Left Peripheries and Psychological Predicates: A Hyperclause Analysis*

Keywords: *psychological predicate, left periphery, pivot, point of view projection*

1. Introduction

Recent work on the left periphery, including Rizzi (1997), Cinque (1999), and Speas and Tenny (2003), has proposed a variety of syntactic projections that encode information pertinent to the syntax-pragmatics interface and has shown that what has been traditionally regarded as peripheral to the syntactic computation have certain structurally definable repercussions in syntactic representation. Following this line of recent research, we propose a hyperprojection analysis for psychological predicates such as *fear, amuse*, and *happy* in English. Our analysis claims that the derivation of examples with internal subjective interpretation includes an invisible hyperprojection called *Point-of-View Projection* (POVP) high in the left periphery of the clause on top of an array of the ordinarily postulated functional projections such as Tense Phrase (TP). According to this analysis, a sentient individual capable of independent internal experience/thought from whose perspective a report is made or described (*Pivot* in the sense of Sells 1987) undergoes covert phrasal movement into [Spec, POVP] at LF. We demonstrate that a set of otherwise unpredictable syntactic properties uniquely associated with psychological predicates, such as backward binding, weak crossover cancellation, anti-local binding, scope ambiguity, and B(inding)-T(heory)-exempt properties of subject anaphors, receive a unified, straightforward explanation under the proposed analysis. To the extent that the proposed analysis is sustainable, it allows us to draw three implications. First, the proposed analysis provides evidence for the recent claim, made by Rizzi (1997), Cinque (1999), and Speas and Tenny (2003), that certain aspects of discourses/pragmatics are constrained by universal principles of syntax. Second, the present analysis shows that purely structural analyses of psychological predicates that

have been dominant in the generative literature is untenable and that the hybrid syntactico-pragmatic account of the predicates such as the one pursued here is on the right track. Finally and most importantly, the present analysis indicates that otherwise peculiar syntactic properties of psychological predicates like those noted above can be reduced to their unique semantic status as internal subjective predicates and its syntactic manifestation in the left periphery.

This paper is organized as follows. In section 2, we propose a hyperprojection analysis for psychological predicates. In sections 3 and 4, we show that the proposed analysis provides a unified explanation of several otherwise mysterious syntactic properties associated with psychological predicates, such as backward binding, weak crossover cancellation, anti-local binding, scope ambiguity, and BT-exempt properties of subject anaphors. We also compare the proposed analysis with other purely structural accounts in the literature, such as Belletti and Rizzi (1988), Fujita (1993, 1996), Pesetsky (1990, 1995), and show that their analyses have several empirical drawbacks that are successfully overcome by the present analysis.

2. Psychological Predicates, Internal Subjectivity, and Pivot: A Hyperprojection Analysis

One semantico-pragmatic characteristic that distinguishes psychological predicates such as *fear*, *amuse*, and *happy*, from non-psychological predicates is that the former constitute internal subjective predicates in that they denote a subjective mental (change of) state of a sentient human being capable of independent, internal experiencer that is beyond the reach of objective observation. This characteristic of psychological predicates is articulated in Brekke (1976: 114, 115) with the following remark:

"*What happens or exists in the mind of a particular person is private, 'privileged-access' information, the exclusive possession of that person alone. When someone describes his own emotional experience or state by using terms like* disgusted, irritated, sad *or* angry, *we*

have to take his word for it-we cannot argue with him, deny the truth of or positively falsify his predication. This is what I mean when I refer to the psych-verbs as being subjective, in contradistinction to objective predicates referring to events or states of affairs of the external world, observable and verifiable by any appropriate sentient being."

In other words, a psychological predicate includes statement of a private, mental description of an (otherwise potentially objective) event/state on the part of a sentient animate being capable of subjective evaluation and emotional experience whose exact nature goes beyond objective observation. In this sense, psychological predicates essentially form a class of internal subjective predicates. This observation suggests that a surface experiencer argument in a typical psychological predicate construction serves the pragmatic role of Pivot in the sense of Sells (1987: 455) (see also Zribi-Hertz 1989), or a person from whose viewpoint a certain internal state is reported.

Two remarks are in order here about the foregoing observation on psychological predicates. First, we maintain that the characterization of psychological predicates as an internal subjective predicate is purely in pragmatic terms. Recent work in the lexical semantics-syntax interface has shown that the alignment of arguments in psychological predicates like *fear* and *frighten* in the syntax is predictable by a certain arrangement of semantic primitive predicates (Levin and Rappaport Hovav 1995) or morphosyntactic heads (Hale and Keyser 2002). Indeed, the above property of psychological predicates does not affect the argument structure in any way. This position, however, does not exclude the possibility that the presence or absence of Pivot also does not affect part of the syntactic derivation that does not relate to argument structure, as we will argue in the rest of this paper. Second, we contend that the above-noted characterization applies not only to the narrow range of psychological predicates but holds for a great many variety of sentences including non-psychological predicates when certain pragmatic

conditions like internal subjectivity and Pivot are met. Under this conception, psychological predicates are but one archetypical case that facilitates internal subjective interpretation.

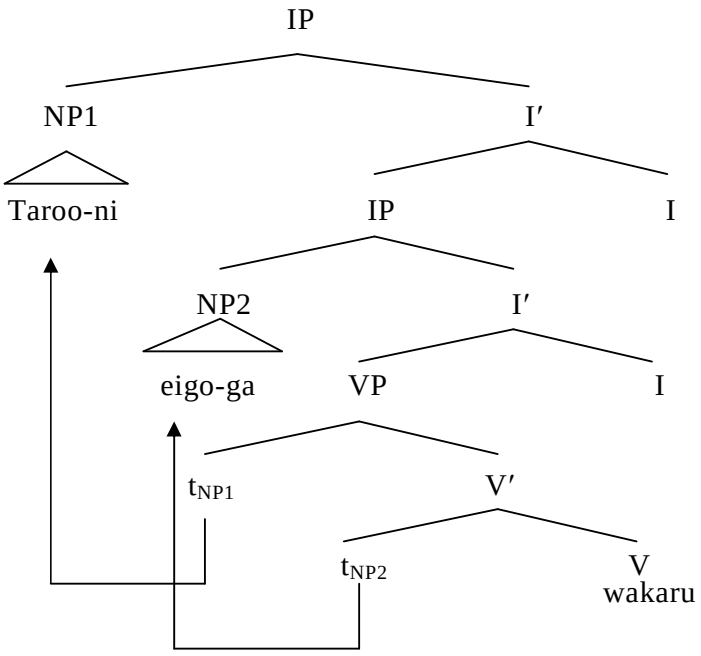
The next question, then, becomes how to express this pragmatic property of psychological predicates in configurational terms if we are to follow the recent "cartography" project on the left periphery represented by Rizzi (1997), Cinque (1999), and Speas and Tenny (2003), in particular. Campbell and Martin's (1989) analysis of psychological predicates is suggestive in answering this question. To account for the well-known phenomenon of backward binding observed in this type of predicate, as illustrated by the contrast in grammaticality between *Pictures of himself pleased Michael* and **Pictures of himself hit Michael* (see section 3 for extensive discussion on this property), they hypothesize that an NP receiving the experiencer role optionally raises at LF to a second subject position in the higher specifier of IP in the double-decked IP structure. They adduce dative subject constructions in Japanese in favor of this hypothesis. As extensively discussed in Kuno (1973), there is a semantically definable set of predicates in Japanese, including verbs of competence (e.g., *wakaru* 'understand', *dekiru* 'can') and verbs of nonintentional perception (e.g., *kikoeru* 'hear', *mieru* 'see'), which allow a dative experiencer argument and a nominative theme argument that follows it. Some examples of this constructions are given in (1a, b).

(1) a. Taroo-ni eigo-ga wakaru (wake).
Taro-Dat English-Nom understand (reason)
'(The reason) Taro understands English.'

b. Hanako-ni kami-no koe-ga kikoeru (wake).
Hanako-Dat God-Gen voice-Nom hear (reason)
'(The reason) Hanako can hear God's voice.'

