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Proleptic objects as complex-NPs

Abstract: Proleptic (or prothetic) objects (*Majaliwa remembered about Samson that he's sick*) present a particular puzzle because they appear to instantiate an unconstrained cross-clausal dependency between the proleptic object (*Samson*) and a correlate (*he*). The current analytical approach to prolepsis is relies on a syntactic mechanism of treating the embedded clause as a predicate, derived by merging a null operator which unselectively binds the correlate. This approach faces a number of known empirical challenges. Moreover, this work does not meaningfully engage with any of the recent semantic innovations in our under-standing of embedded clauses (Kratzer 2006. Decomposing attitude verbs. Available at: http://semanticsarchive.net/Archive/DcwY2JkM/attitude-verbs2006. pdf). I offer an alternative to the CP-predicate approach, adopting three (semi-) independently motivated ideas concerning (i) the syntax of cross-clausal de-pendencies in Lohninger et al. (2022. From prolepsis to hyperraising. *Philosophies* 7(32)), (ii) the semantics of embedded clauses in Kratzer (2006. Decomposing attitude verbs. Available at: http://semanticsarchive.net/Archive/DcwY2JkM/ attitude-verbs2006.pdf)/Moulton (2009. Not moving clauses: Connectivity in clausal arguments. *Syntax* 16(3). 250–291), and (iii) the semantics of *about* in Rawlins (2013. About about. *Proceedings of SALT* 23. 336–357)/Onea and Mardale (2020. From topic to object, grammaticalization differential object marking in Romanian. *Canadian Journal of Linguistics/Revue Canadienne de Linguistique* 65(3). 350–392). I argue that proleptic objects are complex-NPs, roughly, *the thing about Samson*. The somewhat particular properties of prolepsis are natural consequences of these combined ideas. I further present empirical evidence from Japanese that the complex-NP analysis is on the right track. This analysis deepens our understanding of prolepsis by including both semantic and syntactic factors.

Keywords: prolepsis; aboutness; topics; complex-NPs; clausal syntax and semantics; null operators

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1 Introduction

In this article, we are concerned with the proper analysis of English prolepsis,[1] shown in (1).

(1)   Majaliwa remembered about **Samson** that <u>he</u>'s sick.

Descriptively, in (1) there is a dependency between the proleptic object *Samson* and the embedded clause, resulting in a correlate – in this case, a pronoun – in the embedded clause. It this dependency that presents the puzzle concerning prolepsis. Unlike other syntactic dependencies, the relationship between the proleptic object and the pronoun is entirely unconstrained: the majority of diagnostics suggest that there is no syntactic connection between the proleptic object and its correlate. Nonetheless, the proleptic object seems to 'need' the pronominal correlate. Without it, the sentence becomes ungrammatical: *Majaliwa remembered about Samson that Esther is sick* (cf, Lappin 1984: 250).

As I discuss in Section 3, the analysis of prolepsis that all recent theoretical works have converged on is that (1) involves a form of predication: the embedded clause is a 'derived' predicate, and the resumptive pronoun is a link in this predication chain. In this way, proleptic objects are licensed by entering into a predication relationship. I argue against this derived predication view on empirical grounds. In Section 4, I discuss three issues with CPs-as-derived-predicates: (i) there are instances that appear to involve vacuous binding; (ii) proleptic objects are independently licensed in the main clause, and (iii) CPs in general cannot be derived predicates. None of these observations is novel; however, I believe that their cumulative weight strongly speaks against the derived predicate analysis.

Instead, I show in Section 5 that prolepsis is a natural result of independently motivated mechanisms. The most important aspect of this study is that I situate prolepsis in the recent innovative work on the semantics of embedded clauses. Many recent studies have focused on the composition of embedded clauses with attitude verbs, arguing that much of the work originally thought to be part of the attitude verb proper is actually housed on the complementizer. Clearly in prolepsis we want the same relationship between the embedding verb and the clause: the clause is still the object of remembrance/belief/thought/etc. So I will extend this line of work to prolepsis. There are some welcome consequences, foremost is that embedded clauses are *inherent* predicates of a particular type. I will also draw on some recent innovations concerning 'aboutness,' specifically as it connects to the preposition *about* in English. Putting these pieces together will allow us to derive the characteristic

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1 This is also called a *prothetic* object in a number of works, and has been identified as a *res* argument in Moulton (2009) and Onea and Mardale (2020).

properties observed in English proleptic constructions discussed in Section 2, and at the same time connect prolepsis to other well-studied issues like hanging topics, copy-raising, and major/broad subjects.

The core proposal is that prolepsis involves some silent structure, in particular a complex-NP which houses the proleptic object, roughly "the thing about Samson." As I show below, this proposal allows us to circumvent the problems that the derived predicate analysis introduces. In Section 6, I show that there is empirical evidence from Japanese for this complex-NP.

In Section 7 I conclude by discussing briefly some of the crosslinguistic variation found in prolepsis, and I connect the proposal to other cases that have been argued to involve a derived predicate CP.

2 Prolepsis background

I will begin with a brief background on the characteristic properties of prolepsis, primarily in English. It is these core issues that have been the basis of all previous studies, and any new analysis will need to be able to explain them. Proleptic constructions have a fairly consistent signature across languages – though there is some level of variation.[2] The core characteristic of prolepsis is that there is some element in an A-position in the main clause which is in a dependency with an embedded clause. The nature of this dependency is subject to theoretical differences, but the proleptic object does not appear to be 'licensed' in the main clause, similar to how raised subjects are not licit without the embedded clause (2c). Thus, in many cases, a proleptic object is not possible without a following finite clause.[3]

(2)   a.   Majaliwa believes of **Samson** *(that <u>he</u> broke the vase)
       b.   Majaliwa said about **Samson** *(that <u>he</u> is scared of frogs)
       c.   cf, Samson seems *(to be sleeping)

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2 There are four major points of variation (see discussion in Salzmann 2017). The first is that in some languages, proleptic objects are introduced in prepositional phrases, and in others they are "direct" arguments of the verb. I speculate briefly on this difference in Section 7. The second difference has to do with the location of the proleptic object in the main clause. I discuss this presently. The third difference concerns productivity. In some languages, prolepsis is restricted to only a few verbs, while in others it is extremely productive. I have no comment on this distinction, beyond adopting what Lohninger et al. (2022) say: it is a selectional issue. The final difference concerns the fact that two languages are reported as allowing non-DE RE readings of proleptic objects. I have no immediate solution to this difference, but I speculate in Section 7.
3 Salzmann (2017); Gluckman (2021) discuss cases of prolepsis with nonfinite clauses. I put aside this structure in this study, though nothing I say here is contradicted by that data.

It is not enough for there to be an embedded clause. Additionally, the embedded clause must be construed as "about" the proleptic object. Thus, (3) is ungrammatical because *Mary is intelligent* cannot plausibly be taken as about Bill.

(3)   * John said of **Bill** that Mary is intelligent   (Lappin 1984: 250)

The aboutness-relationship typically results in there being a correlate in the embedded clause. Indeed, the appearance of a correlate is sometimes viewed as a requirement: proleptic constructions must have a resumptive element in the embedded clause (Salzmann 2017: 277). Importantly, however, the correlate need not be a pronoun. Epithets (4a), quantifiers (4b), and full co-referential DPs (4c) are also possible as the correlate. (For clarity, throughout this article, I will bold **proleptic objects** and underline correlates.)

(4)   a.   Majaliwa remembers about **Samson** that the poor guy is sick again.
      b.   Majaliwa believes about **his students** that most cheated on the exam.
      c.   Majaliwa heard about **applying for citizenship** that the process could take
           months.

The obligatory dependency between the proleptic object and the embedded clause has been the basis for all theoretical syntactic and semantic studies of prolepsis (Davies 2005; Deal 2018; Salzmann 2017) among others. How do we define this dependency, particularly when other prepositional phrases after embedding verbs do not invoke the same kind of obligatory relationship?

(5)   Majaliwa heard from $Samson_1$ that Esther/he_1 is sick.

In English, all proleptic constructions involve a prepositional phrase housing the proleptic object. The preposition can always be *about*, and with some verbs, it can be *of* (Zyman 2022). (I refer the reader to the arguments in Zyman 2022 showing that the prepositional phrase is indeed selected by the main verb and is in the main clause.)

Whatever the relationship between the proleptic object and the correlate, it cannot be a movement dependency: proleptic constructions are insensitive to islands, (6).

(6)   a.   I believe about **Richard** that [$_{Island}$ he and Linda] are in trouble.
      b.   I believe about **Atin** that the story [$_{Island}$ that she captured the thief] is
           untrue.   (Davies 2005: 659)

Proleptic objects also show limited reconstruction effects. Quantified objects cannot take narrow scope within the embedded clause (7); variables resist binding from inside of the clause (8); idioms do not reconstruct (9).[4]

(7) Scope
  Jennifer knows about **three books** that no one read <u>them</u>.   *no>three

(8) Binding
  *I learned about **her$_1$ project** that no student$_1$ completed <u>it</u>.

