
Property-type Objects and Modal Embedding*

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Abstract

Verbs in West Greenlandic require a special piece of morphology, the antipassive, in order to take narrow-scope indefinite objects. Opaque objects of intensional verbs require the same treatment. This paper develops a semantics for the antipassive morpheme in West Greenlandic that shifts the verb's object position to a property-type, providing for the object's narrow scope, while introducing modal embedding. The modal embedding provides for the interpretation of opaque objects of intensional verbs, in a way syntactically constructing the intensional construction. The modal embedding of property-type object constructions is visible not just in West Greenlandic antipassives but also in Hindi-Urdu and even English, suggesting a generalized modalization in the combination of verb with property-type object.

1 Narrow scope indefinite objects

Many languages mark a distinction between indefinite objects which must take narrow scope with respect to operators such as negation, modals and verbs with intensional object positions, and those which may take wide scope with respect to such operators. This is the pattern described by Bittner (1987) for the West Greenlandic antipassive construction, where we see an antipassive suffix on the verb and an oblique case marker on the object ((b) examples below). (Canonical objects are provided for contrast in the (a) examples).

- (1) Modal operator (Bittner, 1987, ex 29)
- a. atuartut ilaat ikiur-tariaqar-pa-ra
 of.students one.of.them.ABS help-must-TR.INDIC-1SGE/3SGA
 I must help one of the students
 $\exists x[x \text{ is one of the students \& it is necessary that (I help } x)]$
- b. atuartut ilaa-nnik ikiu-i-sariaqar-pu-nga
 of.students one.of.them-OBL help-ANTIP-must-INTR.INDIC-1SGA

*Thanks to Angelika Kratzer, Rajesh Bhatt, Chris Potts and the SuB 12 audience members. Research presented here was supported in part by an NSF graduate research fellowship.

- I must help one of the students
It is necessary that ($\exists x[x$ is one of the students & I help x])
- (2) Negation (Bittner, 1987, ex 38)
- a. suli uqaasia puiu-nngi-la-a
yet his.utterance.ABS forget-NEG-INDIC-3SGERG/3SGABS
He_i had not yet forgotten his_j utterance
 $\exists x[x$ is an utterance of his_j & not yet (he_i has forgotten x)]
- b. suli uqaasia-nik puiu-0-nngi-la-q
yet his.utterance-OBL forget-ANTIP-NEG-INDIC-3SGABS
He_i had not yet forgotten his_j utterance
not yet ($\exists x[x$ is an utterance of his_j & he_i has forgotten x])
- (3) Verb with intensional object position (van Geenhoven and McNally, 2005, 892)
- a. Juuna-p atuagaq ujar-p-a-a.
J.-ERG book.ABS look.for-INDIC-TRANS-3SG.3SG
Juuna is looking for the book/a specific book.
- b. Juuna atuakka-mik ujar-lir-p-u-q.
J. book-OBL look.for-ANTIP-INDIC-INTRANS-3SG
Juuna is looking for any book

The same type of morphological contrast also holds even when no scope bearing operator is present in the clause, however, both in West Greenlandic and in other languages marking similar scopal contrasts in object position (e.g. Hindi-Urdu, Mohanan (1995), Dayal (2003)).¹

- (4) Antipassive alternation without higher scopal operator (Bittner, 1987)
- a. Jakku-p ujarak tigu-a-a
J.-ERG stone.ABS take-TRANS.INDIC-3SGE/3SGA
Jacob took a/the stone
- b. Jakku ujaqqa-mik tigu-si-vu-q
J stone-OBL take-ANTIP-INTRANS.INDIC-3SGABS
Jacob took a stone

¹The glossing here reflects the view that antipassive objects are restricted to indefinite interpretations. Bittner (1987) argues against this generalization based on cases where names, pronouns and demonstrative phrases appear as antipassive objects, as e.g. in (i).