In (1a), the experiencer subject *Taroo* is marked with dative *-ni* whereas the theme object *eigo* 'English' is marked with nominative *-ga*. Campbell and Martin claim that, in (1a), *Taroo* is base-generated within the VP with dative case *-ni* and moved into the specifier position of the higher INFL, with *eigo-ga* 'English' in the specifier position of the lower INFL, as in (2).

(2)



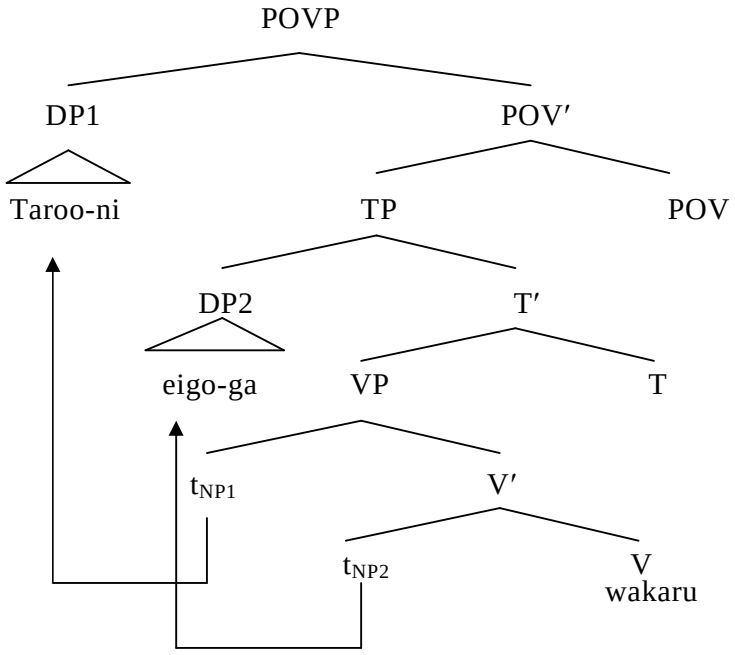
There are two problems with this analysis from the more recent perspective of the Minimalist Program (Chomsky 1995). The first problem is concerned with the optionality of LF experiencer raising and motivation for this operation. Within the Minimalist Program, every operation in syntactic derivation must be driven out of necessity. This view thus casts serious doubt on Campbell and Martin's analysis because the motivation for experiencer raising is not clear. The second problem is that their analysis misses the important generalization that (the vast majority of) the verbs that participate in dative subject constructions, upon a closer look, constitute a class of psychological predicates. Certain verbs of competence such as *wakaru* 'understand' as well as verbs of nonintentional perception such as *kikoeru* 'hear', *mieru* 'see' and *omoeru* 'think' refer to

an internal subjective experience of a sentient animate being. Campbell and Martin's analysis has no way of tightly connecting this semantic property of verbs that appear in dative subject constructions with raising, simply stipulating that only an experiencer NP can move.

So far, we have observed that psychological predicates are characterized as an internal subject predicate that provides a description of a psychological (change of) state from the viewpoint of a particular sentient being capable of independent thought. We have also reviewed Campbell and Martin's (1989) double subject hypothesis for experiencer predicates with a case study in Japanese dative constructions and pointed out two problems with the hypothesis: the optionality of experiencer raising and the failure to recognize the semantics of verbs involved in this construction.

The conjunction of these two points leads us to the possibility that there is a structural position high on the left periphery of a psychological predicate construction above the TP that is specifically designated for a surface experiencer argument. This possibility has indeed been suggested by recent proposals for syntactically represented pragmatic projections as in Rizzi (1997), Cinque (1999), and Speas and Tenny (2003). Following this line of work, we propose a hyperprojection analysis for psychological predicates. According to this analysis, a surface experiencer argument undergoes phrasal movement into the specifier position of the pragmatically motivated syntactic projection dubbed *Point-of-View Projection* (POVP) to be interpreted as Pivot in the sense of Sells (1987), or a standpoint from which a certain mental (change of) state is described. Under this analysis, (1a) would have the syntactic structure in (3).

(3)



This analysis successfully overcomes the two difficulties with Campbell and Martin's (1989) analysis in a unified way. First, the present analysis based on the POVP naturally captures the generalization about the type of predicates that can felicitously occur in dative subject constructions. Dative subject constructions have two subject positions, one in [Spec, TP] and the other in [Spec, POVP]. The latter position has the function of restricting the set of predicates available in this construction to psychological predicates because only this class of predicate typically has an experiencer argument projected in the syntax. Likewise, the motivation for the movement of an experiencer into the specifier of a higher functional projection becomes clear in a way compatible with the minimalist view of movement: it moves to serve as Pivot. [1]

3. Backward Binding

Since Postal (1970), experiencer-object psych verbs, such as *amuse, please*, and *annoy*, have been widely known to exhibit the so-called backward binding (see also Giorgi 1984, Belletti and Rizzi 1988, Campbell and Martin 1989, Pesetsky 1987, 1990, 1995, Bouchard

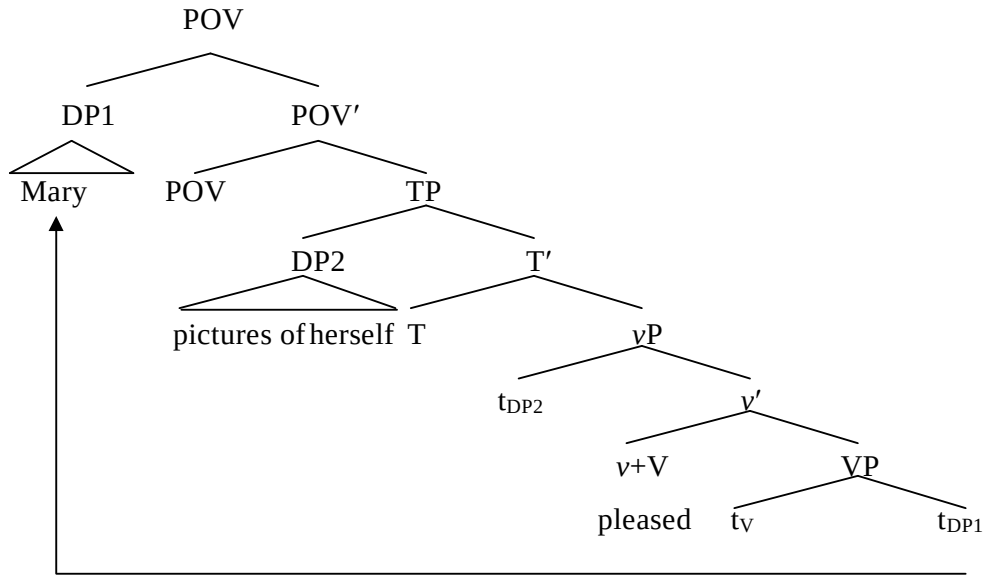
1995, Iwata 1995, and Fujita 1993, 1996): anaphors embedded in subject position can have antecedents that do not seem to bind them in surface structure, in apparent violation of the regular local binding requirement on anaphors. The peculiarity of this binding pattern is highlighted when we compare examples like (4a) with the psych verb *pleased* with those like (4b) which involve a non-psych predicate and disallow backward binding.

(4) a. Pictures of herself pleased Mary.

b. *Pictures of herself hit Mary.

This contrast receives a simple account under our hyperprojection analysis. The existence of the experiencer argument in (4a), but not in (4b), adds to the pragmatic force of the same argument as Pivot. This force is accommodated by the merger of the POVP with the TP, as shown in (5).

(5)



In this structure, the surface experiencer argument *Mary* undergoes covert phrasal movement as Pivot at LF to indicate that the event described by the TP in (4a) occurs in the subjective mental world created by the individual denoted by *Mary*. The POV remains empty without being occupied by the main verb, which raises up to the *v* head. As a result of the movement of *Mary*, this argument is in a position to bind *herself* contained within the subject. Hence, backward binding is allowed in (4a). On the other hand, (4b) does not have the POV projection since this sentence does not involve a psychological predicate that would feed internal subjective mental evaluation of the person denoted by *Mary* but instead just provides an objective description of the relevant event. This means that there is no antecedent available above TP that can bind the reflexive contained within the subject. Thus, backward binding is blocked in (4b).

