ECM constructions as complex predicates: a neo-constructivist approach

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1. Background

The original insight of Chomsky (1955) (LSLT) regarding *Exceptional Case Marking* (ECM) constructions in (2) is that the accusative *him* is the object of the complex (compound) predicate *believe-to-like-cheese.* According to LSLT, the verb first combines with the infinitival predicate taking an NP as its direct object; the infinitive is then moved to the right by a separational transformational rule.

(1) D-structure [Mary] **believes-to-like-cheese** [him].

(2) S-structure [Mary] **believes-t_i** [him]-**to-like-cheese$_i$.**

Lingering questions:

- Where/how should these complex (compound) predicates be formed?
- How to account for the surface word order?
- Incompatibility with the *lexicalist approach* to argument structure: *Theta-Criterion, Projection Principle*

The now-standard ECM approach (Chomsky 1981):

(3) Mary believes [$_S$ **him** *to like cheese*].

Neo-constructivist approach (Sybesma 1992, Borer 2005, Åfarli 2007, Ramchand 2008, Lohndal 2012, *inter alia*):

- No projection of arguments from lexical items
- Syntax provides a skeleton - a number of templates/frames - which are generated independently of verbs and in which lexical items are inserted
- Syntax determines the interpretation/distribution of arguments
- Arguments are something the verb *gets* by being inserted in a particular template frame

Borer (2005): […] "*the syntactic structure gives rise to a template, or a series of templates, which, in turn, determine the interpretation of the arguments. Within such approaches lexical items do not determine structure, but rather, function as its modifiers."*

In support of this thesis, Borer (2005) shows that canonical lexical information traditionally associated with certain lexical items can be easily 'overridden' by syntax (i.e. by a syntactic template in which they are inserted)

Rivière (1982): transitive/intransitive classification of verbs is challenged by the existence of the resultative construction: "it seems that any non-stative verb of English can be followed by NP+Res XP with the resultative interpretation".

(4) The audience laughed the actors off the stage

But if verbs do not contain any information about their arguments, how do we rule out (5)?

(5) ??The audience laughed the actors.

The Strong Minimalist Thesis (SMT): language faculty is "perfect" in a sense that Universal Grammar (UG) should ideally reduce all possible operations to satisfying the "external" conditions (cf. *Rigorous Minimalist Desideratum*[1] – Grohmann 2003)

In this respect (5) is not ungrammatical; it is conceptually bad and is "filtered" out at the C-I interface on the basis of context and conceptual (world) knowledge (due to the lack of *harmony* between the semantic content of the (transitive) frame and the conceptual semantic content of the elements being inserted (*laugh*) – see Åfarli 2007, Nygård 2018).

Where do these templates/frames come from?

Åfarli (2007): "*In some neo-constructional approaches it is common to assume that syntactic frames are generated from underlying aspectual event-structures (e.g. Borer 2003). Alternatively, the frames might be construed as being generated from predicational structures in a fashion consistent with Bowers (1993, 2001).*"

This project is an attempt to revive Chomsky's original complex predicate approach to ECM under the neo-constructivist model of syntax. In particular, I will argue:

- **ECM constructions "share" the same syntactic template with resultatives, which, according to certain syntactic analyses, are argued to instantiate complex predicates** (cf. Neeleman 1994, Borer 2005, Snyder 1995)
- **the matrix verb and the infinitival predicate form a complex predicate, in the LF component**
- **there is no overt object shift in ECM contexts**

2. Resultatives and ECM: related constraints

(6) *Resultatives pattern with ECM in their ability to occur with non-thematic objects:*
(a) John drank [$_{NP}$ the teapot] [$_{AP}$ dry]
(b) John believed [$_{S}$ the teapot to be empty]

[1] "All conditions imposed on and operations made available by C_{HL} follow from virtual conceptual necessity or bare output conditions" (Grohmann 2003:47)

(c) *John drank the teapot
(d) *John believed the teapot

(7) *ECM complements and result XPs describe states (Simpson 1983, Bošković 1997, Martin 2001):*
(a) Jane pounded the dough [$_{AP}$ flat]
(b)*Jane pounded the dough [$_{NP}$ a pancake]
(c) Mary believed [$_{S}$ John to be the winner]
(d)*Mary believed [$_{S}$ John to eat a bagel]

(i) Mary believed [John to have eaten a bagel] **OK**
(ii) Mary believed [John to be eating a bagel] **OK**

Altshuler et.al (2019): by forming a progressive/perfect we create a *stative*

(8) *Neither the subject of a resultative, nor of an ECM construction can control the embedded predicate (both require "fake reflexives"):*
(a) John yelled *(himself) hoarse
(b) Mary believed *(herself) to be ill

(9) *Re- is incompatible with resultatives and ECM (Ormazabal 1995, Marantz 2007):*
(a)*Mary redrank the teapot dry
(b)*Mary rediscovered the problem to be insolvable

BUT they differ in one important respect!

