The accessoriness hierarchy and focus affinity in Spanish

Introduction. The *focus affinity* of a syntactic constituent is its preference for narrow focus as compared to other clausemate constituents. For example, objects are considered better candidates for focus than subjects (Dufter & Gabriel 2016). There are few empirical studies on focus affinity (Contreras 1978, Bearth 1992, Heidinger 2018), and no overall accepted theories thereof. We provide such a theory that opens a broader perspective on the syntax-pragmatics interface in view of recent developments in experimental pragmatics. We first provide an analysis for the phenomenon, we then continue with some predictions of our analysis and finally we present experimental Spanish data in support thereof.

Analysis. I. We assume, following Roberts (1996), that focus is anaphoric to the question under discussion (QUD). Hence, a narrow focus indicates that the assertion it contains addresses a corresponding *wh*-question, as in (1). II. We assume that – like other referential anaphoric expressions – focus constructions undergo cost-utility economy considerations, thus minimizing background while increasing the probability of the intended (anaphoric) referent (Kehler & Rhode 2018). E.g. if the QUD is overtly given, ellipsis may be the optimal decision, as in (2). III. Crucially, we suggest that background construal for an anaphora depends, in addition to probability calculus, on a so-called *accessoriness hierarchy*. If a constituent α is more accessory than a constituent β, all things being equal, α is less likely to be part of an anaphora than β. I.-III. converge in predicting that more accessory syntactic material is less likely to be overt, but if overt it is more likely to bear focus, even if this can be obscured by contextual probability calculus of Bayesian optimization.

(1) a. [SKYLAR]$_F$ danced. Implicit QUD: Who danced?
b. Skylar [DANced]$_F$. Possible implicit QUD: What did Skylar do?

(2) A: Who danced? B: Skylar ~~danced~~.

The accessoriness hierarchy. We think of accessoriness as a fundamental cognitive category amounting to the reverse relative importance of components in conceptualizing entities. For events, we assume that the verb and its arguments are lowest on the accessoriness hierarchy since they build up the event. This correlates with the common obligatoriness of arguments (as opposed to adjuncts). Within the domain of non-argument constituents, we assume a non-exhaustive list of operational principles determining accessoriness: (i) A syntactic function is more accessory if it does not describe one of the core eventualities introduced by the verb or a necessary sub-event thereof. (ii) A syntactic function is more accessory if the event it describes is not part of the causal chain of events introduced by the main verb. We show how these principles can be used to order three non-argument constituents: locative adjuncts (LOC), instrument adjuncts (INST), depictive secondary predicates (DEP). Given that there can be semantic variation within these categories (e.g. Koenig et al. 2007 for INST), we limit the analysis to some prototypical cases: LOC modifies the entire event introduced by the verb (3). INST modifies a sub-event that is causally linked to the event-chain of the verb (4). DEP modifies events (potentially sub-events) that are unconnected to the causal chain (5) (Rothstein 2011). Hence, by pairwise comparison we rank: DEP > INST > LOC.

(3) Skylar cleaned the carpet in the apartment.
$\lambda e.\exists e' \exists e'' \subseteq e;\ e' : becomeclean(carpet) \wedge e'' : cause(e') \wedge Ag(e'', S) \wedge\ in.the.apartment(e)$

(4) Skylar cleaned the carpet with the brush.
$\lambda e.\exists e_1 \exists e_2 \exists e_3 \subseteq e; \exists x\ e_1 : becomeclean(carpet) \wedge e_2 : cause(e_1) \wedge Inst(e_2, x) \wedge e_3 : cause\ (e_2) \wedge Ag\ (e_3, S)$

(5) Skylar cleaned the carpet sober.
$\lambda e.\exists e_1 \exists e_3 \subseteq e; \exists e_2 \tau_{e_2} = \tau_e\ \wedge e_1 : becomeclean(carpet) \wedge e_3 : cause(e_1) \wedge Agent\ (e_3, S) \wedge e2 : drunk(S)$

Experimental study. Our key claim is that accessoriness affects focus affinity beyond any (possible) effects of Bayesian probability optimization. Thus, we compared the focus affinity and the prior probability of these three syntactic functions in a forced choice experiment with written stimuli. We expected robust accessoriness hierarchy effects on focus choice.