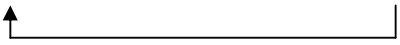
Before we move onto more complex cases of backward binding, it is important to articulate the nature of POVP assumed in the present analysis as well as how and when this functional projection is projected. First of all, we assume, following the economy of representation proposed by Chomsky (1995), Bošković (1997), and others, that the POVP is projected on top of TP at LF only when the material within the TP is interpreted as contributing to the internal subjective mental description of a particular event/state on the part of a sentient being capable of independent thought and experience. Under this assumption, a surface experiencer within the TP is just one typical case that motivates the merger of the POV with TP. In other words, examples that do not contain a psychological predicate can still project POVP on top of the TP when they are compositionally interpreted such that they describe a private, mental event by a sentient participant. We will see later in this section that backward binding does indeed hold for many cases such as "psych idioms/phrases" (see Pollard and Sag 1992, Pesetsky 1990, and Hatori 1997) that do not involve a psychological predicate but whose VP constituents contribute to internal subjective interpretation. One way to formalize the economy-based assumption above in syntactic terms is to claim, adopting the derivational theory of syntax (as in Chomsky 2004 and Uriagereka 1999), that when the TP is

constructed, it is sent off to the meaning-related component for its interpretation; when the interpretation contains internal subjective description of an event/state, the syntactic derivation continues with the merger of POV into which a sentient participant moves into.[2, 3]

We compare now the proposed analysis with some purely syntactic approaches to backward binding and experiencer-object psych verbs as in Belletti and Rizzi (1988), Pesetsky (1990, 1995), and Fujita (1993, 1996). We show below that this line of approach makes false predictions in many (un-)acceptable cases of backward binding that are properly accommodated by hybrid syntactico-pragmatic approaches like our hyperclause analysis.

Belletti and Rizzi (1988) propose an unaccusative analysis of backward binding observed in experiencer-object psych verb constructions such as (4a). Under their analysis, the experiencer argument is base-generated in a specifier position of the VP that is higher than the base-generated position of the theme argument (i.e. the complement of the VP). The surface word order is derived by movement of the theme argument into the specifier position of IP to receive structural Nominative case. Thus, (4a) is represented as in (6). Belletti and Rizzi argue that backward binding is accounted for if Condition A of the BT, defined in (7a) (see Chomsky 1981, 1986, 1993), is an elsewhere condition that can be satisfied once at any point of syntactic derivation.

(6) $[_{IP}$ Pictures of herself $[_{I'}$ I $[_{VP}$ $[_{V'}$ pleased *t*] Mary]]]



(7) For a local domain D:

a. An anaphor is bound in D.

b. A pronominal is bound in D.

c. An R-expression is free.

Then, the binding requirement on *herself* in (4a) is met at the D-structure representation in (6) where the theme argument *pictures of herself* is still in situ and the experiencer argument *Mary* can c-command the reflexive contained within the theme argument.

Belletti and Rizzi's analysis, however, is hard to sustain for many reasons, only two of which we mention here. First, Campbell and Martin (1989), Pesetsky (1990, 1995), and Fujita (1993, 1996) show that backward binding is observed in a far wider range of constructions than the narrow range of experiencer-object psych verbs, as in (8b) and (9b) from Campbell and Martin 1989: 45.

(8) a. Stories about himself always worry John.

b. Stories about himself always make John worry.

(9) a. News items about herself generally amuse Mary.

b. News items about herself generally make Sue laugh.

As the two pairs of example here show, an experiencer-object psych verb construction can often be paraphrased by a combination of the syntactic causative verb *make* and a predicate of emotion. The problem with Belletti and Rizzi's analysis posed by these examples is as follows. The experiencer argument in (8b) and (9b) is assumed to be in an independent lower clause from the matrix clause headed by the syntactic causative verb. Furthermore, the surface causer subject in (8b) and (9b) are selected by the causative verb, not the embedded verb, given that the embedded verbs *worry* and *laugh* are both one-place predicates. If this much is true, then it would be difficult to imagine an unaccusative structure where a matrix subject is base-generated as an argument of the embedded clause to be bound by the embedded subject. However, this structure is precisely what Belletti and Rizzi's analysis would lead us to predict.

Second, as pointed out by Pesetsky (1995: 43-45), Belletti and Rizzi's analysis of backward binding runs into a Case-theoretic problem. Belletti and Rizzi propose that experiencer-object psych verbs have the θ-grid in which an experiencer is associated with an inherent Case linked to the θ-role assignment (Chomsky 1986). This θ-grid specification is intended to have the effect of moving a theme argument into [Spec, IP] for structural Nominative Case and thereby leaving an experiencer argument in situ (i.e. the specifier position of the VP; see (6)). Now, if we were to extend the unaccusative analysis to examples like (8b), we would have to assume that *made* assigns inherent Case to *John*. This assumption is wrong, however, since *John* is assigned a θ-role from *worry* in the embedded clause. The falsity of this assumption is also evidenced by examples as in (10), where *John and Mary* is θ-marked by *angry* in the embedded clause.

(10) [Each other$_i$'s remarks]$_j$ [made e_j [John and Mary]$_i$ seem t_i to be angry].

(Pesetsky 1995: 45)

The present analysis provides a simple account for the grammaticality of backward binding in (8b) and (9b). *John* and *Sue* are interpretable as experiencer arguments in these examples and hence qualified as Pivot; as an anonymous reviewer notes, *laugh* in (9b) is not a psychological predicate by itself but it is pragmatically linked to a certain psychological state. Thus, *John* and *Sue* undergo covert movement into [Spec, POVP]. Backward binding holds here because the arguments bind the reflexive from this derived position.

Pesetsky (1990, 1995) proposes a new generalization about backward binding shown in (11) (Pesetsky 1995: 49). This generalization is intended to account for the difference between (12a-d) and (13a-d) (Pesetsky 1995: 44), which shows that the availability of backward binding is sensitive to the non-volitionality of a subject in a causative construction.

(11) A Causer argument of a predicate π may behave as if c-commanded by an argumental DP governed by π

(12) a. ?Each other's stupid remarks eventually killed John and Mary.

b. ?Each other's criticisms harmed John and Mary.

c. ?Those pictures of himself ultimately destroyed Bill.

d. ?Rumors about herself always plunge Mary into a deep depression.

(13) a. *Each other's stupid friends eventually killed John and Mary.

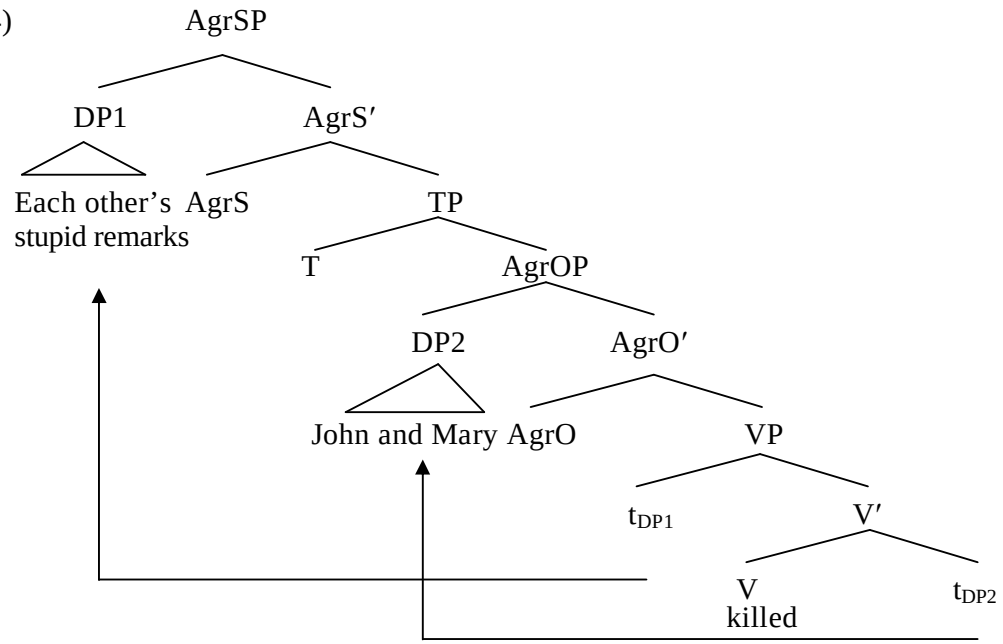
b.* Each other's parents harmed John and Mary.

c.* Each other's teachers insulted John and Mary.

d.* Each other's swimming coaches plunged John and Mary into a deep depression.

