pron$_1$ ...]$_{NPI}$] [**nobody$_1$** ... [....   ]]]
c.   which λ$_3$ [[$_{CP}$ t$_3$ [...pron$_1$ ...]$_{NPI}$] [**nobody$_1$** ... [....   ]]]
d.   which λ$_3$ [...   [**nobody$_1$** ... [[$_{CP}$ t$_3$ [...**pron$_1$** ...]$_{NPI}$]]]

(2) demonstrates why (1) is a DoY. In the transition from (2)a to (2)b, CP-fronting evacuates the pronoun (*which$_3$*) across *nobody*. Covert movement of *which$_3$* to a clause-peripheral position in (2)c accordingly avoids an intervention effect (Smuggling; Collins 2005). Finally, NPI licensing and pronominal variable binding (*pron$_1$*) are evaluated in the lower occurrence of CP in (2)d subsequent to reconstruction. It is exactly this combination of upward CP-movement ((2)b), subextraction out of the higher CP ((2)c), followed by recycling of the lower CP ((2)d) which is characteristic of *DoY*. Thus, the syntactic component is structured in discrete, derivational units.

C. An adequate theory of DP-interpretation needs to include a syntactic as well as a semantic device for scope diminishment (Lechner 1996; Sharvit 1998). On the coreferential distributive interpretation of (3), binding relations are evaluated in the pronounced copy while movement can be undone for scope, indicating that scope can be dissociated from binding ((3) by Sharvit 1998):

(3)   How [many students who like *John$_1$*] does he$_1$ think everyone talked to? (*de re*/**de dicto*)

But the hybrid theory is also known to overgenerate unless properly confined. A restrictive theory of reconstruction will be presented which also entails qualitatively new evidence for the assumption that referential opacity is co-determined by *syntactic* factors.

Dislocated DPs may be restored into lower chain positions for the evaluation of three interpretive properties: (i) the scope of D°; (ii) principles of Binding Theory, variable binding, etc... (*e-binding*); and (iii) referential opacity, expressed in terms of binding of object language situation variables inside the restrictor (*s-binding*; Percus 2000). An inspection of the full logical space of possible dissociations among these three factors leads to the generalization in (4):

(4) a. E-binding and s-binding are evaluated in the same position of a movement chain.
     b. Determiner scope can be dissociated from s/e-binding.

One side of the bi-conditional underlying (4)a is supported by the observation that coreference in (3) depends on construing the restrictor *de re* (Sharvit 1998). Thus, s-binding reconstruction, which is a precondition for *de dicto* readings, entails e-binding reconstruction. Evidence for the other direction (e-binding reconstruction entails *de dicto*) comes from the contrast (5) vs. (6). (5) admits both a consistent *de dicto* and a contradictory *de re* interpretation for the subject, while such a nonsensical reading is absent from (6). This signals that e-binding reconstruction secures reconstruction for s-binding, yielding a opaque *de dicto* reading:

(5) [Their$_1$ height]$_{de\ dicto/de\ re}$ seemed to them$_1$ to exceed [their actual height]$_{de\ re}$
(6) [Each others$_1$'s height]$_{de\ dicto/*de\ re}$ seemed to them$_1$ to exceed [their actual height]$_{de\ re}$

Thus, s-binding and e-binding must be evaluated in the same position. The two assumptions in (7), each of which is independently motivated, have the desired consequence:

(7) a. Covert movement out of silent nodes is strictly local, *modulo* interpretability.
     b. Traces do not include situation arguments (<et,t>, but not <s<et,t>>, is a possible type).

E-binding reconstruction without s-binding reconstruction is excluded for (6) by the minimality condition (7)a, which blocks non-local s-variable binding across the closer operator *seem*, as in (8). Thus, reconstruction in syntax invariably produces locally bound *de dicto* readings.

(8) *[[$_{DP}$ ... s ...]$_{1,\ overt}$ $\boxed{\lambda 2}$ ... [*seem* [λ3 ... [[$_{DP}$ ... $\boxed{s}$ ...]$_{1,\ de\ re}$ ...]]]]]

(7)a receives independent support from the fact that it leads to a unified analysis of three hitherto unrelated phenomena: reconstruction, scope freezing with predicate fronting ((9)a; Barss 1986)) and scope restrictions on inverse linking ((10)a; Larson 1987). (7)a dictates that subextraction out of silent nodes (VP in (9)b, the QRed object in (10)b) needs to proceed strictly locally. Thus, the underlined symbols in (9) and (10) cannot obtain scope across the closest binder (italics).

(9) a. .... and [$_{VP}$ teach every student], noone will   (¬∃ ≻ ∀/*∀ ≻ ¬∃)
     b. .... and   *noone* will [$_{VP}$ teach <u>every student</u>]
(10) a. Two policemen spy on someone from every city   (2 ≻ ∀ ≻ ∃/∀ ≻ ∃ ≻ 2/*∀ ≻ 2 ≻ ∃)
     b. *Two policemen* [<u>every city</u>$_4$ [someone from t$_4$]]$_1$ spy on t$_1$ (after type driven QR)

The second condition (7)b ensures that reconstruction in semantics only generates narrow scope *de re* readings interpretations (see also Heim & von Fintel 2005), accounting for (3). Among others, (7)b sheds new light on the inability of subjects to reconstruct into small clauses ((11)a). If intensional traces are not part of the inventory, all subjects must be interpreted above their base position ((11)b). Together with the assumption that small clauses are indeed small (vPs), it follows that *a linguist* cannot be interpreted below *seem*:

(11) a. A linguist seems *(to be) unhappy. (*de dicto*)   b. seem [$_{small\ clause\ <st>}$ t$_e$ unhappy$_{<e,st>}$]

D. The constellations generated by (7)a are isomorphic to DoY derivations except that only DoY admits subextraction out of higher copies ((12)a). With (7)a, movement must target the lower copy ((12)b); extracting the situation variable out of the higher β results in the unattested *de re* reading that reconstructs for e-binding. It will be seen that this imbalance is due to the fact that the landing site for α is fixed in (12)a only, signaling a scope economy effect (Fox 2000).

(12) a. [$\boxed{\alpha}$ ... [[$_\beta$ ... $\boxed{t_\alpha}$ ...]   [intervener ...   [[$_\beta$ ...α ...]...]]]]   (Duke of York)
     b. [*α ... [[$_\beta$ ...*t$_\alpha$ ...]   [intervener ... [$\boxed{\alpha}$ ... [[$_\beta$ ...$\boxed{t_\alpha}$ ...]...]]]]]   ((7)a)