(9) Idioms
  Samson heard about **the bucket** that Steph kicked <u>it</u>.   only literal reading

There are additional known restrictions on proleptic objects themselves. Proleptic objects must be "referential, specific, or generic" (Lohninger et al. 2022: 4), and in general, must be of NP/DP category. (There is a caveat for the so-called non-referential "third-readings" of proleptic objects in some languages. I discuss those in the Section 7.) Note that the referential restriction rules out most idioms.[5] The generic and specific requirements can be seen with indefinites.

(10) a. I know of **firemen** that <u>they</u> are available.   (only generic)
   b. Nove said of **a secretary** that someone is looking for <u>him</u>. (only specific)
                                        (Lohninger et al. 2022: 4)

Because of this, proleptic objects are often understood as being topics, since topics share similar restrictions (Lambrecht 1994; Reinhart 1981). The relationship to

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4 Salzmann (2017) introduces some data concerning bound variables and anaphora that suggest reconstruction. I will not discuss the German variable-binding data which Salzmann uses (I am not convinced that the given judgments are truly reflective of the data, at least in English), but the evidence for anaphor-binding mentioned in Salzmann (2017: 281) is complicated by the presence of *picture*-NPs, which are able to "evade" Condition A due to logophoric properties of such nouns. Controlling for this in English by using inanimate (and hence non-logophoric) antecedents, we find no evidence for Condition A reconstruction in prolepsis.

(i)   The webpage$_1$ made a copy of itself$_1$

(ii)   *Majaliwa thinks about **the copy of itself$_1$** that the webpage$_1$ made <u>it</u>

5 And, importantly, it rules 'in' those idiomatic expressions which include referential expressions. Thus, we have the difference between *kick the bucket*, which does not receive an idiomatic interpretation in prolepsis, and *take a picture*, which does. The latter object can be referential, but the former cannot.

(iii)   Majaliwa remembered about **the bucket** that Samson kicked <u>it</u>.   only literal reading

(iv)   Majaliwa remembered about **the picture** that Samson took <u>it</u>.   literal and idiom reading

topichood is also consistent with the interpretation: proleptic objects form an aboutness-relationship with the embedded clause, much as topics do with a main clause (Alexiadou 2017).

In closing this background summary, I wish to highlight one point of cross-linguistic variation which will be important later. In some languages, the proleptic object prefers to displace *in the main clause.* As Salzmann (2017: 263, fn. 8) discusses, in German, proleptic objects disprefer an *in situ* position, and instead prefer to be fronted. So while (11a) is acceptable with the proleptic object in a clause medial position, this configuration is "lexically restricted," only possible with a few embedding verbs. Instead, German prolepsis is completely productive with all embedding verbs when the proleptic object is fronted, as in (11b).

(11)   a.   *Ich glaube von keinem Holländer, dass er auch nur einen*
           I   believe of   no.DAT   Dutchman   that he even only a
           einzigen Euro würde   verschwunden
           single   Euro would.3SG squander.INF
           'I believe of no Dutchman that he would squander even a single
           Euro.'   (Salzmann 2017: 295)
       b.   ***ein Maler**, von **dem**,   ich glaube,   dass Maria ihn mag*
           a   painter of   who.DAT I   think.1sg that Mary him like.3SG
           'a painter, of whom I think that Mary likes him'   (Salzmann 2017: 258)

A similar observation is made for Dutch, prompting Hoeksma and Schippers (2012) to suggest that prolepsis is similar to *wager*-class verbs in this regard. In English, this is not the case. Prolepsis does not need this extra step; it is most natural appearing directly after the embedding verb before the embedded clause, a point that I will return to later.

3 The predication analysis

The central assumption at the heart of all current analyses of prolepsis is that this is a case of *predication*: the embedded clause is turned into a predicate through merge of an obligatorily null operator (as in, e.g., Browning 1987). This derived predicate CP "licenses" the proleptic object (by, say, providing a thematic role), and additionally binds the correlate in the embedded clause (Lohninger et al. 2022; Salzmann 2017). Note that the correlate is necessary in this analysis, as otherwise it would be a case of vacuous binding.

(12)　a.　… [PP about Samson] remember [CP Op$_1$[he $_1$ is sick]]
　　　　　　　　　　　⌣‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒‒⌣
　　　　　　　　　　　　　Predication

　　　b.　… [PP … [DP]] V [CP Op$_1$ [… pro$_1$ …]]　　　　　　(Salzmann 2017: 294)

This approach requires us to make a few additional assumptions. First, we must assume a lexical ambiguity for all embedding verbs: the predication operation is built into the verb itself. Thus, the meaning of *remember* in (12) is such that it takes an open proposition *P*, the proleptic object *y*, and an attitude holder *x*, and combines them: $\lambda x \lambda y \lambda P$. remember($x$, P (y)). (See Salzmann 2017: 293 and for a slightly more complex story, Moulton 2013: 106ff.) Without the proleptic object, the meaning is simply $\lambda x \lambda p$.remember(x, p), where *p* is a (closed) proposition.

　　Second, the preposition must be treated as syntactically and semantically vacuous. This is because the proleptic object has to enter into a direct predication relationship with the clausal predicate, which must minimally involve c-command. *About/of* is therefore equivalent to the preposition in raising constructions, e.g., *Majaliwa seems **to Samson** to be sick*. I note that this has some questionable empirical consequences. Branigan and MacKenzie (2002) notice that while (13a) is correctly ruled out due to Condition C, the relative acceptability of (13b) presents a challenge, because this should be a Condition C violation as well, like in (13c). ((13d) provides a baseline showing that the expected Condition C effects appear with a truly vacuous preposition.)[6]

(13)　a.　* I believe of her$_1$ that Marie$_1$ fixed the car and Paula washed it.
　　　b.　? I believe of them$_{1+2}$ that Marie$_1$ fixed the car and Paula$_2$ washed it.
　　　　　　　　　　　　　　　　　(Branigan and MacKenzie 2002: 391)
　　　c.　cf, * I told them$_{1+2}$ that Mary$_1$ and Paula$_2$ were washing the car.
　　　　　　　　　　　　　　　　(Branigan and MacKenzie 2002: 391, fn 8)
　　　d.　* It seems to them$_{1+2}$ that Mary$_1$ and Paula$_2$ are sick.

Third, the (lack of) connectivity only follows if we adopt a particular kind of "predicatization" method, where the correlate is treated like a bound anaphor. After all, other derived predicates (e.g., those formed in relative clauses) can show connectivity effects. So we have to assume that this is a particular form of predicate abstraction, which unselectively binds.

　　It is important to note that the CP-predicate analysis has been moderately successful in explaining many of the characteristics noted above. For instance, as suggested by Landau (2011: 801), only referential things can enter into predication relationships, therefore proleptic objects cannot be idioms or expletives.[7] The

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6 This issue also arises with epithets – which are subject to Condition C – as correlates; see discussion in Salzmann (2017: 313, fn 53).

7 However, the term "referential" needs to be used with caution. Quantificational phrases like *every NP* or *no NP* do not have reference in the strict sense, yet they are compatible as proleptic objects.

"aboutness" relationship may be a side-effect of the general Topic-Comment structure that is found in other kinds of left-peripheral abstractions, with an operator in TopicP or similar (cf Branigan and MacKenzie 2002; Rizzi 1997).

I believe that none of the above amount to intractable problems for the derived predicate analysis, and indeed, some things, like the topichood properties can be thought to fall out from merging this kind of null operator. However, there are three more problems which I believe do create true impediments for this approach. I address these in the following sections. Before turning to those issues, I want to emphasize one point: the derived predicate CP analysis has been applied to a wide range of data, including (but not limited to) prolepsis, hanging topics, copy-raising, and major/broad subjects (I will discuss these briefly in Section 7 below.). This speaks to the utility of these kind of null operator CPs: they are a useful mechanism. But its wide application is not empirical evidence. As I will show below, such derived predicates are a powerful tool which both over- and under-generates.

4 Issues with the derived predicate analysis

In the following sections, I will discuss three issues that a derived predicate analysis must contend with: (i) there are cases of vacuous binding; (ii) there are cases in which proleptic objects are possible without an embedded clause; (iii) CPs cannot be derived predicates in general. These issues are not new, and in fact extend beyond prolepsis. Nonetheless, they remain unexplained on a derived predicate analysis. Note that we are mainly confining the empirical generalizations here to English, unless otherwise noted.

4.1 Problem #1: vacuous binding

The first issue has to do with vacuous binding. There are instances of prolepsis that do not involve a correlate pronoun.[8,9]

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8 Lohninger et al. (2022: 3) say that correlate-less prolepsis is possible, without citing examples. Likewise, Salzmann (2017: 270) notes that, "[c]ases where the antecedent is subsumed by the class denoted by the anaphoric form are familiar from discourse, of course." I take this sentence to refer to the cases of apparent Bridging that I discuss below. See also footnote 10 for examples of correlate-less prolepsis in Puyuma.