- i. Jesusi-mik taku-si-vu-q
Jesus-OBL see-ANTIP-INTRANS.INDIC-3SGA
He saw Jesus (Bittner, 1987, 196)

Cases with names as narrow-scope-only objects can also be constructed in Nez Perce, a language that like West Greenlandic lacks articles; these names are crucially not interpreted referentially, receiving instead a ‘somebody called X’ reading. It may be that the West Greenlandic examples that pose a problem for a straightforward account of antipassive objects as indefinite merit a similar analysis, as also suggested by Manning (1996, 94) (though the extension to pronouns and demonstrative descriptions will require further investigation). Michael Fortescue (p.c. to Manning) notes that the object of (i) is interpreted by Greenlanders referring not to Jesus but to the “concept of Jesus”, suggesting some fundamental problem with definite/referential interpretations of antipassive objects.

The indefinite object of (4a) and that of (4b) are not semantically distinguished in terms of scope, as there is no higher scopal operator in the clause. Antipassive objects' restriction to narrow scope in cases like (1)-(3) does not arise from a need to be in some way licensed by a higher operator, as we see in (4) (cf. the case of NPIs); it must arise through some feature of the antipassive construction itself. In keeping with analyses of objects with obligatory narrow scope in other languages (i.a. Farkas and de Swart 2003, Dayal 2003, Wharram 2003, Chung and Ladusaw 2004), van Geenhoven and McNally (2005) suggest that the antipassive object be analyzed as predicative or property-type.² The non-quantificational, property-type semantics of the object prevents it from undergoing QR and thus taking scope other than in its base position, explaining antipassive objects' inability to scope above modals in cases like (1b) and negation in cases like (2b). We might further assume that, as in other languages, the predicative object is an NP, not a DP; presumably this is at the root of its oblique case-marking. But West Greenlandic differs from languages such as Hindi-Urdu, Hungarian and Maori in using special pieces of verbal morphology – antipassive morphemes – in constructions where objects are property-type. What is the role of these morphemes? In an analysis of closely related Inuktitut, Wharram (2003) proposes that antipassive verbal morphology serves to syntactically mediate the composition of a verb with a property-type object:³

- (5) ANTIP (Wharram, 2003, p. 69):
 $\lambda P_{\langle e \langle s, t \rangle \rangle} \lambda Q_{\langle e, t \rangle} \lambda e \exists x. P(x)(e) \ \& \ Q(x)$

This morpheme attaches to a verb with an entity-type object position and converts this position to a property-type. Applied to a verb, it produces a verbal constituent with a denotation equivalent to the verb's semantically incorporating form in van Geenhoven's (1998) sense. With an extensional verb like *help* (1) or *forget* (2), this produces the desirable result of keeping the object's scope under modals and negation; the object scopes with the verb.

The situation is a little bit different, however, with intensional verbs like *look for*, as in (3). Such verbs are well-known for their ability to give rise to contrasts of *de re/de dicto* interpretation in their object positions. As argued by Zimmermann (1992, 2006), intensional verbs in their most basic form have property-type object positions, permitting *de dicto* object readings; thus van Geenhoven (1998) noted that “an intensional verb is semantically incorporating par excellence” (p. 179). On Zimmermann's treatment, no lexical rule or typeshift of semantic incorporation or syntactic shift via antipassive affixation should be necessary for such verbs to take property-type objects. Yet we see in (3) that the West Greenlandic verb *ujar* ‘look for’ apparently cannot take a property-type object in its most basic form. To get the narrow scope, *de dicto* interpretation for the object, an antipassive construction is required. As van Geenhoven and McNally (2005) note, this pattern is a challenge for Zimmermann's proposal that *de dicto* object

²Stiebels (2006, 558) makes the same suggestion for antipassives with overt objects in Mayan languages.

³In (5) t is the type of propositions, following Wharram, and s is the type of events; thereafter t is the type of truth values and w is the type of worlds. Note that Wharram assumes that agent arguments are not part of the denotations of verb roots, as discussed below.

readings are basic (at least for intensional verbs) and that *de re* object readings are derived (e.g. via QR or type-shifting). The situation in West Greenlandic looks exactly reversed: the *de re*, entity-type object verb is basic (lacking an antipassive morpheme), and the *de dicto*, property-type object verb is morphologically derived.