- Hoekstra (1988): **resultatives are built upon agentive verbs** (**The hero saw the stone flat*).
- Pesetsky (1991): **agentive verbs do not allow ECM** (**Mary wagered John to be the winner*).

Semantically, resultatives have a causative interpretation, being a syntactic counterpart of lexical causatives.

- Neeleman & van de Koot (2012): **causation is not a linguistic notion**; language can only emulate it by using other linguistic primitives that can also be found in lexical semantics verbs that are not causative:

(10) (a) λy λx [[$_{e}$ x [$_{s}$ ... y ...]] & x = CCF] *causation*

John *broke* the window : John *drank* the teapot *dry*

a. *Causation* is a relation between two events: a causing event and a caused event.
b. *Causation* has a temporal dimension: the causing event must precede the caused event.
c. *Causation* is counterfactual: if the causing event had not occurred, the caused event has not occurred either.

(b) λy λx [[$_{s}$ x [$_{s}$ ... y ...]] & x = CCF] *maintenance*

John *supports* Mary : syntactic counterpart ?

If (10) is the right way to view matters, we, in principle, should also be able to find a syntactic correlate to the maintenance verbs, or show that such a construction cannot exist. **I suggest that the ECM construction is the most suitable candidate to fit into this gap.**

Verbs of maintenance and verbs of causation both share the linguistic primitives of **result-state** and **Crucial Contributing Factor** (merged as external argument); however, while this result-state **is interpreted as a culmination of the preceding event** in the case of causative verbs, **it is interpreted as coexisting with and dependent on another state** in case of maintenance verbs.

- Representations in (10) reflect Hoekstra's and Pesetsky's observations
- Parsons (1991): "the notion of culmination does not apply to states" – "a state simply holds or it does not".
- **Proposal**: both *believe* and *drink* in (6) combine with a result-state: the difference in the interpretation is derived at C-I interface.

Folli and Harley (2006): "The semantic telicity or lack thereof of the whole construction is the compositional result of the semantics of the particular lexical items involved":

(11) (a) Mary drove [$_{SC}$ John crazy]
(b) Mary considers [$_{SC}$ John crazy]

Big Question: ECM complements express propositions, which attitude verbs take as arguments.

Neeleman (1994): [In the model of interpretational semantics] "one might expect semantic interpretation to be sensitive to syntax, but there is no reason why propositional and syntactic structures should be isomorph, since syntactic knowledge and propositional knowledge are different in nature, stated in different terms, and represented in different modules of grammar."

In such a model syntactic structures *are fed into semantic module that derives independent propositional interpretation.*

Pillinger (1980): B-verbs in Latin take only A-I, and *not finite complements.*

King (2012): structure of a sentence (the sentential relations) determines the structure of the proposition (the propositional relations)

Emonds (1991): "There is no propositional or even phrasal thought without syntax." "External stimuli or even an internal state can evoke non-propositional groupings of concepts or "conceptual structures" but only syntactically connected words have a meaning which can be checked for truth and appropriateness."

Put differently, "propositional interpretation" may be nothing more than the way the semantic component reads off particular syntactic information, i.e., another instance (in Boeckx's words (2015:20)) of "the output of syntax-dependent interpretive process."

3. Resultatives and ECM: semantic evidence for complex predicate approach

(12) (a) The sheriff shot the gunman dead
(b) The sheriff killed the gunman (by shooting him)

Direct causation: the state expressed in the result subevent must be one that can be directly caused by the causing subevent: no intervening causes (cf. Goldberg 1995, Kratzer 2004).

Neeleman & van de Koot (2012) propose to account for this restriction by appealing to the notion of *Accountability*, according to which an NP bearing Reinhart's [+*m*] (~ mind) feature is held accountable for the action expressed by the verb if and only if it is the CCF argument of the verb.

(13) The sheriff caused the gunman to die (by shooting him).