Pesetsky (1995) and Fujita (1993, 1996) each provide a purely syntactic explanation of the generalization given in (11). Since the two analyses make exactly the same set of predictions concerning backward binding, we take the liberty of restricting our discussion to Fujita's minimalist analysis, leaving Pesetsky's Cascade-Syntactic analysis aside. Fujita (1993, 1996) provides an Agr-based Case-theoretic account of the above generalization, providing a minimalist updating of Pesetsky's analysis. The so-called classical version of the Minimalist Program as outlined in Chomsky (1993) assumes that in English subjects move to [Spec, AgrSP] in overt syntax whereas direct objects to [Spec, AgrOP] in covert syntax for the purposes of Case checking under the Spec-Head agreement with an Agr head. Assuming the VP-internal subject hypothesis (see Koopman and Sportiche 1988, among others), this version of Case Theory creates a configuration in which the trace of a surface causer subject is bound by the raised experiencer argument in [Spec, AgrOP] at LF via chain binding. This configuration is illustrated in (14) for the example in (12a).

(14)



In this structure, the experiencer *John and Mary* is base-generated in the complement of *kill* and moves to [Spec, AgrOP] in covert syntax, while the causer *each other's stupid remarks*, base-generated in [Spec, VP], moves into [Spec, AgrSP] in overt syntax. At LF, the trace of the causer subject in [Spec, VP] is (chain-) bound by the direct object in [Spec, AgrOP]. Hence, examples as in (12a-d) are correctly predicted to be grammatical. As for examples like (13a-d), which involve a volitional agent and disallow backward binding, Fujita (1993: 383) contends that an agent argument is base-generated in a specifier position of the higher VP headed by the abstract verb MAKE structurally higher than [Spec, AgrOP] so that the trace left by the movement of the agent argument might never be bound by the raised experiencer object in [Spec, AgrOP] at LF; see also Koizumi (1995) for the same hypothesis known as the *Split-VP Hypothesis*. Thus, Fujita's approach provides a natural structural explanation of Pesetsky's generalization given in (11).

Fujita's analysis is appealing in light of the fact that it successfully reduces what has been considered as an exclusive, idiosyncratic property of experiencer-object psych verbs to the property of non-volitional causatives in general. However, his analysis is too strong.

There are three cases of backward binding where his analysis gives false predictions. First, consider minimal pairs in (15a, b) and (16a, b); see Rizzi (1993) for a related minimal pair.

(15) a. Pictures of herself made Ruth happy.

b. *Pictures of herself made Ruth famous. (Bando and Matsumura 2001: 95)

(16) a. That book about herself struck Mary as embarrassing.

b. *That book about herself struck Mary on the head. (Bouchard 1995: 295)

The contrast between (15a)/(16a) and (15b)/(16b) suggests that the availability of backward binding is sensitive to the semantic type of the secondary predicates selected by the main verbs *make* and *strike*; psychological predicates (*happy, embarrassing*) vs. non-psychological predicates (*famous, on the head*). Fujita's analysis would have no way of accounting for the difference between (15a)/(16a) and (15b)/(16b) because his purely syntactic analysis would make it impossible for this psychological vs. non-psychological distinction to make any difference for the fate of syntactic derivation. One might save this analysis by arguing that it could assign different structures to the cases with psych adjectives and those without to account for the difference here. However, assuming the proposed causative structure for (15a)/(16a) and another structure for (15b)/(16b) would make the analysis circular and undermine Fujita's original claim that backward binding is a property of purely syntactic binding at LF.

By contrast, the psychological vs. non-psychological distinction and its correlative availability of backward binding makes full sense in our analysis because the projection of the POV at LF depends on the existence of a surface experiencer argument within the TP. (15a) is grammatical because the adjective *happy* contributes to the experiencerhood of *Ruth*, which thereby moves into [Spec, POVP] and binds the reflexive within the subject. This movement is impossible in (15b), however, which does not involve a surface experiencer argument in it. The same sort of

story holds for the minimal pair in (16a) and (16b). The combination of *strike* and *embarrassing* within the VP creates a complex psych predicate that facilitates an interpretation where *Mary* is an experiencer. By contrast, (16b) is nothing but a description of the event in which Mary's books fell on her, leaving no possibility that she is interpreted as an experiencer within the TP.

The next case where Fujita's (1993, 1996) analysis gives incorrect prediction concerns examples like (17a-c) and (18a-e) (see Pollard and Sag 1992, Campbell and Martin 1989, Pesetsky 1990, Iwata 1995, and Hatori 1997 for more examples of the same sort).

(17) a. Pictures of himself in Newsweek dominated John's thoughts.

b. The picture of himself in Newsweek made John's day.

c. The picture of himself in Newsweek shattered the peace of mind that John spent the last six months trying to restore. (Pollard and Sag 1992: 278)

(18) a. The jokes about herself got Mary's goat.

b. Each other's nasty remarks really ruffled John and Mary's feathers.

c. Each other's teaching really got their dander up.

d. The photos of himself made John's face turn red.

e. The rumors about herself made Mary's hair stand up. (Pesetsky 1990: 109)

There are two common denominators among the examples in (17a-c) and (18a-e). One is that they all denote some mental (change of) state of a human experiencer in the sense that the set of expressions within the VP constitute a kind of "psych idioms" (Hatori 1997) or "psych phrases". Another is that the potential antecedents for anaphors in these examples are contained within the direct objects. Fujita's account cannot deal with this second property because his account, which arguably assumes the first-branching definition of c-command, would falsely predict these examples to be all ungrammatical on a par with

examples like (19a-d), which do not show backward binding due to the inability of a possessor argument to bind outside its containing DP.

(19) a. *Stories about herself generally please Mary's father.

b. *Each other's health worried the students' doctor.

c. *Each other's books amazed the men's teacher.

d. *Pictures of each other annoy the millionaire who funded the politician. (Pesetsky 1987: 127)

The two features above, however, directly fall out from our analysis. The combination of a predicate and its complement/modifier within the VP yields a psychological interpretation of the surface sentient possessor DP in (17a-c) and (18a-e). Thus, the POVP is projected at LF, and the surface experiencer moves into its specifier position. Backward binding obtains because this argument is structurally in a c-commading position to bind the reflexive in [Spec, TP]. [4]

The final case that is problematic for Fujita's analysis comes from ungrammatical instances of backward binding as in (20b) and (21b).

(20) a. Pictures of himself give Bill a headache.

b. *Pictures of himself send John a message. (Campbell and Martin 1989: 45)

(21) a. Pictures of herself amused Mary.

b. *Pictures of itself broke the vase.

His analysis correctly predicts the grammaticality of (20a) because it is an instance of non-volitional causative constructions. The surface experiencer argument *Bill* undergoes covert object shift into [Spec, AgrOP] for the purposes of Case Checking, from which it (chain-) binds the trace of the reflexive contained with the surface causer subject. However, the same analysis, as it stands,