9 There is gradient acceptability among speakers about the sentences in (14) – but that matches what has also been found for hanging topics in Radford (2018), copy-raising in Landau (2011); Asudeh and Toivonen (2012), and major/broad subjects in Takano (2003). I also note an interesting parallel to the

(14)   a.   Mason discovered about **his new car** that the radio doesn't work.
       b.   Aisha remembered about **the wedding** that it rained the entire time.
       c.   The docent explained about **the mural** that the artist was inspired by their trip to Portugal.
       d.   I heard about **your apartment** that there's a wonderful view (adapted from Heycock 1991)
       e.   Margaret knows about **her children** that Otto is at school, Addie is at the doctor's, and Lew is in his room.
       f.   The detective realized about **the murder** that the killer must have used a gun.
       g.   I read about **that restaurant** that the owner does all the cooking.

This kind of example is a problem for the derived predicate analysis because it implies a case of vacuous binding: there is nothing for the operator to bind in the lower clause.

     I note that assuming a bound implicit NP-proform might work in some cases (e.g, *owner (of it)* in (14g)), but it cannot apply to all of the examples above (e.g., *artist (*of it)* in (14c)). And even implicit arguments that are argued to be syntactically projected, like the experiencer of *amusing*, cannot act as the correlate in prolepsis.

(15)   a.   It was amusing pro_1 [PRO_1 to watch the worm parade] adapted from Landau (2010: 367)
       b.   *I believe about **Fred$_1$** that is was amusing <u>pro$_1$</u> [PRO$_1$ to watch the worm parade]

See related discussion in Heycock (1991: 292), Heycock and Doron (2003: 106) and Landau (2011: 793).

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analysis of gapless relative clauses, like in (i), proposed in Collins and Radford (2015). They suggest that some of these (those with topic-comment interpretation) involve a silent SAY predicate, which is elided, a process that they call *predicate ghosting*. Notice that, in effect, they are proposing that these involve prolepsis with a correlate-less embedded clause.

(i)   You look at some of the other papers **who** <I would say about> *it's not going to be just the 'News of The World' running dodgy practices.* (Collins and Radford 2015: 216), formatting from original

(ii)   All we've had so far are words **which** <I would say about> frankly we need to see the numbers. (Collins and Radford 2015: 217), formatting from original

These judgements are not restricted to English. Similar sentences are observed in Dutch and German, two of the languages in which prolepsis has been extensively studied.[10]

(16) a. *Dat was **de bruiloft waarvan** ik weet dat het de hele tijd regende*
        that was the wedding of.which I know that it the whole time rained
        'That was the wedding about which I know that it rained the whole time.'

   b. *Dit is **de auto waarvan** ik weet dat de radio het niet doet*
        This is the car of.which I know that the radio it NEG works
        'This is car about which I know that the radio doesn't work.'

(17) a. *Das war **die Hochzeit** von **der**   ich (noch) weiß, dass es die ganze Zeit*
        this was the wedding of which I yet   know that it the whole time
        regnete
        rained
        'This was the wedding of which I know that it rained the
        whole time.'

   b. *Dies ist **das Auto**, von **dem** ich weiß, dass das Radio nicht funktioniert*
        this is the car of which I know that the radio NEG works
        'This is the car, of which I know its/the radio doesn't work.'

I believe that it is worth putting these facts into perspective relative to similar constructions. Landau (2011) proposes a distinction between *propositional* and *predicative* CPs. To illustrate, Landau differentiates hanging topics in (18a) and left dislocation in (18b). According to him, left dislocation requires a derived predicate CP, as seen by the requirement for a correlate in (18b), while hanging topics do not.[11] (Note that, for many speakers, (18b) is fine without a pronoun, but with an intonational break after *John*.)

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10 Thanks to Allard Jongman and Malte Zimmerman for help with Dutch and German respectively. Identical observations have been in Puyuma, as well. Note the grammaticality of the English translation. It is unknown whether such correlate-less proleptic clauses are found in all languages with prolepsis proper.

(i)   *ma-ladram-ku **dra**   **aputr** [dra mara-padrangal   na   pulrikudrakudran]*
        AV-know-1SG.PIVOT INDF.ACC flower C   AV.super-expensive DEF.PIVOT chrysanthemum
        'I know about flowers that chrysanthemums are the most expensive.'   (Chen 2018: 17)

11 I think it is worth noting that the distinction that is claimed to exist in (18) may not be real. Alexiadou (2017); Culicover and Jackendoff (2005); Lambrecht (1994); Radford (2018); Villa-García (2023) all demonstrate that examples like (18b), an apparent left dislocation *without* an associated correlate, do exist. (In van Riemsdijk 1997 these are called "Loose Aboutness Left Dislocations" and in Radford 2018 referred to as "orphaned" topics.)

(i)   (As for) Bernardo, I am sure that nobody has confidence in that idiot. (Alexiadou 2017: 2139)

(18)   a.   As for John, something terrible happened.
        b.   John, something terrible happened *(to him).

<div align="right">(Landau 2011: 809)</div>

Landau groups prolepsis together with left dislocation rather than hanging topics, because prolepsis, too, has to have a pronominal requirement (according to him). At the very least then, the examples of correlate-less prolepsis in (14) demonstrate that proleptic objects do not always appear with a predicate CP, and can be treated similarly to (18a).

This point can be specifically demonstrated using some of Landau's own data concerning copy-raising. Landau distinguishes between two kinds of copy-raising, roughly, that which requires a correlate, and that which does not, parallel to the pair of sentences in (18). (This is an over-simplification because the division is not exact. "Propositional" copy-raising clauses *can* have a correlate, but need not. "Predicative" copy-raising *must* have a correlate.) Examples of copy-raising which do not require a correlate are shown in (19). According to Landau, these examples cannot involve predicative CPs, and instead must have a propositional (non-predicative) embedded clause.

(19)   a.   Most Jewish programs for college students are mainly about bringing the student together and getting them to interact with each other. Not necessarily about finding the truth or making a lifelong commitment. **This program seems as if they were trying to hide who they really are and that they are related to Christianity.**

(ii)   Cars like this, the performance is not about the figures.

<div align="right">Radford (2018: 42), quoting James May, BBC2</div>

As far as I can tell, Landau's terminological distinction between a "hanging topic" and "left dislocation" is also not supported in the literature. Davison (1984); Gundel (1988); Lambrecht (1994); Prince (1998); Alexiadou (2017) do not make a systematic distinction between hanging topics and left dislocation. In other languages, there is a clear difference between *hanging topic left dislocation* and *clitic left dislocation*, and there is also a distinction between *contrastive left dislocation* and *hanging topic left dislocation*, but the examples in (18) do not reflect either of these differences. (And of course, neither are instances of *topicalization*, which involves overt movement.) I note finally that in Alexiadou's (2017) overview of left dislocation, she observes that "Hanging topics can be introduced by an 'as for' phrase…[h]owever…the presence of these phrases is not obligatory" (p. 2139). Prefiguring the eventual analysis, I suggest that *as for* does something similar to *about* in explicitly defining a role semantic for *John*. Without it, we have to rely on other cues, like prosody, to determine how to interpret the relationship between *John* and the following clause. This, I suggest explains the relative unacceptability of (18b).

    b.   The day of the 17th, I checked the tracking information out of curiosity in how far it had come and where it had been. The tracking information showed it as being scanned into the Nashville sorting facility. I could not express my excitement as **the situation appeared like I would receive the package a day early.**

    c.   In fact, even the sky appeared as though the clouds themselves had been stripped of life.   (Landau 2011: 785, bold in original)

According to Landau, the relationship demonstrated in these examples between the subject and embedded clause is "open-ended" and "flexible," meaning that is it is not syntactically encoded, but relies on contextual factors. Now notice then this same pragmatic relationship holds for proleptic objects as well.

(20)   a.   I suspect about **this program** that they're trying to hide who they really are and that they are related to Christianity.

      b.   I'm hopeful about **this situation** that I'll receive my package a day early.

      c.   I exclaimed about **the sky** that the clouds themselves had been stripped of life.

Prolepsis is just as open-ended and flexible as Landau's copy-raising examples. So prolepsis is actually grouped together with (18a), rather than (18b): it need not (though it often will) have a correlate, depending on pragmatic, not syntactic factors.

    Since it will be important later, I will delve into a more precise definition of the relationship between the proleptic object and the embedded clause. This relationship is identical to what we expect from a *discourse* aboutness topic. For instance, the same connection between clauses is found in Bridging contexts, a point made explicitly in Villa-García (2023) concerning hanging topics. In Bridging there is an antecedence relationship between sentences, resulting in the felicitous use of a definitive description (Irmer 2011).

(21)   a.   **The Crown**, I cry every time I think of poor Lady Di.

      b.   I've been binge-watching **The Crown**. I cry every time I think of poor Lady Di.   Villa-García (2023: 304), bold in original

All the cases of prolepsis in (14) involve the same kind of relationship. In (22a) and (22b), the existence of the radio is inferred as a part of the car. In (23a and (23b), the wedding serves as a situational "setting" for the following clause/sentence. Likewise, in (24a) and (24b), the artist can be inferred from the fact that murals have creators.

(22)   a.   Mason discovered about **his new car** that the radio doesn't work.
  b.   Mason hates **his new car**. The radio doesn't work.

(23)   a.   Aisha remembered about **the wedding** that it rained the entire time.
  b.   Did you hear about **the wedding**? It rained the entire time.