(13) is a bi-clausal control structure, and the sheriff is a CCF (external) argument of *cause,* but not of *die.* Therefore, *the sheriff* appears to be only partially accountable for the whole event: his accountability is limited to the causation event only, excluding the resultant state. Thus, while it is true that *the sheriff* shot *the gunman*, which contributed to the causal chain of events that culminated (resulted) in the gunman's death, it may not be true that *the sheriff* is directly accountable for the resultant state itself.

In lexical causatives both events are to be clustered on one lexical item, therefore, the CCF argument must be accountable for the entire macro-event including the result-state.
The parallel behavior of lexical causatives and resultatives stems from the fact the verb and the adjective instantiate a compound predicate *shoot-dead.*

A similar phenomenon in ECM. Borkin (1984): "although *believe* can be used to describe the acceptance of the truth of the proposition presented by someone other than the subject of the matrix clause, "this use of *believe* is not appropriate with infinitives at all."

(14) The doctor has told Sam that Mary is sick
(a) …but Sam won't believe that she is sick.
(b) …# but Sam won't believe her to be sick. (adapted from Borkin 1984: 79)

(15) Moulton (2010:12): Context: "*we are explaining that our grandmother kept much hidden about the grandfather we never knew. After her death we uncover why: he was a liar and a cheat":*

(a) Because my grandmother never told us much about our long dead grandfather, we never knew that he was a liar and a cheat.
(b) #Because my grandmother never told us much about our long dead grandfather, we never knew him to be a liar and a cheat.

Moulton (2010): ECM requires that the grandfather should have been alive at some point during the speaker's lifetime in order for them to 'know' him this way.

Moulton (2010): "It is not possible to ascribe a belief using *know*-ECM if that belief is "merely arrived at by believing something second-hand."

(16) Moulton (2010:12): Context: *Horace was demoted and he reacted badly to it to it. We are trying to keep this a secret from the boss, Rita. Unfortunately, Rita was told by another employee that Horace was upset*
Someone asks me: *What things does the boss know about Horace's reaction to his being demoted?*

(a) She knows that he's upset about it.
(b) #She knows him to be upset about it. (see also Runner&Moulton 2017)

4.Resultatives and ECM: syntactic evidence for complex predicate approach.

In pseudo-gapping, the alleged complex predicate in both resultative and ECM can be entirely omitted, leaving a stranded auxiliary (cf. Hoeksema 1991).

(17) (a) She *wiped* more tables *clean* than he did [$_{VP}$ *e*] floors.
(b) I can *believe* Mary *to be smart* more easily than I can [$_{VP}$ *e*] Bill.

Given the assumption that all components of the complex predicate behave as one unit, we would expect the relation between them to be tighter than between the same components in a phrasal configuration.

Snyder (1995, 2001): the semantic contribution of complex predicates is greater than just the sum of its parts. Snyder observes that the interpretation of (18a) is more than a mere conjunction of the predicate *hammer* and *flat*. The resultative construction has an aspectual reading that cannot be determined strictly compositionally:

(18) (a) John hammered the metal flat (in an hour).
(b) John hammered the flat metal (?? in an hour).
(c) John hammered the metal until flat (??in an hour). (Snyder 1995, 2001)

Wurmbrand (2000): constraints on topicalization should follow from semantic rather than syntactic properties of the relevant construction. Since topic/focus is interpreted semantically, topic/focus position can only be occupied by elements that *have compositional semantic content: (elements that contribute their own meaning).*

Although both resultatives and depictives consist of the same syntactic string (V-NP-AP) on the surface, the sentence final AP can be fronted only in a depictive construction, but not in a resultative one (Ettlinger 2005).

(19) (a) *[$_{AP}$ Clean] Jill wiped the floor [$_{AP}$ *e*].
(b) [$_{AP}$ Naked] Bill painted the house [$_{AP}$ *e*].

Rizzi (1991) notes a similar puzzle with respect to ECM: VP-preposing is (at least marginally) possible with Control infinitivals, but not with ECM ones[2]:

(20) (a)* … and [VP know the answer], I believe Bill to [VP *e*]
(b) …and [VP fix the car], John tried PRO to [VP *e*].

5. ECM and resultatives: common template: *Contraria sunt complementa.*

I assume the existence of a syntactico-semantic frame in (21) whose meaning can be enriched (modified) by lexical insertion in the dedicated slots giving rise either to a 'resultative' or an 'ECM' interpretation.