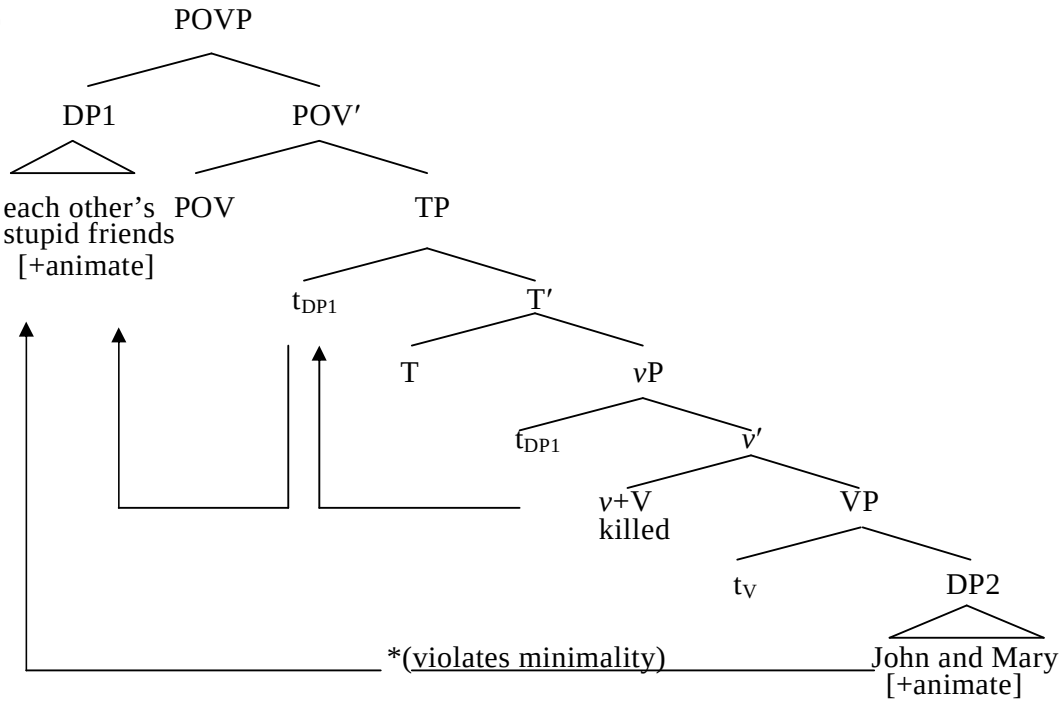
would predict backward binding in another instance of the double object verb *send* to be grammatical, contrary to facts, as shown by the ungrammaticality of (20b). The same argument can be made on the basis of the contrast between (21a) and (21b). Given that *break* in (21b) is a non-volitional causative verb as *amuse* in (21a), his analysis would predict the former to be grammatical on a par with the latter because at LF the object *the vase* in [Spec, AgrOP] should be able to bind *itself* within the causer subject. (20a, b) and (21a, b), therefore, show that Fujita's (1993, 1996) syntactic analysis is untenable. Our hyperclause analysis, on the other hand, gives right results with examples like (20a, b) and (21a, b). (20a) is grammatical due to the fact that the semi-idiomatic phrase *give x a headache* is a psych idiom like those in (17-18) that serves to yield a psychological change of state undergone by *Bill*. This interpretation thus leads to the now familiar claim that the hyperprojection POV is superimposed on TP in covert syntax, which provides a right configuration for the binding to hold. This option is not available in (20b), however, which does not involve any sentient experiencer; *John* is a goal expression without any indication for experiencerhood. (21b) is bad since the only possible antecedent *the vase* does not qualify as an experiencer, hence does not trigger introduction of the POV on top of TP.

Let us conclude this section by considering how our analysis can account for the difference between (12a-d) and (13a-d), which formed an original argument for Fujita's (1993, 1996) Split VP analysis of backward binding. An anonymous reviewer points out that the verbs or VPs in (12a-d) are not lexically specified as psychological; rather, the psychological interpretation may be coerced via the subject NPs including the backward anaphors. We believe, however, that it is the VP material in (12a-d) that plays a more crucial role in facilitating their psychological interpretation, as in the examples in (17a-c) and (18a-e) with psych idioms/phrases. This is evidenced by the following observation. The verb *kill* in (12a) does not mean "to put to death" but instead "to depress or discourage one completely." Likewise, the verbs *harm* and *destroy* in (12b, c) are used not in their original physical sense

but in their extended mental sense. Finally, there is no doubt that the semi-idiomatic expression *plunge x into a deep depression* in (12d) amounts to a compositional mental interpretation like *depress x*. Thus, examples as in (12a-d), upon a closer semantic scrutiny, turns out to further strengthen the view that analyses that reflect certain pragmatic imports of the denotation of TP in the left periphery as in our hyperclause account are on the right track.

How about examples in (13a-d), which show that the backward binding effect disappears in volitional causatives? We maintain that movement of a surface object experiencer into [Spec, POVP] across an agent subject is blocked by a feature-based minimality. More specifically, given the natural assumption that both agents and experiencers have the feature [+animate], agent arguments are closer than experiencer arguments from the position of the [Spec, POVP] in terms of asymmetric c-command (Chomsky 1995) and hence must be attracted by the POV head. This attraction, in turn, results in canceling an otherwise observed backward binding effect. The relevant configuration is illustrated in (22) for (13a).

(22)



In this representation, the POV head attracts the closest potential animate (hence potentially sentient) DP. Since the agent DP *each other's stupid friends* is structurally closer to the head than the experiencer DP *John and Mary*, the head attracts the agent DP, with the result that the experiencer DP cannot bind the reflexive within the subject at any stage of syntactic derivation. The claim that the animate feature counts as intervener in the calculation of binding is independently motivated. Asudeh (2000: 6) proposes the Intervention Constraint in (23) to derive the contrast between (24a) and (24b) from Pollard and Sag 1994: 268.

(23) No potential binding may intervene between an anaphor and an antecedent. A potential binding is an animate, referential nominal that is not a coargument of the antecedent.

(24)a. Bill_i thought that *nothing* could make [a picture of himself_i in the *Times*] acceptable to Sandy.

b. * Bill_i thought that *no one* could make [a picture of himself_i in the *Times*] acceptable to Sandy.

The existence of constraints like (23) is a natural consequence of the proposed account of the loss of backward binding. This analysis also correctly excludes (19a-d) because movement of the antecedent is blocked by its dominating animate DP.[5]

Summarizing, we have demonstrated in this section that backward binding in psychological predicates receives a straightforward account under the hyperprojection analysis, which posits the pragmatically motivated POVP above the TP based on the presence of internal subjective interpretation for the TP assigned at LF. In doing so, we have also pointed out several cases where purely structural analyses as in Belletti and Rizzi (1988), Pesetsky (1990, 1995), and Fujita (1993, 1996) make wrong predictions with respect to backward binding and shown that those cases are correctly accounted for by our analysis.[6]

4. Crossover Cancellation, Anti-local Binding, Scope Ambiguity and BT-Exempt Anaphors

Since Belletti and Rizzi (1988), experiencer-object psych verbs have been noted for their apparently unpredictable syntactic properties other than backward binding. In this section, we demonstrate that these properties are also naturally derived under our analysis.

4.1. Weak Crossover Cancellation

The first property of experiencer-object psych verbs is that they allow inverse variable binding of the reflexive within the subject by the experiencer argument, as shown in (25a, b) (Fujita 1993: 384; see also Johnson 1992). Comparison of (25a, b) with standard cases of weak crossover (Postal 1971; Wasow 1979) as in (26a, b) with non-psych verbs indicates that inverse variable binding is unique to experiencer-object psych verbs.

(25) a. His_i promotion pleases everyone_i.

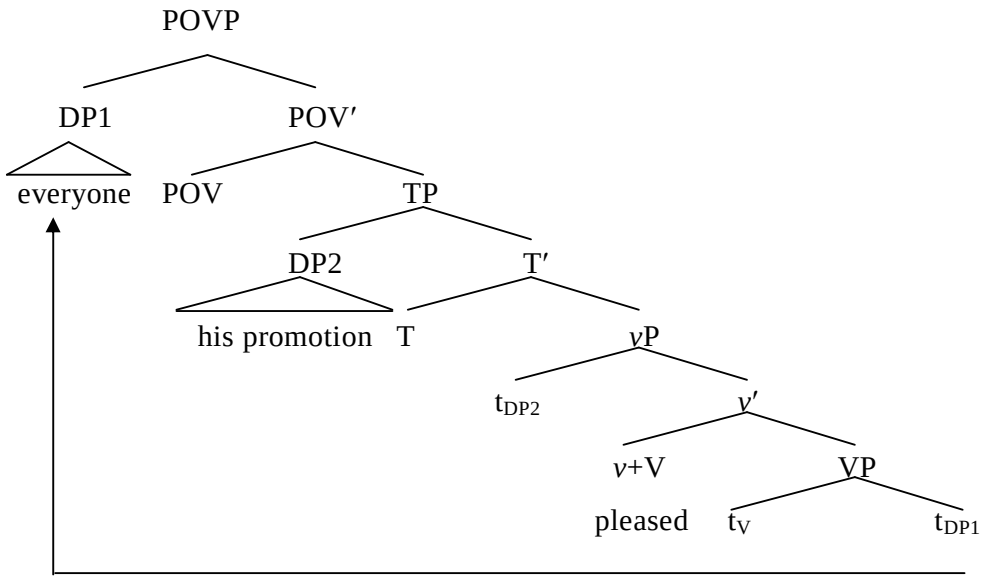
b. His_i heath worries every patient_i.