The semantics of the antipassive marker in combination with intensional verbs also deserves comment. If the opaque reading of these verbs is derived with the help of antipassive morphology, can we use Wharram’s ANTIP denotation (5)? We cannot; the existential closure over the object will fall outside of modal quantification contributed by the verb. As commonly conceived, *look for* introduces a set of accessible worlds, the “successful-search worlds”, in which the object is found. Thus a modal quantifier $\forall w$ is part of the lexical meaning of *look for*. To derive an opaque reading, we need the scopal relation $\forall w > \exists x$: in each successful search world, there is a potentially different x that is found. But combining ANTIP (5) with a verb does not allow us any compositional way of embedding the existential closure over the object (which ANTIP contributes) inside the verbal meaning to derive the correct scopal relation. Rather, we end up with $\exists x > \forall w$, deriving only a transparent, *de re* reading, in contrast to the attested meaning in (3b).⁴

The antipassive alternation in (3) thus poses a morphological challenge and a semantic one. We must explain why an antipassive construction is necessary to obtain an opaque/*de dicto* reading for the object of an intensional verb; we must develop a semantics for the antipassive marker that allows this reading to be compositionally derived. What we have in hand from West Greenlandic is a contrast between simplex verb forms with definite or (wide-scope) indefinite objects and complex verb forms with narrow scope indefinite objects. This morphological picture suggests that we must take verb roots in West Greenlandic, intensional or extensional, to have entity-type object positions. Wharram’s insight that an antipassive morpheme allows an entity-taking verb to take a property-type object seems well justified. To make this proposal work for intensional verbs, we will need two adjustments to the picture so far: a theory of intensional verb roots that allows them (like extensional verb roots) to take entity-type objects without derivation; and a denotation for antipassive morphology such that when ANTIP and a verb combine, existential closure over the object is embedded within the scope of the modality associated with the verb.

⁴The same problem is relevant to the analysis presented by Chung and Ladusaw (2004). On their theory, property-type objects combine with verbs via a mode of composition Restrict which allows the property to restrict the verb’s object argument without saturating it. Existential closure over the object position comes in higher in the structure. We might adapt this analysis to the West Greenlandic facts by supposing that the job of ANTIP is to trigger Restrict. In this case as well, however, we risk having existential closure too high in the case of intensional verbs. It appears that the Restrict theorist would be forced either to abandon Restrict for intensional verbs, or to adopt a structure for these verbs’ complements that is perhaps more sentential, allowing a lower place for existential closure (as suggested by Quine (1960); but see Schwarz (2007) on the generality of sentential analyses).

2 Modal embedding

Some interesting evidence from West Greenlandic suggests a possible way forward on this latter issue of modal embedding. Bittner (1987) notes that in sentences (6), the use of an antipassive correlates with the introduction of otherwise unexpected modalization. The verb *qimat* ‘leave’ is not an intensional verb, and accordingly, transitive clause (6a) entails that what was left by the agent was, objectively speaking, a hunting hut. But antipassive (6b) does not make this commitment. Rather, it tells us only that what the agent left was something he had *used* as a hunting hut, be it a tent or a cave or anything else.⁵

- (6) a. illuigaq qimap-pa-a
 hunting.hut leave-TRANS.INDIC-3SGERG/3SGABS
 He left a hunting hut
- b. illuikka-mik qimat-si-vu-q
 hunting.hut-MOD leave-ANTIP-INTRANS.INDIC-3SGABS
 He left a hunting hut (Bittner, 1987, ex. 80)

Noting this contrast, Bittner remarks:

There is evidence suggesting that, in [West Greenlandic], all antipassive predicates are world-creating, even if their transitive counterparts denote purely extensional predicates. The sets of worlds that the antipassives create are subjective worlds of the agent – worlds in which things are as he perceives them or intends them to be. (Bittner, 1987, p. 225)

What would it look like to develop a theory of the worlds that the antipassive morpheme “creates”? We would need to add modal quantification to our ANTIP denotation. The existential closure over the object can be relativized to the possible worlds picked out by ANTIP’s accessibility relation. The accessibility relation we pick will have to respond to a number of desiderata. ANTIP needs to be able to embed both intensional and extensional verbs. To get intensional verbs right, it will need to preserve certain modal relations that hold in the actual world, as we will see in section 3. Bittner’s remark suggests that a teleological relation might be right for this purpose, i.e. one based on an agent’s intent. I will develop this hypothesis a little here.