Neeleman and van de Koot's CCF argument is merged in the specifier of the functional projection FP. An F-argument in this syntactic position has an irreducible general property of being an "initiator" of the event irrespective of the basic semantic type of the lower V)

(21)
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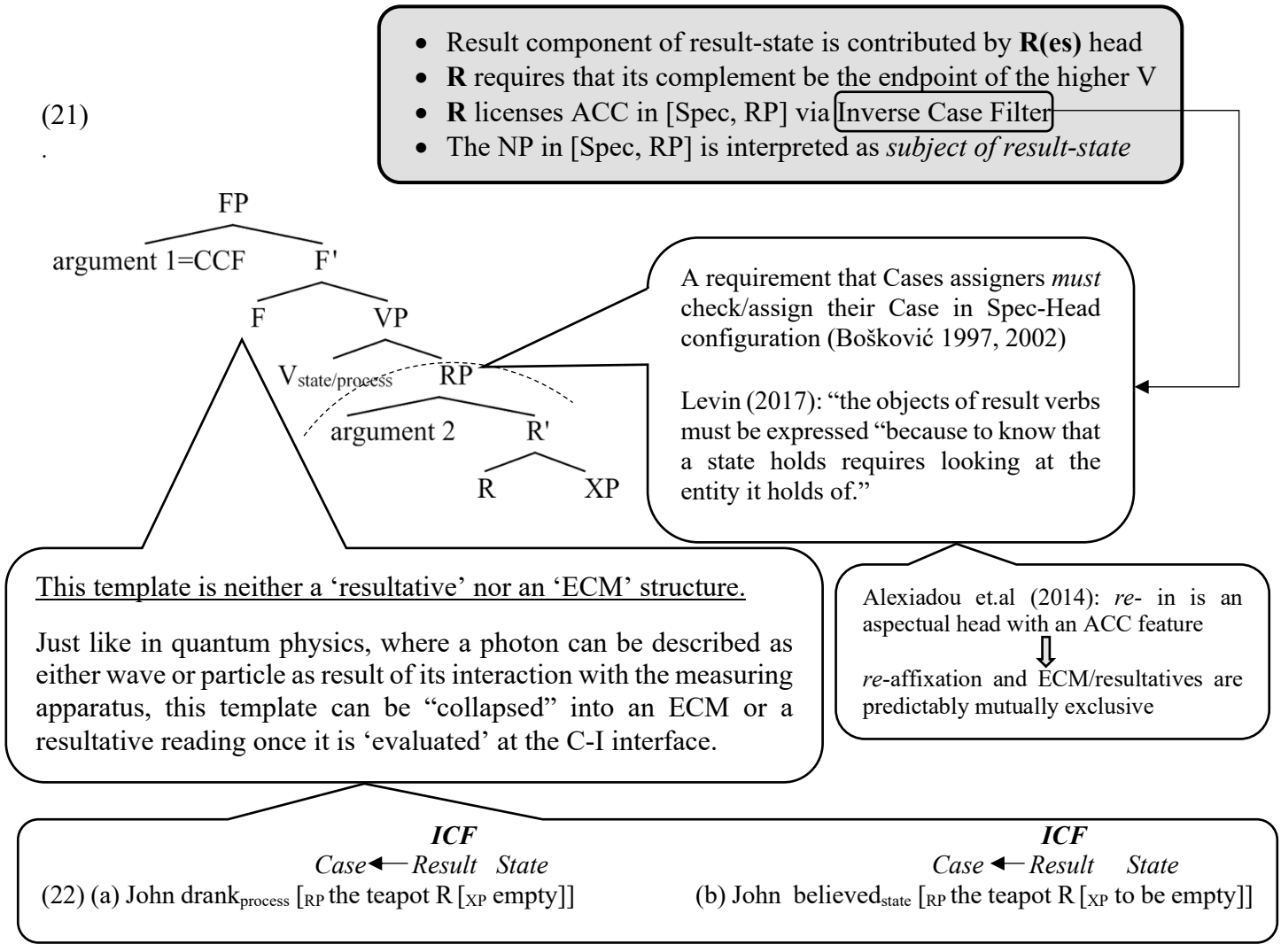


[2] Bošković (1997) and Martin (2001) also point out that VP-ellipsis is possible in Control infinitives, in contrast to ECM configurations:

(i) (a) Rebecca wanted Jill to [VP join the team], so Pam persuaded her [PRO [T to] [VP *e*]].
(b) *I consider Pam to [VP like soccer], and I believe [Rebecca [T to] [V P *e*]] as well. (Martin 2001)

This analysis captures the intuition that the subject of ECM complements to non-stative verbs like *declare* can be "affected" by the event in question (Pesetsky 1991, Branigan 1992; cf. Ito 2014):

(23) Congress declared March to be National Syntax Month (Pesetsky's exception to Agent/ECM correlation) (Pesetsky 1991:21).