(26) a. *His_i father hit everyone_i.

b. *His_i father killed everyone_i.

This cancellation of the weak crossover effect in (25a, b) is predictable under our hyperclause analysis. (25a), for example, has the following syntactic structure at LF.

(27)



In this configuration, the pronoun *his* within the surface causer subject has *everyone* in [Spec, POVP] as its local binder, which correctly accounts for the availability of variable binding in (25a). This reading is absent in (26a), however, because it does not have the POV hyperprojection. The proposed analysis is superior to a possible alternative analysis based on the scope-shifting operation of Quantifier Raising (May 1977), as the latter analysis predicts all the examples in (25a, b) and (26a, b) to be fine under the relevant reading but this prediction is only correct for (25a, b). In other words, the covert operation would have no way of correctly distinguishing between (25a, b) and (26a, b) since no formulation of the scope-shifting operation has ever been proposed that is sensitive to certain pragmatic characteristics of a verb class such as psychological predicates.

4.2. Anti-Local Binding

The second property of experiencer-object psych verbs that falls out from our analysis is that they do not allow local binding of an anaphor in direct object position by the causer subject, as shown in (28a) from Roberts (1991: 29). The peculiarity of this property

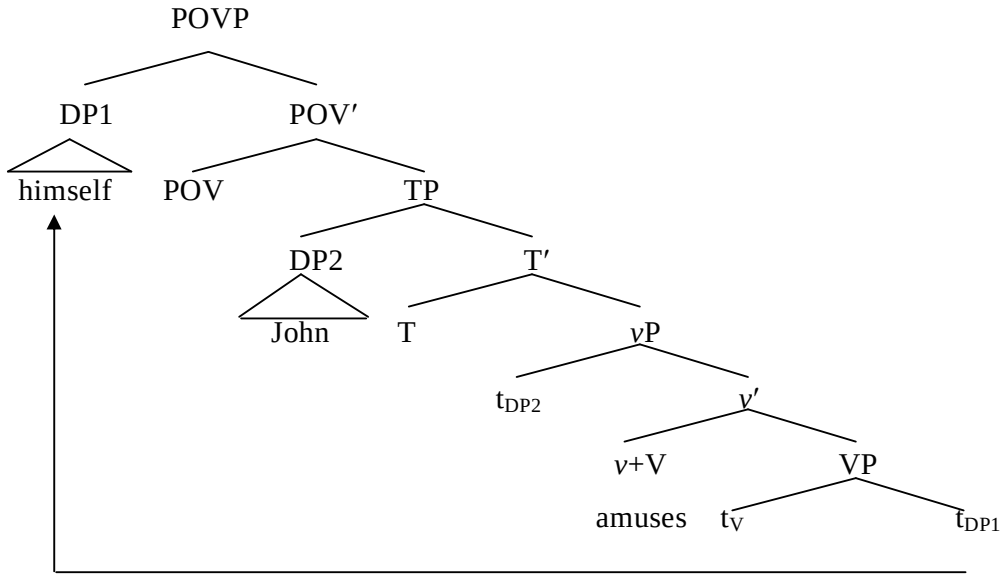
becomes clearer when we compare this example with (28b), which involves a non-psych predicate and allows local binding without any loss of grammaticality.

(28) a. ?? John amuses/disgusts/horrifies/irritates himself.

b. John killed/hurt himself to take his friends by surprise.

This contrast receives a simple account under the present analysis. The LF representation for *John amuses himself* in (28a) is shown in (29). In this representation, the hyperprojection POVP is merged with the TP with psychological interpretation. The surface experiencer *himself* moves into its specifier position to serve the role of Pivot.

(29)



This representation is correctly ruled out if the Condition C of the Binding Theory in (7c) holds at LF: the R-expression *John* in [Spec, TP] is bound by the reflexive *himself* located in [Spec, POVP]. (28b) is correctly predicted to be ruled in because the hyperprojection is not merged on top of TP at LF.

4.3. Scope Ambiguity

The third property of experiencer-object psych verbs, pointed out by Kim and Larson (1989), is scope interaction between the causer subject and the experiencer object, as in (30a). Compare (30a) with (30b), which involves a non-psych predicate and only allows the wide scope reading of the subject. This contrast shows that experiencer-object psych verbs are special in this regard.

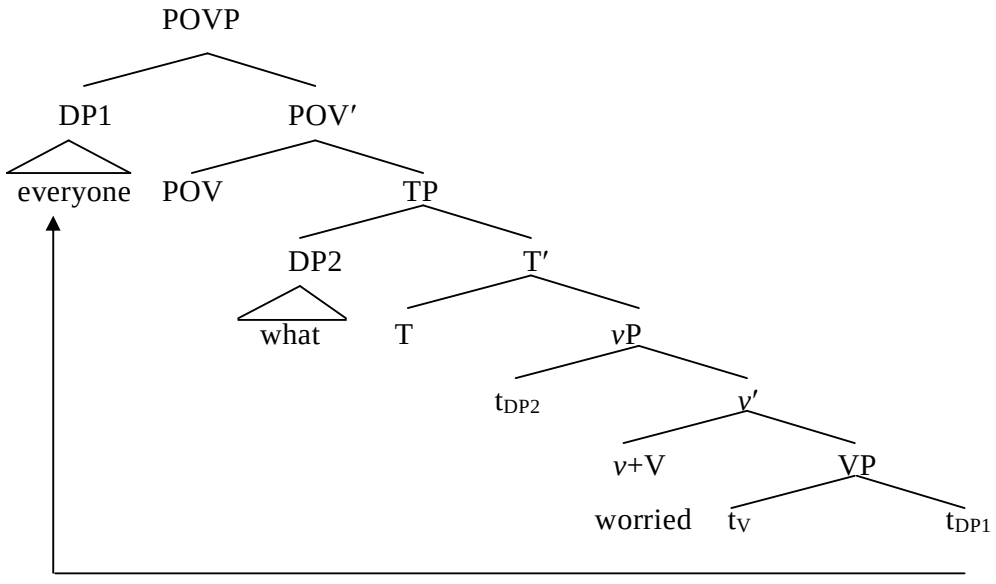
(30) a. What worried everyone? (what>every, every>what)

b. Who hit everything on purpose? (who>every, *every>who)

(Kim and Larson 1989: 681, 682 with a slight modification)

This special property also falls out naturally as a consequence of our proposed analysis, which projects the POV on top of TP for (30a) in the manner seen in (31).

(31)



When the derivation has preceded up to the TP here, *what* c-commands *everyone* in situ, deriving the wide scope reading of the *wh*-phrase. When the POVP is projected in the derivation in covert syntax, the universal quantifier, which has now moved into the specifier

position of POVP, c-commands the *wh*-phrase, deriving the narrow scope reading of the *wh*-phrase. The present analysis also correctly predicts that *who* always scopes over *everything* in (30b) because, without the POV, there is no stage where the quantifier is in a higher position than *who*. The Quantifier Raising analysis would certainly provide the desired configuration but it would not do, as this operation should not be driven by pragmatic characteristics of predicates involved, or the nature of the operation would be void of any substance.[7]

4.4. BT-Exempt Anaphors

Under our analysis, the LF structure for (32a) would be as in (32b). This structure is structurally identical to the LF structure in (32c) of sentences like *Michael thought a picture of himself/him would be great on that wall*, in the sense that the antecedent-anaphor relation in both cases exhibits a non-local anaphoric dependency that crosses a finite clause.