(24)   a.   The docent explained about mural that the artist was inspired by their trip to Portugal.
  b.   **The mural** was extraordinary. Apparently, the artist was inspired by their trip to Portugal.

The point here is that there is a relationship between the proleptic object and the embedded clause, but that relationship is semantico-pragmatic, rather than syntactic.

4.2 Problem #2: licensing

The second issue for the predication analysis involves the licensing requirement. Recall that on the analysis of prolepsis described in Section 3, the proleptic object is dependent on the embedded clause because the embedded clause "licenses" the proleptic object (via e.g., assigning it a thematic role). Thus, embedded clauses are required in the following sentences (repeated from (2) above).

(25)   a.   Majaliwa believes of **Samson** *(that <u>he</u> broke the vase)
  b.   Majaliwa said about **Samson** *(that <u>he</u> is scared of frogs)

However, this is not quite representative of the entire empirical picture. Rawlins (2013) observes that *about*-PPs have a wide distribution, freely occurring *without* an embedded clause.

(26) John {asked / wondered / knows / dreamed /…} about **Mary**

                  (Rawlins 2013: 336)

Note that these are not elliptical sentences: there is no antecedence requirement in uttering (26), hence no silent clause. Since *about*-PPs are productive with essentially all clause-embedding verbs, they share a distribution with proleptic objects, which are similarly productive in Germanic languages (Salzmann 2017). The entailment relationships in (27) confirm that examples like (26) are indeed proleptic objects without embedded clauses (see Onea 2024: 281ff for an identical observation.).

(27)   a.   John {asked / wondered / knows / dreamed} about **Mary** {whether/that} <u>she</u> was sick
  b.   Therefore, John {asked / wondered / knows / dreamed} about **Mary**.

It is difficult to see how the proleptic object is entering into a predicational relationship in these cases: there is no clausal predicate. In some cases, a *propositional DP* (a "propDP," borrowing a term from Elliott 2017) is required.[12] Thus, while (25) are ungrammatical without the embedded clause, the inclusion of *something* fixes them. Note further that the same predicates that allow *of* proleptic objects also allow *of* without the embedded clause (cf, Zyman 2022).

(28) a. Majaliwa said about/of **Samson** that <u>he</u>'s sick.
      b. Therefore, Majaliwa said *(something) about/of Sams**on**

(29) a. Majaliwa believes about/of **Samson** that <u>he</u>'s sick.
      b. Therefore, Majaliwa believes *(something) about/of Sam**son**

(30) a. Majaliwa suspected about/of **Samson** that <u>he</u>'s sick.
      b. Therefore, Majaliwa suspected *(something) about/of **Samson**.

I have no comment on why some embedding predicates require this 'extra' propDP. (The presence of such a DP lends support to Rawlins' analysis, which I discuss shortly.) The point here is that proleptic objects are possible without an embedded clause. This ultimately undermines the motivation for the predication relationship, which is to license the proleptic object. In fact, proleptic objects are perfectly acceptable without entering into a predicative relationship.

4.3 Problem #3: CPs cannot be derived predicates

The final problem concerns a prediction that the derived predicate analysis makes. If CPs can be turned into derived predicates via null operator merge, then we expect them to act like predicates elsewhere. That is, we expect there to be empirical evidence that they *are* predicates. However, as Landau (2011) points out, this kind of CP systematically cannot be a predicate.

(31) a. * Samson$_1$ is [$_{CP}$ Op$_1$ that he$_1$ is sick]
      b. * This painting$_1$ is [$_{CP}$ Op$_1$ that it$_1$ is a masterpiece]   (Landau 2011: 796)

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12 The class of propDPs is defined distributionally and includes (i) DPs headed by the noun *thing*; (ii) *what* (iii) anaphor *it/that*; (iv) null operators in comparatives. (See Elliott 2017.) A reviewer asks whether any of the other propDPs work in prolepsis. Pronominal anaphora and null operators do not, simply because they cannot be complex-NPs, according to the analysis presented below. Clearly DPs headed by *thing* can. *What* can actually work as well: *What does Majaliwa know about Samson?* and *What Majaliwa knows about Samson is that he's sick.*

This is a significant issue for which there is no good explanation other than simply stipulating that these sorts of clauses cannot be predicates outside of prolepsis and the like.[13] The analysis of prolepsis discussed above hinges on the assumption that CPs can be predicational, yet there is no independent empirical evidence that this is correct.

I note that other cases of true predication similarly do not pass this test. For instance, Salzmann (2017: 294) observes that *such that* clauses can be predicates. But *such that* clauses cannot appear in prolepsis.

(32)   a.   **Samson**$_1$ is [such that <u>he</u>$_1$'s sick]
       b.   * Majaliwa knows about **Samson**$_1$ [such that <u>he</u>$_1$'s sick]

And lastly, there is no good explanation for why CPs with *overt* operators cannot be used in prolepsis. For instance, the standard treatment of relative clauses is that they are (or at least can be) true derived predicate CPs (Browning 1987; Cinque 2020; Heycock 1991). However, +*wh*-embedded clauses systematically do not work in prolepsis – even when +*wh*-clauses are selected by the embedding predicate (cf, Branigan and MacKenzie 2002: 394). Note as well that +wh-clauses can appear in predication structures – though these are specificational, perhaps not 'true' predicates. Nonetheless, CPs with null operators do not have this option at all.

(33)   a.   * Majaliwa remembered about **Samson**$_1$ [who$_1$ (<u>he</u>$_1$) is sick]
       b.   * Majaliwa wondered about **Samson**$_1$ [who$_1$ (<u>he</u>$_1$) is sick]
       c.   Majaliwa$_1$ was [who$_1$ was sick]

In summary, the idea of deriving a CP-predicate in prolepsis is difficult to square with the empirical picture. There is no empirical evidence that such CPs *can* be predicates: they do not act like predicates elsewhere. Moreover, there are cases in which we do not want them to be predicates anyway, as it leads to vacuous binding. And finally, we find cases of prolepsis without clausal predication anyway. These are serious

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13 This is essentially the solution that Landau (2011) posits (the only solution I am aware of). Landau suggests that (31) might fall out from the two constraints below. (On my understanding, (ii) must be allowed to "overrule" (i).)

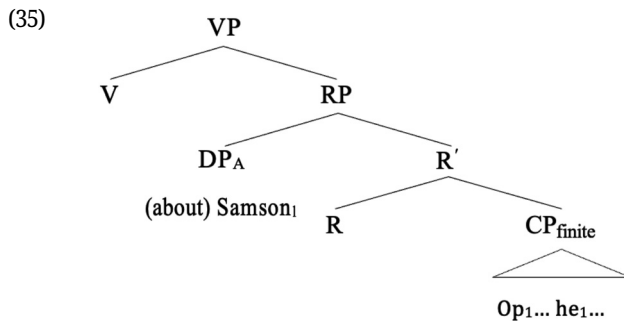(i)   Null operators cannot be merged with a finite clause.

(ii)   Null operator CPs are selected.   (Landau 2011: 797)

According to Landau, the examples in (31) are ungrammatical because of the constraint in (i): Op has been merged with a finite clause (and presumably it has not been selected).

issues because the derived predicate analysis of prolepsis *hinges* on the purported predicational properties of such CPs.[14]

5 Proposal: proleptic objects as complex-NPs

The core idea I pursue is sketched in (34). The novelty in this analysis is that proleptic objects are born in a DP-shell, which I suggest means something like *the thing about X* or perhaps more colloquially *X's deal.*

(34) a.   Majaliwa remembers about **Samson** that <u>he</u>'s sick.
      b.   ≈ Majaliwa remembers \<the thing\> about **Samson** \<is\> that <u>he</u>'s sick.

The analysis will pull together three (semi-)independent lines of research on the syntax and semantics of clausal embedding. As I show below, some recent advances in our understanding of independent aspects of prolepsis can – and should – be adopted into our understanding of prolepsis proper. Crucially, I will be able to derive proleptic constructions from these independently established mechanisms, without having to resort to a derived predicate analysis. Finally, I will demonstrate in Section 6 that there is empirical support for this analysis from Japanese.

5.1 Ingredient #1: the relational phrase

The first idea I will adopt is from Lohninger et al. (2022). In a series of works, these authors look at a range of cross-clausal A-dependencies (prolepsis, subject and object hyper-raising, long distance case/agreement), and formulate a universal architecture to capture these disparate phenomena. The core of their proposal hinges on the presence of a Relational Phrase (RP) which connects some element in the main

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14 One piece of evidence raised by Salzmann (2017: 279) in favor of a null operator is that embedded clauses in proleptic constructions are opaque for further movement. (They are weak islands.) However, prefiguring the analysis below, notice that extraction is also impossible in equational sentences like (iii)/(iv).

(i)   * Who do you believe John loves __ ?
(ii)   Who do you believe of John that he loves __   adapted from Salzmann (2017: 279)
(iii)   The rumor is that Ralph loves John.
(iv)   * Who is the rumor that Ralph loves __ ?

Thus, the islandhood effects can be explained as a side-effect of the equational relationship in (iii)/(iv), which is what my analysis proposes.

clause, DP_A, with the embedded clause (see also den Dikken 2006, 2017.). The basic idea is illustrated in (35), which demonstrates their understanding of prolepsis.