(24) (a) *John wagered/yelled/muttered Mary to be the winner.
(b) John declared/ruled/decreed Mary to be the winner.

Under the neo-constructivist approach, (24a) can be ruled out at the C-I interface for interpretive deviance: given our real-world knowledge, while it is possible to change someone's status by means of declaring/ruling, it is not possible to do so by means of *wagering* or *yelling.*

Potential problem at this point*: if infinitival 'subjects' and accusative Case in ECM are licensed outside the domain of the matrix predicate, in [Spec, RP], all constructions in (25) should be acceptable, contrary to fact.*

(25) (a) *[$_{RP}$ Him [$_{InfP}$ to be a spy]] would be unusual.
(b) *Mary is aware [$_{RP}$ Bill to be a spy].
(c) *It is believed [$_{RP}$ Bill to be a spy].
(d) *Mary's belief [$_{RP}$ Bill to be a spy].

On the traditional lexicalist approach, the whole paradigm in (25) is ruled out because the infinitival subject fails to receive Case in the absence of a Case licenser.

- Ormazabal (1995) following Pesetsky (1991): all zero heads are affixal (bound morphemes)
- **R** is specified as LF-affix (Chomsky 1995) that undergoes covert HM

ICF
Case ←—*Result* *State*
(26) John believed [$_{RP}$ the teapot R[$_{+LF\ affix}$][$_{InfP}$ to be empty]]
LF incorporation

We can now derive the Case Filter violations in (25) in the spirit of Ormazabal (1995): in (27a) the free-standing affix cannot receive a full semantic interpretation, while in (27b-d) it is attached to the non-verbal host (but see Pesetsky 2021 for an alternative non-lexicalist account of (25)).

(27) (a) *[$_{RP}$ Bill [$_{R}$ Ø [$_{InfP}$ to be a spy]]] would be unusual.
free-standing affix
(b) *Mary is sure+Ø Bill to be a spy.
(c) *It is believed+Ø Bill to be a spy.
(d) *Mary's belief+Ø Bill to be a spy.
non-verbal host

6. "Through the wormhole": dislocation without movement. Creating an (abstract) complex predicate.

Another potential problem:

According to (26), the infinitival subject remains in the embedded clause. There is some evidence, however, in favor of the claim that ECMed NP must appear in the main clause (at a relevant point of the derivation). Lasnik & Saito (1991) provide examples like (28) showing that *the defendants* can c-command the adjunct belonging to the matrix clause in (28a) but not in (28b), when *the defendants* is unambiguously within the embedded clause.

(28) (a) The DA proved the defendants$_i$ to be guilty during each other$_i$'s trials.
(b) *The DA proved that [the defendants$_i$ were guilty] during each other$_i$'s trials.

This contrast suggests that the infinitival subject in (28a) must be in the matrix clause in order to be able to c-command the anaphor:

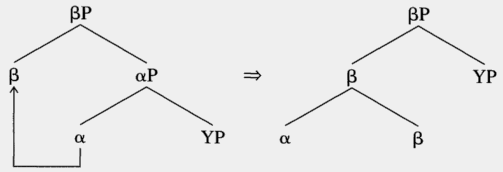
(Another) Big Question: Why does an ECM subject raise? Where are the promised complex predicates?

- Case (*covertly* – cf. Branigan 1992 or *overtly* – cf. Bošković 1997)
- EPP (cf. Lasnik 1999)

Lasnik (2002): EPP has been "a pervasive mystery since it was first formulated by Chomsky (1981)".
Hornstein (2020): EPP is "the bugbear of all possible features" (cf. also Boeckx 2000, Epstein et.al 2005).

Branigan (2010) "… the obviously stipulative nature of the EPP is convenient, inasmuch as the concept serves as a placeholder within the theory for something that everyone can agree is missing an explanation, making it easier to address other theoretical questions without being sidetracked. *But on the other hand, we would like to actually find an explanation, or at least make progress toward one"*.