In order to add a modal component to Wharram’s ANTIP, (5), syntactic and lexical assumptions need be considered. Following Kratzer (1996, 2003), Wharram assumes that agent arguments are not true arguments of verb roots; they are introduced by an independent head Voice. If we adopt this assumption, at the point when an antipassive morpheme combines with a verb root, the agent has not yet been introduced, and therefore reference to modal intent cannot be syntactically connected with it. How, then, could the antipassive morpheme introduce modal quantification by intent? We might

⁵Such interpretations of extensional verbs inveigh against adopting a means of modal embedding in property-type object constructions that applies *only* to intensional verb roots, as proposed by van Geenhoven and McNally (2005).

still make *indirect* use of an agent's intent if we take advantage of the verb's event argument. Suppose that we can retrieve from an event the agent of the event, and that the agent might have some intent in participating in the event. Speaking modally, there is some condition that holds in all the worlds in which the agent's intent for that event is fulfilled. The event which is performed with some purpose in mind might then have this modal relation of intent directly associated with it. It is an event with telos. The truth conditions of a sentence containing a purpose clause, for instance, like *Lindy sat by the fire (in order) to warm up*, may require that the sitting event in which Lindy participates carries a telos of Lindy warming up. We might introduce a function INTENT, type $\langle s, wt \rangle$ (a function from events to propositions), which retrieves from an event with associated telos the set of worlds compatible with that telos.⁶ On our hypothesis that the modal accessibility relation introduced by ANTIP is a teleological one, all verbs that combine with ANTIP must name an event with associated telos. Events named by intensional predicates like *want*, *need*, *look for*, and the like do seem compatible with such an accessibility relation: wanting and needing are aiming to have, looking for and seeking are aiming to find, etc. Making our hypothesis explicit, (and keeping syntactic changes to a minimum,) we can revise Wharram's ANTIP as follows:⁷

$$(7) \quad [[\text{ANTIP}]] = \lambda P_{\langle e \langle \langle s, wt \rangle \rangle} \lambda Q_{\langle e, wt \rangle} \lambda e \lambda w . \forall w' \in \text{INTENT}(e) : \\ \exists x. Q(x)(w') \ \& \ P(x)(e)(w')$$

As before, this head attaches to a verb (P) and mediates its composition with a nominal (Q), which must be property-type, but now in the process it also modally embeds the description of both verb and noun.

Modalization, of course, must be in some way constrained with extensional verbs in order to derive their differences from intensional verbs. In many cases, verbs in property-type object constructions can indeed say something about the actual world, even if this is not clearly the case in (6b). Why should this be? A helpful language in this connection is Hindi-Urdu, which has also been argued to use property-type objects by Dayal (2003). When animate objects in Hindi-Urdu are not case-marked, they must be indefinite and have narrow scope with respect to higher operators, just like West Greenlandic antipassive objects:

$$(8) \quad \text{anu bacca nahii sambhaal-egii} \\ \text{Anu child not look.after-FUT.F}$$

⁶Hacquard (2006) has argued that accessibility relations generally hold between events and sets of worlds. Parallel to INTENT, she proposes a CONTENT function which retrieves from a believing eventuality the set of doxastic alternatives.

⁷Alternatively, if we let agent arguments be introduced by verb roots, we might use a denotation as follows:

$$i. \quad [[\text{ANTIP}]] = \lambda P_{\langle e \langle \langle e \langle \langle s, wt \rangle \rangle \rangle \rangle} \lambda Q_{\langle e, wt \rangle} \lambda y \lambda e \lambda w . \forall w' \in \text{INTENT}(y) : \exists x. Q(x)(w') \\ \& \ P(x)(y)(e)(w')$$

Here INTENT is a function from individuals to the set of worlds compatible with their intent. The INTENT function from events might also be used, of course, even if agent arguments are introduced by verb roots, but it need not.