(35)

The point here is that R instantiates the predicational relationship between the proleptic object and the clause; this part of the meaning is not built into the embedded verb and there is no need to posit a lexical ambiguity for all clause-embedding verbs. Note that the authors assume that DP_A may – and often must – displace higher into the main clause. (This point will figure into the eventual analysis of Japanese in Section 6.) In English, this results in DP_A being merged as an argument of the embedding verb (Zyman 2022). As I discussed earlier, most examples of German prolepsis are felicitous when the proleptic object has been A'-moved higher within the main clause. I make no claims about the final position of the proleptic object. I simply assume that it starts in spec-RP.

The proposal in Lohninger et al. (2022) is largely conceptual; by postulating RP, they are able to explain a swath of cross-clausal dependencies. A reviewer therefore asks whether there is any empirical motivation for such a relational phrase. The answer is a clear yes – at least for prolepsis. Here I will briefly consider data from Swahili, which is well-documented as having two complementizers, *kwamba* and *kuwa* (Ashton 1947; Mpiranya 2015). *Kwamba* is a *say*-complementizer, diachronically related to a verb meaning 'say, speak.' *Kuwa* is a *be*-complementizer (or copular complementizer), synchronically identical to the copula in Swahili. (Note that *be*-complementizers are relatively common in Eastern and Southern Bantu languages; Gluckman 2023).[15]

(36) *Juma a-na-amini   kuwa/kwamba Maina a-na-umwa*
      Juma 1SM-PRES-believe C_{be}/C_{say} Maina 1SM-PRES-be.sick
      'Juma believes that Maina is sick.'

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[15] Thanks to Cyprian Vumilia for these judgments. Anecdotally, I have elicited similar results in other Bantu languages with *be*-complementizers. (The gloss SM stands for "subject marker.").

The two complementizers are largely in free variation (Finholt and Gluckman 2023), meaning that they are basically interchangeable – except in the presence of a proleptic object. In that context, only *kuwa*, the *be*-complementizer, is possible.

(37) *Juma a-na-amini   kuhusu **Maina** kuwa/*kwamba a-na-umwa*
      Juma 1SM-PRES-believe about   Maina C_{be}/C_{say} 1SM-PRES-be.sick
      'Juma believes about **Maina** that <u>he</u> is sick.'

As copulas are relational phrases *par excellence*, I take this to be clear empirical motivation for a relational phrase in prolepsis.

5.2 Ingredient #2: contentful individuals

The second idea I am adopting concerns recent advances in the semantics of embedded clauses. One of the most influential recent proposals about embedded clauses stems from ideas in Kratzer (2006, 2013); Moulton (2015) (and many subsequent authors), who have repositioned the "work" associated with attitude reports. In the traditional Hintikkan approach, attitude verbs are modal quantifiers, quantifying over belief states of the attitude holder.

(38) $[\![\text{believe}]\!] = \lambda p_{st}\,\lambda x.\forall w \in \text{DOX}_x\,, p(w) = 1$

Kratzer *et seq* reformulate this idea, postulating that this meaning is actually associated with the embedded clause, built into the meaning of the complementizer. Moreover, based on how clauses interact with nouns like *rumor, claim, belief*, finite clauses are conceived of as being properties of individuals – but special kinds of individuals, those with propositional content.

(39) a. CONTENT(x) = {w | w is compatible with x}   (Moulton 2009: 27)
      b. $[\![\text{that}]\!] = \lambda p\lambda x.\ \forall w \in \text{CONTENT}(x), p(w) = 1.$
          defined iff x has propositional content
      c. $[\![\text{that Samson is sick}]\!] = \lambda x.\ \forall w \in \text{CONTENT}(x),$ Samson is sick in w.
          defined iff x has propositional content

Here, CPs are properties of individuals, but they are not *derived* predicates. They are inherently properties of special kinds of individuals. Thus, they may combine either directly (via predicate modification; Heim and Kratzer 1998) or predicatively with propositional nouns. In either case, they identify the content of the noun.

(40) a. $[\![\text{rumor}]\!] = \lambda x.\text{rumor}(x)$
      b. $[\![\text{the rumor that Samson is sick}]\!] = \iota x[\text{rumor}(x) \wedge \forall w \in \text{CONTENT}(x),$ Samson is sick in w]
      c. $[\![\text{the rumor is that Samson is sick}]\!] = 1$ if $\exists! x[\text{rumor}(x) \wedge \forall w \in \text{CONTENT}(x),$ Samson is sick in w]

There are various approaches to extend this to clausal complements of verbs. For concreteness, I will assume that of Elliott (2020), who adopts a neo-Davidsonian approach to verbal predicates, separating out all the arguments from the predicate. An embedding verb like *remember* is simply a property of event(ualities), which, through the course of the derivation, may "acquire" arguments.

(41)   ⟦remember⟧ = λe.remember(e)

Elliott assumes that there is no ontological distinction between individuals and eventualities, and therefore verbs can combine with their complement clauses via predicate modification. In (42), e is a contentful eventuality (Hacquard 2006), which is indistinguishable from a contentful individual.

(42)   ⟦remember that Samson is sick⟧ = λe.remember(e) $\wedge$ $\forall w \in$ CONTENT(e), Samson is sick in w

This general approach (with variations) has been enormously successful in accounting for a range of behaviors both across and within languages (Bochnak and Hanink 2022; Bondarenko 2020; Elliott 2020; Gluckman 2021; Major 2021), among many others. However, outside of Moulton's (2009) discussion, this line of thinking has not been applied to proleptic constructions.

5.3 Ingredient #3: *About*-PPs

The final idea that I adopt comes from work on the preposition *about* in Moulton (2009), Rawlins (2013), and Onea and Mardale (2020). Rawlins (2013) in particular addresses the cases of *about*-PPs without an embedded clause, repeated below in (43).

(43)   John {asked / wondered / knows / dreamed /…} about Mary

(Rawlins 2013: 336)

Rawlins observes that in some ways, *about*-PPs are over-productive: they combine with nouns, verbs, and adjectives. But within those categories, they have a restricted distribution, generally combining with categories that have propositional content, as defined above. For instance, *about*-PPs may appear with all attitude embedding predicates (without an embedded clause), but otherwise do not appear with other verbs: **eat about Mary, *run about Mary,* etc.

As we observed above, in (43) are examples of proleptic objects without an associated clause. Building on the semantic concepts for propositional content introduced above, Rawlins (following Moulton 2009) argues that *about*-PPs affect the propositional content that such verbs invoke. Intuitively, if *John asked about Mary*, then John asked some question which concerns Mary; if *John knows about Mary*, then

John knows some fact which concerns Mary; if *John dreamed about Mary*, then John dreamed some dream which concerns Mary. Here, *about* is adding the meaning "which concerns *x*." Slightly more formally, the propositional content of the implicit noun (*question, fact, dream, belief, lie, …*) is restricted to "concern" the complement of the preposition.[16]

I provide in (44a) a version of the Moulton/Rawlins proposal that adopts directly from Onea and Mardale (2020). I translate the "concerns" meaning into topichood with the semantic role TOPIC, defined in (44b). (For an alternative to this idea, see Portner and Yabushita 1998).

(44)   a. $[\![about]\!] = \lambda x \lambda y.$ *x* is the TOPIC in CONTENT(*y*)
          defined iff *y* has propositional content
                                 adapted from Onea and Mardale (2020: 371)
   b.   For a contentful individual *x*, an individual *a* is the TOPIC in CONTENT(*x*) if there is a discourse *D* such that CONTENT(*x*)=CONTENT(*D*) and *a* is the discourse topic of *D* and *R*(*D*, *a*), where *R* is a relational variable lexically determined by the matrix predicate.
                                 adapted from Onea and Mardale (2020: 372)
   c. $[\![[_{PP} about\ Samson]]\!] = \lambda y.$ Samson is the TOPIC in CONTENT(*y*).
          defined iff *y* has propositional content

Functionally, *about*-PPs affect the propositional content of some contentful noun by making the content "about" the proleptic object. It does so by explicitly stating that the proleptic object is the topic in that content. The definition of TOPIC works by equating the relevant content with a discourse context, and makes the complement of *about* a discourse topic. As we noted earlier, this is precisely the kind of topichood relationship we want in prolepsis.

Putting content nouns together with *about*-PPs yields the intersective meaning in (45a). *The rumor about Samson* refers to the unique rumor whose topic is Samson. When we equate such complex-NPs with propositions, we get the meaning

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16 A more fleshed out version of Rawlins (2013) is the following: propositional content comes in different "flavors," depending on the verb in question. A verb like *ask* invokes inquisitive content; *know* uses informative content; etc. Rawlins proposes that this content is not "orthogonal" to some subject matter that the proleptic object evokes. That is, how we settle this content moves us forward to settling whether some proposition concerning the proleptic object is true or not. Onea and Mardale (2020) argue that this is basically right, but adopt an analysis that aligns with what I say in the text. According to Onea & Mardale, Rawlins errs in taking the "base case" as a sentence like *John wondered about why Mary left*, where *about* appears with a clausal complement. We concur with Onea & Mardale that the base case is *about* with a nominal complement, meaning that the complement of *about* is not inherently a (set of) proposition(s).

in (45b). In this case, the following clause provides the actual content which Samson is a topic in.