(32) a. Pictures of himself please Michael.

b. $[_{POVP}$ Michael1 $[_{POV'}$ POV $[_{TP}$ pictures of himself $[_{T'}$ T $[_{vP}$ t_{DP1} $[_{v'}$ *v*+V $[_{VP}$ t_{v} TDP2]]]]]]]

c. $[_{TP}$ Michael thought … $[_{TP}$ a picture of himself/him would be great on that wall]]

Giorgi (1984), Lebeaux (1984/1985), Reinhart and Reuland (1993), and Runner (1995), claim that the subject anaphor in examples like (32c) behaves as non-locally bound anaphors (NLBA) that are exempt from the binding requirement imposed by Condition A of the Binding Theory ((7a)). If the premises we have made so far here are correct, then the present analysis predicts that subject anaphors in an experiencer-object psych verb construction should share non-local behaviors associated with an NLBA. At this point, Lebeaux's (1984/1985: 345, 346) observation becomes instructive. He proposes four diagnostics as in (33-36) that distinguish NLBAs from locally bound anaphors (LBAs).

(33) NLBAs allow split antecedents; LBAs do not.

a. $John_i$ told $Mary_j$ that there are some pictures of $themselves_{i+j}$ in the building.

b.*The men_i introduced the $women_j$ to $themselves_{i+j}$.

(34) NLBAs appear in free variation with pronouns; LBAs do not.

a. $John_i$ knew that there were some pictures of $himself_i$/him_i inside.

b. $John_i$ likes $himself_i$/*him_i.

(35) NLBAs do not require c-command of the antecedent; LBAs do.

a. $John_i$'s campaign required that pictures of $himself_i$ be placed all over town.

b.*$John_i$'s wife loves $himself_i$.

(36) NLBAs allow two readings under VP ellipsis; LBAs allow only one.

a. John thought that there were some pictures of himself inside, and Bill did, too.

(=pictures of John or Bill; both strict and sloppy identity readings are allowed.)

b. John hit himself, and Bill did, too.

(= Bill hit Bill, not Bill hit John; only sloppy reading is allowed.)

Our analysis now predicts that subject anaphors in an experiencer-object psych verb construction should pattern with an NLBA. This prediction is partially confirmed: subject anaphors in this construction allow split antecedents (37a) and occur in free variation with pronouns. ((37b) is from Johnson 1992: 265.) [8]

(37) a. A bad rumor about $themselves_{i+j}$ made $Jennifer_i$ tell $Andy_j$ that they should resign.

b. Pictures of him_i/$himself_i$ worry $John_i$.

Cançado and Franchi (1999: 138) show that the same prediction is also borne out in Brazilian Portuguese, as shown in (38a, b).

(38) a. O sucesso do *proprio* filho aproxima João de Maria.
the success of their own son bring closer João to Maria.
'The success of their won son brings João closer to Maria.'

b. A distância entre ele (si) e o orientador preocupa João.
the distance between him (himself) and his advisor worry João
'The distance between him/himself and his advisor worries João.'

This result suggests that treating subject anaphors in an experiencer-object psych verb construction as NBLAs is correct. Because the prediction here can only be made under our hyperclause analysis, the analysis in turn receives empirical support.

4.5. Agentivity and Psych Effects

We have seen at the end of section 3 that the backward binding effect does not manifest itself when agentivity/volitionality is forced on the surface causer subject in an experiencer-object psych verb construction. The relevant examples are repeated here as (39a-d).

(39) a. *Each other's stupid friends eventually killed John and Mary deliberately.

b.* Each other's parents harmed John and Mary.

c.* Each other's teachers insulted John and Mary.

d.* Each other's swimming coaches plunged John and Mary into a deep depression.

We have argued that the cancellation of backward binding effects in this context arises because the movement of a surface animate experiencer is blocked by another animate agent that intervenes between the experiencer and the POV head. If this account is correct, not only backward binding but also all the other psych effects examined in this section should disappear

when experiencer-object psych verb constructions involve a volitional agent. This prediction is confirmed by (40a-f). ((40c) is from Roberts 1991: 30 with a slight modification.)

(40) a. *Friends of each other often pleased Tom and Sue on purpose. (no backward binding)

b. *His_i friends amuses every $patient_i$ on purpose. (no weak crossover cancellation.)

c. They often disturb each other on purpose while studying. (no anti-local binding)

d. Who worried everyone on purpose? (no scope ambiguity; who>every, *every>not)

e. * Friends of $themselves_{i+j}$ deliberately made $Jennfier_i$ tell $Andy_j$ that they should resign. (no split antecedents)

f. Friends of *him_i/$himself_i$ worry $John_i$ on purpose.
(no free variation between reflexives and pronouns)

To summarize, our hyperprojection analysis provides a unified explanation for several otherwise mysterious syntactic peculiarities of experiencer-object psych verb constructions, such as weak crossover cancellation, anti-local binding, scope ambiguity, and BT-exempt properties of subject anaphors as well as the lack thereof in their volitional counterparts.

5. Conclusions

This paper has presented a hyperprojection analysis of psychological predicates whereby the covert Point-of-View Projection is superimposed at LF on top of the surface TP based on its denotation as an internal subjective description of an event/state on the part of a sentient, animate being capable of independent experience/thought. The POV head attracts the closest surface experiencer argument into its specifier position so that the argument may serve the additional role of Pivot in Sells' (1987) sense at LF. This analysis provides a unified explanation of a wide variety of apparently unrelated, otherwise idiosyncratic

syntactic properties of experiencer-object psych verbs. To the extent that the proposed analysis is tenable, three important consequences follow. First, the present analysis provides evidence from psychological predicates for the recent work on the left periphery as in Rizzi (1997), Cinque (1999), and Speas and Tenny (2003), which claims that certain aspects of the pragmatic force of a sentence have well-defined repercussions in syntactic computation and representation. Second, purely structural analyses of experiencer-object psych verbs and their syntatcic properties as in Belletti and Rizzi (1988), Pesetsky (1990, 1995), and Fujita (1993, 1996), that have been dominant in the generative literature, cannot be maintained in the strict sense; instead, hybrid analyses that incorporate insights from both structural and discourse-related sources are in need to accommodate the full range of patterns attested in this verb class. Finally, the proposed analysis sheds a new light on the nature of the syntax-pragmatics interface by showing that a set of otherwise unpredictable syntactic behaviors of psychological predicates can be solely reduced to their often-neglected but apparently obvious pragmatic import as *internal subjective predicates*.

Endnotes

* Earlier drafts of this work were presented at the 8th Annual Meeting of the Morphology and Lexicon Forum held at the University of Tokyo and the 127th National Conference of the Linguistic Society of Japan held at Osaka City University. We are very grateful to two anonymous reviewers for critical comments on an earlier version of this paper. Thanks also go to the audiences at those meetings as well as Andy Barss, Andrew Carnie, Joe Emonds, Heidi Harley, Taro Kageyama, Yoshiaki Kaneko, Dana Lupsa, Nobuhiro Miyoshi, Kunio Nishiyama, Yoshiki Ogawa and, in particular, Masaru Nakamura for invaluable feedback and discussion. All errors are our own.

[1] Alternatively, any surface (non-experiencer) argument can, in principle, move into [Spec, POVP] as long as this movement does not violate any principles of syntax, with the movement of "illicit" arguments yielding only a deviant interpretation at LF. We remain neutral between this formal explanation and the functional explanation noted in the text.

[2] The present analysis implies that the POV is projected when it is pragmatically motivated. An anonymous reviewer notes that the use of the term "pragmatic" here seems inaccurate, given that the function of the POV is purely semantic rather than pragmatic and it does not hinge on any interpersonal relations or contextual factors. We use this term in every sense that various notions like focus, topic and speech act can be used (Speas and Tenny 2003), not necessarily having to do with the use of "pragmatic" as the theory of actual language use. Though we may well use terms like "discourse-oriented" as in Speas and Tenny (2003), we continue to use the term pragmatic, meaning that the property is one that is implied/coerced/induced by some inference rules based on the denotation of the *v*Ps/TPs.

[3] The proposed analysis may have the additional advantage of shedding a new light on the syntax-pragmatics interface problem by reincarnating what appears to be the basic idea of the classical performative analysis in current minimalist syntax. Ross (1969) provides evidence that all sentences, regardless of mood, are covertly headed by the performative clause of the forms I TELL, I ASK, I ORDER, etc. The POV thus might well correspond to one of those performative clauses in his analysis. We leave examination of this possibility aside for reasons of space. Thanks to an anonymous reviewer and Masaru Nakamura for independently bringing our attention to the performative analysis and its relevance to the proposed hyperprojection analysis.