- Stepanov (2012): HM causes the projection of the incorporated head to collapse

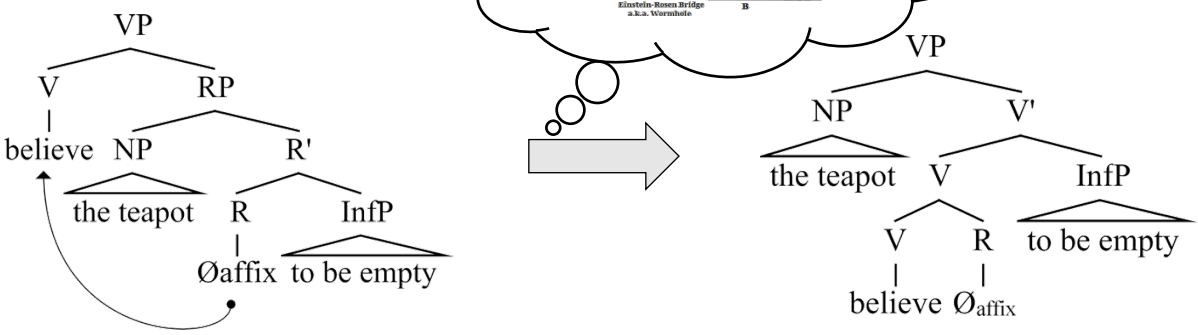


- The material in the projection of the vanishing head is 'reassociated' ('reassembled') during the derivation of LF in its original hierarchical order within the projection of the incorporating V at LF (Müller 2017)
- InfP becomes the complement of the conglomerate head, and the material in [Spec, RP] becomes its specifier ('inner subject')

The HM in (26) creates an abstract complex predicate *believe-to-be-empty* via a version of Baker's (1988) Government Transparency Corollary (GTC), which makes the information in RP domain available 'at the top'.

After the 'reassociation' the embedded subject also retains the predication relation to InfP, mediated now by the conglomerate head V+R.

(29)



(30) believe [$_{RP}$ the teapot R [$_{InfP}$ to be empty]] → **LF**: [$_{VP}$ the teapot [$_{V'}$ believe+R [$_{InfP}$ to be empty]]].

As a result of 'reassociation', the ECM subject can c-command low elements in the higher clause at LF **without formally undergoing A-movement into the higher clause,** which correctly predicts Lasnik & Saito's (1991) facts in (28) (under the assumption that binding principles hold at LF – cf. Chomsky 1995).

Using another allusion to the phenomenon of theoretical physics, it is possible to say that the infinitival subject "travels" through the wormhole: the fact that it has its landing position in the matrix clause is simply a side-effect of the independently motivated HM rather than a result of the Internal Merge motivated by the ad hoc EPP feature.

7. Against overt object shift in ECM

ECMed subjects can be interpolated with the matrix clause material (Postal 1974, Johnson 1991, Koizumi, 1993, Runner 1995, *inter alia*)

- **infinitival subject can precede certain manner adverbs modifying matrix predicate:**

(31) (a) Mary proved [Bill easily to be a spy] (cf. *Mary proved that Bill easily was a spy).
(b) Mary proved Bill easily [~~Bill~~ to be a spy].

Bowers (2018): manner adverbs are modifiers of a head responsible for ACC Case licensing.

Proposal: V-NP-Adv-Inf order follows without OS: after R undergoes HM, *easily* (along with other material in RP domain) is reassembled within VP, taking scope over the complex predicate *prove-to-be-a spy:*

(32) Mary proved [$_{RP}$ Bill [$_{R'}$ easily R^0[$_{InfP}$ to be a liar]]] →
→ **LF**: [$_{VP}$ Bill [$_{V'}$ easily [$_{V'}$ prove +R^0[$_{InfP}$ to be a spy]]]].

- **infinitival subject can precede higher-clause particles**

(33) Mary made Bill out [$_{S}$ Bill [$_{InfP}$ to be a spy]].

Brinton (1985): the core meaning of Germanic particles can be characterized as "resultative"

Proposal: particles identify R: they are incompatible with *re-* (**reheat the soup up*) and can license unselected arguments (*the cats meowed the dogs*(out)).*

(34) Mary made [$_{RP}$ Bill [$_{R}$ out] [$_{InfP}$ to be a spy]].

The possible (for some speakers) V-Prt-NP word order with *make-out* idiom in (35) can be seen as a PF phenomenon (Rothstein 1995), resulting in the particle cliticization onto the higher V:

(35) ?/*Mary made out Bill to be a spy (cf. Lasnik's 2019 "Optional Raising Hypothesis").

Crucially, V-Prt-NP word order is impossible when the embedded subject is a weak pronoun. Given that weak pronouns are clitics that must undergo incorporation to V (Oehrle 1976), the ungrammaticality of (36) is due to the failure of *him* to cliticize, the clitic position of *make* being occupied by *out.*

(36) *Mary made out him to be a spy.

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