(45)   a.   ⟦the rumor about Samson⟧ = ιx[rumor(x) ∧ Samson is the TOPIC in CONTENT(x)].

      b.   ⟦the rumor about Samson is that p⟧ = 1 iff ∃!x[rumor(x) ∧ Samson is the TOPIC in CONTENT(x) ∧ ∀w ∈CONTENT(x), $p(w)$ = 1]

Note the effect of TOPIC: it constrains the relationship between the complement of *about* and the embedded proposition. The incongruity of a sentence like (46a) is equivalent to incongruity of the discourse in (46b) because in both cases, without additional contextual information, *Samson* is not the topic of the utterance "Esther is sick".[17]

(46)   a.   # The rumor about Samson is that Esther is sick

      b.   Did you hear about Samson? #Esther is sick.

Under the current assumptions that there is no distinction between individuals and events, *about*-PPs can combine directly with embedding predicates via predicate modification, resulting in the following meaning in (47).

(47)   ⟦know about Samson⟧ = λe.know(e) ∧ Samson is the TOPIC in CONTENT(e) defined iff e has propositional content

In prose what (47) says is that e is an event of knowing, and Samson is the topic in the propositional content associated with that event.

5.4 Putting the pieces together

I believe that the three ingredients above are all significant syntactic and semantic advances. But it is not possible for them to be right while still maintaining the derived predicate analysis of prolepsis, as discussed in Section 3. If Lohninger et al. (2022) are correct, then the "locus" of the predication relationship is not the verb itself, but a

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17 Here I use '#' instead of '*' because on the present account, the examples in (46) are merely infelicitous, not ungrammatical. As a reviewer points out, (46a) becomes more felicitous if we know that Esther is, say, Samson's wife. A reviewer asks if we might give a more formal definition for the term "topic" I am using here. How do we pick out the topic? Indeed, there are entire semantic and pragmatic frameworks that attempt to answer this question. My definition takes a fairly simple approach: it is what the utterance is about. One way of thinking about this is that the *purpose* of an utterance is to give some relevant, salient information about the topic. I abstract away from a more formal definition, noting that *however* we define the topichood relation in (46b), we want that same relation in (46a).

lower layer. Likewise, if Kratzer (2006) *et seq* are correct, then embedding verbs combine with "inherent" properties of contentful individuals, not derived properties (of non-contentful individuals). And if Moulton (2009)/Rawlins (2013)/Onea and Mardale (2020) are correct, then *about* is playing a meaningful and significant role in prolepsis; it is not vacuous.

The core proposal adopts the insights above in the following way: proleptic objects are complex-NPs(/DPs), introduced in the specifier of RP. This complex-NP is headed by a phonologically null generic contentful noun, read as "the thing about Samson" or more colloquially, "Samson's deal."

(48)
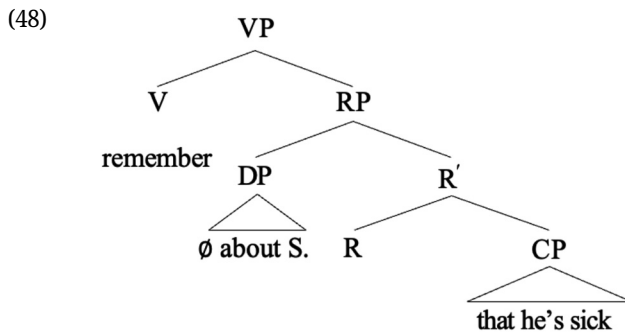
There is still predication in prolepsis, mediated through the head R, but now the kind of predication is equational, equating a contentful noun with its propositional content, which is provided in the CP. *About*-PPs make a semantic contribution, identical to their use outside of prolepsis: they restrict the propositional content to being "about" the proleptic object.

I propose that the complex-NP is interpreted as a definite generic contentful noun, which I call THING.

(49) $\llbracket\ [_{DP}\ \varnothing\ \text{about Samson}\ ]\ \rrbracket = \iota x[\text{THING}(x) \wedge \text{Samson is the TOPIC in CONTENT}(x)]$
         where THING(x) is a generic contentful noun

Note that ultimately, the interpretation of the contentful noun will depend on the embedding verb, as discussed extensively in Rawlins (2013). For instance, under *ask*, THING will have content that is consistent with the contentful noun *question*. Under *know*, the interpretation will be fact; etc. This is consistent with the fact that proleptic arguments are syntactically selected (Zyman 2022) (which is achieved via A-movement into the main clause). Ultimately, this is also the explanation for the use of *of* as the preposition in prolepsis: the choice between *about* and *of* is dependent on which null contentful noun has been chosen. (On this understanding, there is no semantic distinction between *of* and *about* in prolepsis.)

The head R itself I take to be a run-of-the mill relational head (e.g., a copula), which takes a predicate, an individual, and an eventuality, and asserts that the predicate holds of the individual in that eventuality, (50). Thus, RP combines with the embedding predicate via predicate modification.

(50) $[\![R]\!] = \lambda P_{et}\, \lambda x_e \lambda e_v\, .P\,(x)$ in e

(51)
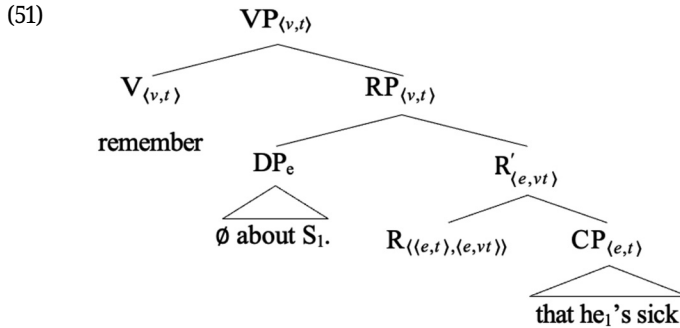
(52)   a. $[\![RP]\!]^g = \lambda e.\exists!x[\text{THING}(x) \wedge$ Samson is the TOPIC in CONTENT$(x) \wedge \forall w \in$CONTENT(x), $g(1)$ is sick in $w]$ in e

b. $[\![(51)]\!]^g = \lambda e.\text{remember}(e) \wedge \exists!x[\text{THING}(x) \wedge$ Samson is the TOPIC in CONTENT$(x) \wedge \forall w \in$CONTENT(x), $g(1)$ is sick in $w]$ in e

In prose, (52b) denotes the set of eventualities which are remembering eventualities and in which there is a unique contentful noun whose content is the set of worlds in which Samson is sick, and Samson is the topic in that content. Assuming that the subject is introduced as an attitude holder in higher functional structure, and that there is existential closure, the original sentence in (1) has the meaning in (53).

(53) $[\![(1)]\!]^g = 1$ iff $\exists e[\text{HOLDER}(e) = \text{Majaliwa} \wedge \text{remember}(e) \wedge \exists!x[\text{THING}(x) \wedge$ Samson is the TOPIC in CONTENT$(x) \wedge \forall w \in$ CONTENT(x), $g(1)$ is sick in $w]$ in e

Importantly, the pronominal correlate in this analysis is interpreted relative to the assignment function *g*; it is not bound. There is no syntactic relationship between the proleptic object and its correlate. Thus, the lack of connectivity and topichood properties come for free. The topic requirement will often translate into there being a pronoun in the embedded clause, but not always, simply due to the fact that topics often – but not always – have correlates (Alexiadou 2017; van Riemsdijk 1997). Note that establishing a topichood relation with the embedded clause makes correlates *preferred* in precisely the same way that we track topics across a discourse. The reference of a free pronoun will preferentially track the topic of the conversation,

but it need not if other factors intervene. The general topichood properties of proleptic objects, like referentiality, specificity, and genericity, also come from the fact that *about* directly asserts topichood of its complement.[18]

In short this analysis captures everything that the derived predicate CP analysis does. Each piece of the prolepsis puzzle (the Relational Phrase, the semantics of embedded clauses, and the semantics of *about*) is independently motivated. Moreover, notice that we have an explanation for why proleptic objects (in English) are always introduced in a prepositional phrase: they're part of a complex-NP.[19] Most importantly, in the next section I show that there is empirical evidence for positing a null contentful noun. Before that I need to address two concerns raised by reviewers. The first issue is that a reviewer suggests the analysis predicts that we can have sentences like (54), where the silent noun is modified.

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18 This analysis suggests an alternative to Rawlins's (2013) data where *about*-PPs appear without embedded clauses. I assume in this case that the null noun is one of Elliott's (2017) propositional DPs, e.g., *something* (which as we observed are in fact necessary with certain embedding verbs, e.g, *believe*). In Elliott's analysis, propositional DPs like this must be treated as quantifiers which take the embedding verb as an argument. (Elliott's denotation essentially makes sure that the content is "the same" across worlds.)