[4] As an anonymous reviewer notes, questions remain as to how the movement of an experiencer argument works in (17a-c) and (18a-e). Specifically, in these examples, the experiencer arguments that are to move into [Spec, POVP] are embedded either in the possessor position of the object NP or

in a relative clause. As for the possessor extraction, we assume that the Left Branch Condition is not at work at LF, allowing an experiencer alone to move out of an NP in (17a, b) and (18a-e). See also Campbell and Martin (1989) for a similar analysis based on Baker's (1988) Government Transparency Corollary. (17c) shows that the Complex NP Constraint is also lifted. It has been widely recognized since the Government-and-Binding (GB) era that overt and covert movement is subject to different constraints; specifically, Huang (1982) and Lasnik and Saito (1984) show that the sensitivity to islands, including the Complex NP constraint, diagnoses only overt syntactic movement. Following this line of research, we maintain that the LF movement of *John* in (17c) from the relative clause is also immune to the Complex NP Constraint.

[5] An anonymous reviewer asks whether the proposed account would not incorrectly rule out examples in (ia, b) due to the existence of "animate" subjects such as *dogs* and *Susan*.

(i) a. Dogs please Mary.

b. Susan frightens Bill.

We disagree. The mere presence of DPs like *dogs* and *Susan* in (ia, b) does not necessarily entail that they are [+animate]. Arad (1998) convincingly shows that the so-called psych effects (see section 4 for a summary), including backward binding, are observed only under stative interpretation. Under this interpretation, (ib) can only mean that "something about Susan (her nasty behavior, her appearance, her permanent irritated character, etc.) keeps Bill in a frightening state for a certain period of time"; it cannot mean "Susan volitionally frightens Bill at her will." Accordingly, the presence of *Susan* vis-à-vis *Bill*, which is required for the eventive interpretation of (ib), is not necessary under the stative interpretation as long as Bill is under a frightening state due to her attributes. This reading, therefore, allows us to treat DPs like *Susan* and *dogs* in (ia, b) as non-

animate entities. If this line of argument is right, then the presence of those DPs does not block the movement of an experiencer into [Spec, POV] in (ia, b). The same line of argument applies to examples of dative subjective constructions like (ii), pointed out by the same reviewer (see also (1a, b)), that involve raising of an experiencer over an "animate" DP.

(ii) Boku-ni Hanako-ga t wakara-nai/ai-se-nai.
I-Dat Hanako-Nom understand-Neg/love-can-Neg
'I do not understand Hanako./I cannot love Hanako.'

(ii) is naturally interpreted as if Hanako were not an animate being. For example, (ii) can be felicitously paraphrased as in (iii) with the formal noun *koto* 'thing'.

(iii) Boku-ni(-wa) Hanako-no-koto-ga wakara-nai/ai-se-nai.
I-Dat-Top Hanako-Gen-thing-Nom understand-Neg/love-can-Neg
'I do not understand Hanako./I cannot love Hanako.'

If this analysis is correct, then (ii) ceases to be a problem for our minimality-based account.

[6] As an anonymous reviewer notes, a fundamental question remains as to whether backward binding is truly an issue to be dealt with in the syntax in the first place. The reviewer notes that, on the empirical side, examples as in (ia, b), wherein the anaphor and the antecedent show up in two different clauses, indicate that backward anaphors cannot be handled by an intra-sentential notion like c-command and hence are not syntactic in nature.

(i) a. *John* was furious. The picture of *himself* in the museum has been mutilated. (Buring 2005: 226)

b. *John* was going to get even with Mary. That picture of *himself* in the paper would really annoy her, as would the other stunts he had planned. (Pollard and Sag 1992: 274)

Although we leave detailed examination of these examples for another occasion, we nonetheless note one possible direction here that allows us to maintain our analysis in face of these examples. As argued extensively in Nunes (1995), the current minimalist theory of structure building allows cross-clausal movement as a natural possibility. Under this theory, nothing blocks movement of *John* from a clause to another in contexts like (ia, b) to bind the reflexive as the Pivot in [Spec, POVP]. To the extent that this direction is tenable, we believe that our hyperclause analysis could incorporate the insight from functional/discourse-related work as in Zribi-Hertz (1989) or Kuno and Takami (1993) that backward binding across clauses is captured by principles like "subject of consciousness" or "Pivot" without necessarily leaving examples such as (ia, b) to a matter of discourse or pragmatics.

On the theoretical side, as the same reviewer notes, several non-syntactic approaches for peculiarities of psychological predicates have been advanced in Culicover and Jackendoff (2001) and Pustejovsky (1995). It is not clear, however, whether these approaches can deal with the fact that experiencer-object psych verbs show not only backward binding but other peculiarities concerning weak crossover, scope interaction and others which have been convincingly shown to be a matter of syntax (i.e. sensitive to c-command, movement restrictions, A vs. A′ movement, etc.). We maintain, therefore, that the approaches in question cannot be a serious competitor to our analysis unless they can successfully show that those syntactic/quantificational properties can be all dealt with in their conceptual/lexical structure with a better empirical converge, a task that neither Culicover and Jackendoff nor Pustejovsky actually undertakes.

[7] An anonymous reviewer suggests that the two readings of (30a) should be correlated with the presence or absence of the Pivot of the POV. This suggestion is correct when rephrased as follows in our analysis; (30a) shows scope interaction as the result of the movement of the experiencer into [Spec, POVP] whereas (30b) allows only wide scope reading of *who* since *everything* does not qualify as Pivot.

[8] Several notes are in order here. First, one might wonder whether the optionality of reflexive pronouns as in (37b) does not weaken our analysis. Given the complementary distribution between anaphors and pronominals, our POVP would wrongly provide a local antecedent for the pronoun in (37b), improperly excluding it as a Condition B violation. Note, however, that examples as in (32c) are one of the best-known cases that do not show the standard complementary distribution governed by Conditions A and B of the Binding Theory. Under our proposed analysis, then, the optionality of reflexives as in (37b) is reduced to whatever condition governs the similar optionality as in (32c). Second, the test concerning VP ellipsis is inapplicable as it is impossible to create a grammatical example with a subject anaphor that does not contain an overt antecedent due to VP ellipsis, as in * *Pictures of herself did*. Third, one might note that if subject anaphors in an experiencer-object psych verb construction as NLBAs do not require c-command, the raising of an experiencer into [Spec, POVP] is not required in the first place. As we have seen in examples like (17a-c) and (18a-e), however, we assume here too that c-command is a relevant notion, contrary to Lebeaux's original diagnostic, though we need to leave the exact nature of movement that raises *Jennifer* and *Andy* in (37a) (and in (38a) from Brazilian Portuguese) into the specifier of POVP as a problem. Finally, even LBAs sometimes can have a non-commanding antecedent, as in (i) (see also Tang 1989 for relevant discussion).

(i) [Taroo-no puraido]-ga zibunzisin-o kurusime-ta.
Taro-Gen pride-Nom self-Acc afflict-Past
'Taro's pride afflicted himself.'

This example may well involve c-command of the reflexive by *Taroo* by the movement of the latter into [Spec, POVP] (cf. note 4) due to the fact that *Taro* can be interpreted as Pivot. We are very thankful to two anonymous reviewers for raising the important questions addressed here.

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Left Peripheries and Psychological Predicates: A Hyperprojection Analysis [English Abstract]

This paper proposes a hyperprojection analysis of psychological predicates whereby a surface sentient argument undergoes covert movement into the specifier of the pragmatically motivated *Point-of-View* Projection to serve as Pivot. This analysis provides a straightforward explanation of various peculiar properties associated with experiencer-object psych verbs such as backward binding, weak crossover cancellation, anti-local binding effects, and the Binding-Theory-Exempt properties of subject reflexives. The current investigation has a number of important consequences for the issue of the syntax-pragmatics interface. First, the proposed analysis provides support for the recent claim concerning the syntax-pragmatics interface as in Rizzi (1997), Cinque (1999), and Speas and Tenny (2003) that proposes to reflect a restricted set of pragmatic information in the left periphery of syntactic derivation. Second, our investigation shows that purely structural analyses of psych predicate constructions have serious shortcomings and that hybrid syntactico-pragmatic approaches to this construction such as the proposed hyperclause analysis are on the right track.