Anu will not look after children. (Dayal, 2003) [$\neg > \exists x; * \exists x > \neg$]

Mohanan (1995) noted that such objects in Hindi-Urdu do not always give rise to existential entailments, even with extensional verb roots. This suggests that in Hindi-Urdu, just as in West Greenlandic, property-type object constructions are in some way modalized. Although we see no antipassive morpheme on the Hindi-Urdu verb, perhaps we can appeal to a covert ANTIP in Hindi-Urdu. If this is the case, semantic commonalities between the two languages' property-type object constructions have their root in structural commonalities, a desirable result. In both languages, adding ANTIP to a verb root (intensional or extensional) produces a modalized structure. In Hindi-Urdu, however, higher structure can interfere with this modalization, producing an existential entailment in certain cases. Dayal (2003) noted that the determining factor seems to be viewpoint aspect. When a verb is marked perfective, the event described by the verb must take place in the actual world. With the imperfective, this is not the case. The following pair from Rajesh Bhatt (p.c.) illustrates the contrast:

- (9) a. Anu baccaa sambhaal-tii hai
 A child take.care-IMPERF.FSG be.PRS.SG
 Anu takes care of children
 > There need not be children that Anu has actually taken care of
- b. Anu-ne baccaa sambhaal-aa
 A-ERG child take.care-PERF.MSG
 Anu took care of children
 > There must be some actual child that Anu has taken care of

This difference recalls the case of low modals under perfective in Hindi-Urdu, where not merely unactualized modality but also real world instantiation is required:

- (10) Yusuf havaii jahaaz uṛaa sak-aa (# lekin us-ne havaii jahaaz nahiĩ
 Yusuf airplane fly can-PERF (but he-ERG airplane NEG
 uṛaa-yaa)
 fly-PERF)
 Yusuf could fly the airplane (# but he didn't fly the airplane) (Bhatt, 1999, ex. 321b)

On the analysis of ANTIP as in (7), it is not surprising that it should pattern like ability modals in showing these “actuality effects” under perfective aspect. Both ANTIP and ability modals contribute modal quantification; both are syntactically low. Presumably, then, whatever it is that is responsible for the actuality effect under perfective in (10) can also explain the existential entailment brought about by perfective in (9b). Here is one way this might go. Actuality effects on low modals have been analyzed by Hacquard (2006) as arising because perfective aspect makes a commitment to an event occurring in the actual world. In a case like (9b) or (10), we have a commitment to an actual event, but the only description of that event is modally embedded; i.e. in (10) we have an actual event and in worlds compatible with Yusuf's ability, that event is an airplane-flying. Hacquard proposes that when we describe an event across multiple worlds, we can

take certain features of the event’s description to be stable across worlds. If e exists in the actual world, and e is an airplane-flying in some set of worlds W , we conclude that e is an actual world airplane-flying as well. We use a process of *trans-world event identification*, exporting the event description to the actual world, to produce the actuality entailment. Applying this analysis (which is developed in much greater detail by Hacquard) to (9b), we have an actual event which in the worlds compatible with its associated intent is a childcare event; we reason that in the actual world, the event is a childcare event as well. The denotation for (9b) up to Perfective (but excluding tense and higher material) is given below.

$$(11) \quad \lambda t \exists e . \tau(e) \subseteq t \ \& \ Ag(Anu)(e)(w_0) \ \& \ \forall w' \in \text{INTENT}(e) : \\ \exists x.child(x)(w') \ \& \ \mathbf{take.care(x)(e)(w')}$$

What Hindi-Urdu shows us is that it is perfective viewpoint aspect that is in a sense responsible for the extensionality of the antipassivized verb. The verb itself is intensionalized by the presence of ANTIP, a low modal operator. With structures containing low modalization – ability modals or ANTIP – perfective has an “actualizing” effect. If Hacquard is right about the origin of this effect, perfective combines with a verbal constituent that denotes an (intensionalized) predicate of events and contributes existential quantification over events while anchoring the event description to the actual world. In a case like this one, however, part of the event description has its world argument already bound by the modal quantification of ANTIP. Thus e is an event which in the actual world has Anu as its agent, and which in certain possible worlds is a childcare event. We export to the actual world the description that holds in the possible world set; we end up with actual-world childcare.