(i) $[\![something]\!] = \lambda Q_{\langle et ,t \rangle}.\exists P_{\langle et \rangle}[\exists p_{\langle st \rangle}[\forall x[P(x) \rightarrow \text{CONTENT}(x) = p]] \wedge Q(P)$

adapted from Elliott (2017: ex (43))

I note that this is a potential alternative analysis to prolepsis proper, different from what we have proposed above — but still consistent with the idea that proleptic objects are complex-NPs. That is, instead of THING, we might suppose that the silent noun is a propDP. However, there are two problems. First, it ignores the relational phrase proposal from Lohninger et al. (2022), which I believe to be empirically supported. But more problematic is that propDPs cannot co-occur with an embedded clause: *Majaliwa remembers something that Samson is sick*. These are in complementary distribution because the propDP *has* the propositional content.

19 I note that this analysis also captures the data from German introduced in Salzmann (2017) in (i) and showing that proleptic objects cannot bind into adjunct clauses. This is in contrast with aboutness topics introduced with *bei* 'at.'

(i)   *??das*   **Bild,**   *von* **dem**   *all*   *lachen,* *wenn*   *ich*   _es_   *zeige*
      the   picture   of   which.DAT   all   laugh   when   I   it   show.1sg
      'the picture about which everyone laughs when I show it'

(ii) **Das   Bild**,   *bei* **dem**   *alle*   *lachen,* *wenn*   *ich*   _es_   *zeige*
      the   picture,   at   which.DAT   all   laugh   when   I   it   show.1sg
      '**the picture** at which everyone laughs when I show it'   (Salzmann 2017: 454)

There are a few reasons why (i) can be ruled out. On this analysis, (i) can only be constructed by merging RP as an adjunct. To get to its surface position, the proleptic object *von dem* would have to move out of the adjunct, an island-violating movement. In contrast, *bei dem*, which is not part of a complex-NP, is generated in the main-clause; there is no RP — or movement out of an island.

(54)   * Johnson knows amazing ∅ about **Williams** that <u>she</u>'s an incredible
         sculptor.

However, as a general rule, phonologically null (non-elided) material cannot be modified. Consider null implicit arguments of predicates like *very amusing*.[20] This can have an implicit pronoun (as shown in (15)). While an overt experiencer can naturally be modified, *The play was very amusing **to us, the critics***, an implicit argument cannot, **The play was very amusing **pro the critics***. Whatever explains this fact extends to (54).

     Another reviewer asks why we can't overtly pronounce the contentful noun in prolepsis (55a). To their comment, I also include (55b), which attempts to predicate the null noun of an overt relational phrase, *is*.

(55)   a.   * Majaliwa remembered the thing about **Samson** that <u>he</u> is sick
        b.   * Majaliwa remembered ∅ about **Sampson** is that <u>he</u> is sick.

Again, the response here is simply to note that null elements are "licensed" differently from overt elements. Again taking *very amusing* as an example. An overt experiencer must be introduced by the preposition *to*, while an implicit experience cannot be introduced by *to*.

(56)   a.   The play was very amusing *(to) the critics.
        b.   The play was very amusing (*to) *pro*.

This generalization extends to (55a). The reason that (55a) is ungrammatical is because the thing that introduced the overt noun *thing*, RP, is unpronounced. It is ungrammatical for exactly the same reason that (56a) is ungrammatical without *to*. Similarly, (55b) is ungrammatical for the same reason that (56b) is ungrammatical with *to*: we cannot overtly pronounce something whose function is to introduce a null element.[21]

6 Evidence for a complex-NP: Japanese prolepsis

In this section, I will discuss some well-known data from Japanese. While I cannot replicate the body of work on Japanese embedded clauses (see Hoji 1991, 2005;

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20 I include *very* to make sure that *amusing* is treated as an adjective, not a verb, in the following examples. This is purely for simplicity of the examples.

21 A third comment from a reviewer asks why the count noun THING unlike any other count noun in English is allowed to appear with a null determiner. This may simply be a morphological idiosyncracy: a null allomorph of D appears with a null noun. (I believe that this is what Kiparsky and Kiparsky 1970 implicitly assume as well in their proposal for FACT heading factive clauses.)

Kitagawa 1985; Kuno 1976, 2010; Saito 1983; Takano 2003; Yoon 2007, among many others), I focus on cases which have the hallmarks of prolepsis (what Kitagawa 1985 calls "quasi-ECM"), well-cited in the literature. In (57a, 57b), I have chosen examples with overt pronouns in the embedded clause to highlight the non-raising/ECM nature of these constructions, though it is agreed that *pro* is also possible as well, as shown in (57c).[22]

(57)　a.　*keisatu-wa*　**Sigeko-o**　　[$_{CP}$*kanozyo$_1$-ga*　*Yamada-no*
　　　　police-TOP　　Shigeko-ACC　she-NOM　　　　Yamada-GEN
　　　　kyoohansya　*datta*　*to]*　　*danteisita*
　　　　accomplice　　was　　that　concluded
　　　　'The police concluded about **Shigeko$_1$** that <u>she$_1$</u> was　(Kitagawa 1985: 270)
　　　　Yamada's accomplice.'

　　　b.　*Watasi-wa*　**kare-no**　**seikoo-o**　　[$_{CP}$ <u>*sore$_1$-ga*</u>
　　　　I-TOP　　　　he-GEN　　　success-ACC　it-NOM
　　　　magureatari　*da*　*to]*　*omotte*　*ita*
　　　　due.to.luck　　is　　that　think
　　　　'I assumed of his **success** that <u>it</u> was due to luck.'　(Hoji 1991: 5)

　　　c.　*Watasi-wa*　**ano**　**hito$_1$-o**　　[$_{CP}$[*pro$_1$*　*musuko san]-ga*　*moo*
　　　　I-TOP　　　　that　person-ACC　　　　　son-NOM　　　　already
　　　　daigakusei　　*da*　*to]*　*(bakari)*　*omotte*　*imasita*
　　　　college.studen　is　　that　　　　　　thought
　　　　'I thought of **that person$_1$** that {<u>her$_1$</u>/<u>his$_1$</u>} son is already a college student.'
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(Hoji 1991: 5)

Such cases display the core characteristics of prolepsis: (i) the bolded object is not a part of the embedded clause and cannot be interpreted there (in terms of scope, anaphora, and binding); (ii) there is an obligatory dependency between this object and the clause resulting in a (sometimes null) correlate; (iii) the correlate is not

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22 To be clear, there is debate as to whether such constructions involve true prolepsis or something else. Yoon (2007) defends the position that these are Major Subjects which have displaced into the main clause, rather than proleptic objects (Hoji's 2005 "Major Objects"), which are generated in the main. However, we saw earlier regarding Lohninger et al. (2022) that these are not mutually exclusive. Proleptic objects start in spec-RP and can (and often must) displace into the main clause. Part of Yoon's argument is that there is no way for this argument to get a thematic role. However, under the account proposed here, the thematic role is clear: it's a possessor. Yoon's second argument is that there are cases which appear to involve violation of the Proper Binding Condition, a naturally consequence of movement. Again, I do not dispute these facts, but merely note that they are compatible with a proleptic analysis, since there is movement into the main clause from spec-RP.

confined to any particular syntactic position. (See Hoji 2005; Yoon 2007 and works therein for extensive discussion). It is often noted that these examples are interchangeable with a complex-NP/DP as the proleptic object (see in particular Kishimoto 2021). In such cases, the object is encased in a DP-shell, headed by the noun *koto*. The general consensus is that there is no meaningful difference between the object with or without the DP-shell.

(58)   a.   *boku-wa* **Yamada-san₁ no   koto-o** <u>*kare₁*</u>*-ga* *hontoono*
           I-TOP   Yamada-san   POSS koto-ACC he-NOM   real
           hannin da   to   sitteita
           culprit PRES COMP   knew
           'I know about Yamada-san₁ that he₁ was the real   (Kitagawa 1985: 268)
           culprit.'

       b.   *Mary-wa* **John-no koto-o** *[CP kurasu-no naka-de* <u>*kare₁*</u>*-ga itiban*
           Mary-TOP   John-GEN KOTO-ACC   class   among   he-NOM   most
           baka da   to]   omotte iru
           fool   is   that   thinks
           'Mary thinks of **John₁** that <u>he</u>₁ is the most stupid among the class.'
                                                    (Hoji 1991: 4), cited from Saito (1983)

As discussed in Takano (2003) and Kishimoto (2021), the noun *koto* has various uses in Japanese. Of particularly relevance here is its "aboutness" use:[23] "N *no koto*, whose literal meaning is 'thing of N', is often used with such verbs as *sitteiru* 'know', *hanasu* 'talk' and *wasureru* 'forget', and mean 'know about N', 'talk about N', etc" (Murata 1999: 77), citing Makino and Tsutsui (1986: 193). That is, *koto* (in this use) does the same thing – with the same distribution – as what Rawlins observes for *about*-PPs in English.[24]

(59)   a.   *Mary-wa John-no   koto-o   omot-ta*
           Mary-TOP John-GEN   KOTO-ACC   think-PAST
           'Mary thought of/about John.'

       b.   *Mary-wa John-no   koto-o   hanasi-ta*
           Mary-TOP John-GEN   KOTO-ACC   speak-PAST
           'Mary spoke of/about John.'

       c.   *Mary-wa John-no   koto-o   wasure-ta*
           Mary-TOP John-GEN   KOTO-ACC   forget-PAST
           'Mary forgot of/about John.'