Stimuli start with a base sentence (6) including a left-dislocated direct object, a lexical subject, a resumptive clitic for the dislocated object, the negation word *no*, a verb, two postverbal

constituents. The base sentence is ambiguous with respect to the focus of negation: both postverbal constituents can form the narrow focus of the sentence. In two given paraphrases, one of the two postverbal constituents is unambiguously marked as the focus of negation. Since the focus of negation and the information structural focus align (cf. Beaver & Clark 2008), the participants' choice between the two paraphrases indicates which postverbal constituent is interpreted as the focus of *no*. 24 lexicalizations were shown in six experimental conditions: LOC-INST (as in (6)), INST-LOC, INST-DEP, DEP-INST, LOC-DEP, DEP-LOC, crossing accessoriness and linear order.

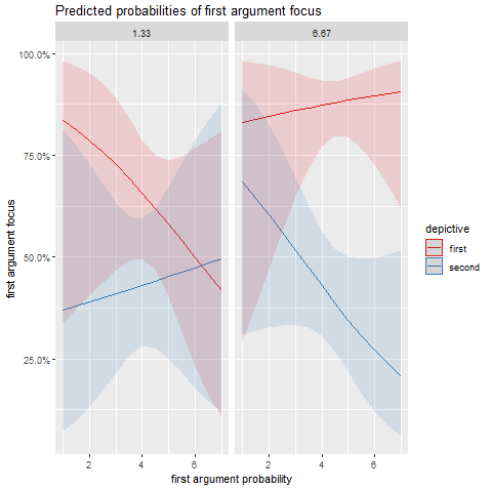
A total of 144 items were presented to 36 monolingual native speakers of peninsular Spanish (age ranging from 20 to 61 years) via the internet using Prolific Academic, in a mixed Latin square design. Conditional probabilities of the two constituents depending on each other were separately measured in the same design by asking a 7-point likert scale answer to a question such as (7), which measures P(Loc|Inst):

(6) *La flor, Juan no la arrancó en la terraza con el rastrillo.*
the flower, Juan NEG it.uprooted on the terrace with the rake

a. *Juan la arrancó con el rastrillo, pero no en la terraza.* F = *en la terraza*
Juan it.uprooted with the rake, but not on the terrace

b. *Juan la arrancó en la terraza, pero no con el rastrillo.* F = *con el rastrillo*
Juan it.uprooted on the terrace, but not with the rake

(7) *Juan arrancó la flor con el rastrillo.*
'Juan uprooted the flower with the rake.'
¿Qué tan probable es que lo haya hecho en la terraza?
'How probable is it that he did this on the terrace?'



Pairwise evaluation of one syntactic function vs. the other two with a regression model such as: `1st_arg_foc ~ Prob1st_arg *Prob2_arg *syn_func` shows *** significant effects of syntactic functions for both LOC and DEP, and as expected no effect for INST, since it is located between LOC and DEP on the accessoriness hierarchy. Of course, conditional probabilities interact with syntactic functions and linear order as suggested by assumption II. The interaction plot to the right shows the effect of DEP on focus. If DEP is first (red line), focus on first constituent is more likely across most conditional probability distributions, and vice versa, focus on the first constituent is least likely if DEP is the second argument. Conditional probabilities only overwrite preference based on accessoriness in the extreme case.

Outlook. Suppose focus affinity is indeed a special case of anaphoric expressions choice and that accessoriness is a fundamental syntactic correlate of optimal cognitive representation of entities that can be operationalized both in the verbal and nominal domain. Then, accessoriness may serve as the missing link to unify theories such as the accessibility hierarchy of Ariel (1990) with Bayesian theories of referential economy. This would finally allow a deeper integration of accessibility theory into the syntax-semantics interface.

Ariel, M. 1990. Accessing… ▪ Bearth, T. 1992. Constituent order… ▪ Beaver, D. & B. Z. Clark. 2008. Sense and sensitivity. ▪ Contreras, H. 1978. El orden de palabras en español. ▪ Dufter, A. & C. Gabriel. 2016. Information structure, prosody, and word order. ▪ Heidinger, S. 2018. Sekundäre Prädikation und Informationsstruktur. ▪ Kehler, A. & H. Rohde. 2018. Prominence… ▪ Koenig, J.-P. et al. 2007. What with? ▪ Roberts, C. 1996. Information structure in discourse. ▪ Rothstein, S. 2011. Secondary predicates. In HSK 33.2