Looking a little closer, this gets us actual-world existential import for the object with the help of two factors. The major reason is the presence of perfective aspect and hence actual-world event anchoring. But the structure of the event description has a role to play as well. Our commitment to an actual event which is in some worlds a caretaking event could not be cashed out just by actualizing the description boldfaced above, because this description has an open argument x . We must also “export” to the actual world the existential quantification over x , and accordingly the description of x as well. It is from this that it follows that there are actual children. This detail of the structure of extensional verb roots will play an important role in distinguishing them from intensional verb roots.

The state of our progress on the question of modal embedding is thus as follows. Although the question first arose when we looked at Wharram’s ANTIP in combination with intensional verbs, we saw that modal effects are present in antipassive constructions even with extensional verb roots, and noted Bittner’s proposal that all antipassive constructions in West Greenlandic are “world creating”. In response, we modalized ANTIP, tentatively assigning it a teleological accessibility relation which is retrieved from an event. Exploring the origins of extensional behavior when ANTIP combines with an extensional verb, we found in Hindi-Urdu that a crucial role is played by perfective aspect. We saw that extensional verb roots with property-type arguments, intensionalized by ANTIP, may only return to apparent extensionality with the help of aspectual

structure. We also noted a connection between the effect of perfective aspect on ANTIP constructions and similar “actuality effects” on ability modals. Actuality effects, it has been noted, do not obtain in all languages; they do not, for instance, obtain in English (e.g. *He was able to fly the airplane* does not entail that any airplane-flying actually occurred). This may be related to why we obtain less than fully extensional behavior in a case like (6b), the hunting hut example; our prediction is that West Greenlandic should not show actuality effects. If the analysis of property-type object constructions in term of ANTIP should be cross-linguistically extensible, it may also be of some help in clarifying why so many apparently extensional English verbs should be able pass tests for intensionality in contexts noted by Moltmann (1997). The roots of these verbs need not involve modal quantification (i.e., they are truly extensional); their apparent intensionality comes from a silent ANTIP, along with the absence of actuality effects in English.

3 Intensional verbs

We turn next to the representation of intensional verbs. We saw above that intensional verbs in West Greenlandic behave just like extensional verbs in taking entity-type objects in their most basic form. They seem to need antipassive morphology to take *de dicto*, property-type objects. This suggests that their roots have what we might call a “transparent” semantics, where there is no binding of a world argument in the object nominal.

Developing a semantics for these roots, we can preserve from earlier analyses the insight that intensional predicates quantify over possible situations. (I assume that situations are parts of worlds, proper or improper; see Kratzer 2007. The same semantic type *w* is used for worlds and situations.) Of course, particular intensional predicates quantify over particular sets of situations; *want* quantifies over situations where wants are met, whereas *seek* quantifies over situations where quests are successful. The predicate seems to determine the accessibility relation. I will pursue the appealingly simple position here that differences in accessibility relations are in fact the *only* thing that differs from intensional predicate to intensional predicate.⁸ We might suppose that intensional verbs locate their object in the situations determined by the accessibility relation. (A similar analysis in terms of quantification over “satisfaction situations” is discussed in Moltmann 1997.) Here are some sample denotations:⁹

⁸This is if we confine ourselves to the semantics. In the syntax, roots may have variable selectional restrictions; for instance *want* must be agentive, whereas *need* need not. When *need* does not combine with Voice, it can function as a raising verb (much like modals):

- (i) The sink_{*i*} needs *t_i* to be fixed
- (ii) ?? The sink_{*i*} wants PRO_{*i*} to be fixed

Want, by contrast, can only be a control verb. It requires an agent.