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23 This term is taken from Takubo (2008).

24 Thanks to Utako Minai for help with the Japanese data.

I take *koto* therefore to be an overt instantiation of the null contentful noun that I posited for English, directly reflecting Rawlins' intuition.[25] Its appearance in proleptic constructions follows because proleptic constructions are *built* using such contentful nouns. The "aboutness" relation is established in Japanese via the possessive relation.[26]

As for (57), a possible analysis of the "bare" variant is that this is a form of possessor raising, already defended as a possible source of proleptic structures in Shibatani (2001); Hiraiwa (2001). In (60), the proleptic object *Mary-ga* has undergone possessor raising from *Mary-no me-ga* 'Mary's eyes.'

(60)   *John-ga* **Mary-wo** *[me-ga   waru-i to] omoikondei-ta*
        John-TOP Mary-ACC eyes-NOM bad-PRES C believe-PST
        'John thinks that Mary has bad eyesight.'   (Hiraiwa 2001: 73)

I suggest then that in (57), the proleptic object has undergone possessor raising leaving behind *koto*, which remains unpronounced.

(61)   *Keisatu-wa* **Sigeko-o₁** [RP ~~Sigeko~~*<-no koto>* [CP <u>*kanozyo₁*</u>-ga *Yamada-no*
        police-TOP Shigeko-ACC Shigeko-GEN KOTO   she-NOM   Yamada-GEN
        kyoohansya datta to]] danteisita
        accomplice was that concluded
        'The police concluded about Shigeko₁ that she₁ was Yamada's accomplice.'

This requires us to assume that *koto* must be unpronounced when it is stranded – a strange assumption given that other cases of possessor raising do not similarly allow the possessum to be unpronounced. However, I believe that this fact is tied to the more general observation that proleptic objects do not remain in spec-RP, but typically displace to a higher position (Lohninger et al. 2022; Zyman 2022). If spec-RP is not a case position, then the complex-NP must displace to receive case. However, in (61), only part of the complex-NP has moved to the available case-position. *Koto* in spec-RP remains caseless. I therefore propose that phonological deletion is a repair strategy for this context. The idiosyncratic possessum deletion in Japanese is a result of the particular syntax that this genitive phrase was introduced in.

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25 Note that I distinguish the contentful noun THING (which is found in prolepsis and it is what we believe *koto* represents) from Elliott's (2020) propDP *something*, which I do not believe can be instantiated by *koto*.
26 I note that Takano (2003) discusses similar data for Nominative Objects, which are analyzed as proleptic structures as well.

(i)   *John-wa Mary{-ga/-no koto-ga} wakaru*
       John-TOP Mary-NOM/-GEN KOTO-NOM understand
       'John understands (about) Mary.'

In sum, I believe that the Japanese data reflects the state of affairs for prolepsis in general. The presence of an overt DP in (and out) of proleptic structures directly translates to the proposal for prolepsis in Indo-European languages.

7 Conclusions

I will speculate briefly on the crosslinguistic patterns. Does this account extend to other languages? For those languages that require a prepositional proleptic object, the answer is a straight-forward affirmative. We expect these languages to behave like what I have outlined for English above. This seems to make the right predictions for German and Dutch, as discussed above.

However, there are languages which do prolepsis differently. For instance, as documented in Davies (2005) for Madurese, proleptic objects are true arguments of the embedding verb; they are not part of a prepositional phrase, or otherwise part of some complex-NP. The same is reported for Puyuma in Chen (2018), Tiwa in Dawson and Deal (2019) and Nez Pierce in Deal (2018). For instance, as we saw with Japanese, proleptic objects can be accusative marked in the main clause in some languages.

(62) a. *Taamsas-nim   pee-nek-se   'aayat-ona [pro   hi-naas-wapata-ca*
          Taamsas-ERG   3/3-think-IMPERF woman-ACC 3SG   3SUBJ-O.PL-help-IMPERF
          mamay'as-na
          children-ACC
          'Taasmas thinks a lady is helping the   Nez Perce (Deal 2018: 627)
          children.'

      b. *ma-ladra-ku   kana walak [dra tu=deru-aw   na*
          AV-know-1SG.PIVOT   DEF.ACCchild C 3.GEN=cook-PV   DEF.PIVOT
          kujan   adaman
          shrimp   yesterday
          'I know that the child cooked shrimp yesterday.'   Puyuma (Chen 2018: 3)

I have suggested one possible way around this for Japanese by having the proleptic object actually possessor-raise (or equivalent) out of this complex-NP. Alternatively, we could try to adopt an additional assumption from Lohninger et al. (2022) that R is sometimes combined with C. This would require devising a more complex meaning for C, one which incorporates the semantics of R and THING. Ultimately, this is an empirical question, which needs to be investigated for each language.

However, this idea might extend to explain the so-called "third readings" observed in Tiwa and Modern Greek by Dawson and Deal (2019) and Tsilia (2023) respectively. In both languages, a proleptic object may be read non-*de re* (but still cannot be read *de dicto*). On the analysis above, this third-reading isn't possible – and

that is a good outcome. Third-readings are not available in any of the languages I have focused on in this paper. However, this begs the question how we might modify the analysis to account for languages like Tiwa and Modern Greek. I can only offer speculation. In order to generate the third-readings, we need the modal quantification associated with clausal embedding to scope over the proleptic object. Therefore, any explanation for third-readings would hinge on variation in the syntax and semantics of complementation. I have adopted a particular version of the "inherent predicate" approach to embedded clauses, but it is reasonable to assume that not all languages treat embedded clauses in the same way. One difference might be that R and C are combined in the language, allowing the semantics associated with C to interact more with the proleptic object.

I also will briefly speculate as to whether the analysis has implications for the other constructions that are often grouped together with prolepsis, which are hanging topics, copy-raising, and major/broad subjects. In Villa-García's (2023) analysis of hanging topics, they are introduced in a previous clause which identifies the discourse topic.

(63) His temper, it was volcanic.

 a.   [CP1 ~~the topic of conversation is~~ his temper]

 b.   [CP2 it was volcanic]   (Villa-García 2023: 282)

Here, the end effect is the same as what I propose – a topic is established for a clause – but the mechanism that introduces this element is different. In English prolepsis, the work comes from *about*: a topic is introduced as part of the meaning of the preposition. With hanging topics, the work comes from the hidden sentential structure. In other words, there are multiple ways to introduce this kind of topic. Looking across languages, it is striking to note that in German and Dutch, proleptic objects are preferably fronted, as noted earlier.

(64) a.   *Er war **der Mann**,   von   **dem**   wir glaubten dass sie ihn meinte*
            he was the man,   of   whom we believe   that she him meant
            'He was the man about whom we believe that she meant him.' German

 c.   *Hij was **de man**, van **wie** we geloofden dat zij him bedoelde*
            he was the man, of whom we believed that she him meant
            'He was the man, about whom we believed that she meant.'   Dutch
            (Hoeksma and Schippers 2012: 4)

If the analysis here is correct, then this fronting has an explanation: it is how topichood is established for the proleptic object. That is, in German and Dutch, the topichood meaning does not come from the preposition *von/van*, but rather it's the fact that the constituent housing the proleptic object (for us, a complex-NP) has been

fronted to a topic position. Presumably a similar explanation extends to major/broad subjects, which possibly occupy a syntactic topic position.

For copy-raising, I speculate that the topichood meaning may be introduced in the verb itself. In Landau's (2011) analysis of copy-raising, he posits a lexical ambiguity for copy-raising verbs. In one case, the verb assigns to the subject a semantic role, that of a *perceptual source*. It would be easy to augment this account with the proposal that copy-raising verbs can also assign a role like TOPIC to their subject.

In other words, there are multiple ways that a topic can be introduced both within and across languages. This is in fact the specific conclusion that Onea and Mardale (2020); Onea (2024) come to with respect to topichood: languages vary with how this semantic role is encoded. We have in this paper focused on English, for which topichood can be introduced through the preposition *about*. This in turn leads to prolepsis, in the right configuration.[27]

Perhaps the larger question this study raises is whether derived predicate CPs – specifically those with unselective binding of a correlate – are *ever* needed. As I noted earlier, these kinds of null operator CPs are empirically questionable: there is no strong evidence that such structures exist. I have shown that they are not warranted for prolepsis. This is in line with Villa-García's (2023) analysis of hanging topics, which also does not rely on null operators. For copy-raising, Landau (2011) demonstrates that at least sometimes there can be no predicate CP, though he argues that derived predicates are still necessary in at least some instances. A similar set of facts is observed in for major/broad subjects in some languages, like Japanese (Heycock and Doron 2003). Thus, right now, the empirical picture suggests that at least some cases of derived predicate CPs can be discarded in favor of an analysis involving null nouns, a concept for which there is ample independent evidence. It remains open whether all purported cases of derived predicate CPs can be dealt with similarly.

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[27] Note that in Japanese, topichood needs to be tied directly to the possessive relation in prolepsis, though of course Japanese has dedicated topic positions and marking as well.

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