⁹These denotations allow *want* and *seek* to take entity-type arguments; in combination with ANTIP, they will take property-type arguments. Separate denotations for these verbs will be needed to analyze cases with propositional arguments, e.g. *Anne wants/seeks to win the tournament*. Why two denotations?

- (12) $\sqrt{WANT} : \lambda x \lambda e \lambda w . \forall s \in \text{DESIRE}(e)(w) : x \leq s$
 [where DESIRE is a function from events and worlds to propositions (bouletic alternatives)]
- (13) $\sqrt{SEEK} : \lambda x \lambda e \lambda w . \forall s \in \text{SUCCESS-SEARCH}(e)(w) : x \leq s$
 [where SUCCESS-SEARCH is a function from events and worlds to propositions (successful-search situations)]

These sample denotations for *want* and *seek* make use of different accessibility relations, but use them in the same way. *Want* locates individuals within situations that belong to the bouletic alternatives associated with the wanting event. All wanting events bring in a set of bouletic alternatives; that is what makes them wantings. *Seek* locates individuals within successful-search situations. Likewise, all seeking events will be associated with the successful-search accessibility relation. The correlation also holds in reverse: events associated with bouletic alternatives are wantings, and events associated with successful-search situations are seekings.

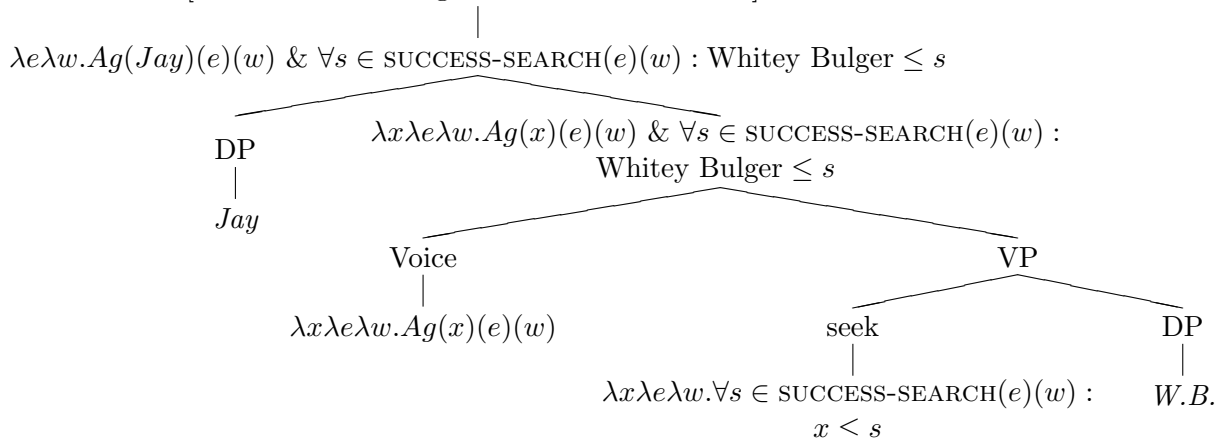
Given these root denotations, the simplest way to examine the semantics of intensional roots is to feed them a basic expression of type $\langle e \rangle$ – a name. In this case the nominal will directly serve as argument of the root, without requiring (or allowing) ANTIP or other trappings.¹⁰ (Thus, here, there will be no modalization in terms of intent.) Let us take a look at what we might say for a sentence like (14), *Jay sought Whitey Bulger*. Here the object is a name; it can combine directly with the denotation of *seek* in (13). We add Voice to introduce the agent (Kratzer, 1996); functional structure such as Aspect provides existential closure over events and grounds the event to the actual world. We now have an actual event with an actual-world agent which is, in the actual world, associated with a successful-search accessibility relation. If we can assume that such relations are only associated with seeking events, we have actual world seeking, as desired. This (seeking) event is such that all situations which correspond to its success contain Whitey Bulger.

It has been proposed (e.g. by Larson et al. 1997) that verbs such as *want* and *seek* in fact always take propositional complements; in cases where no propositional material can be seen directly, a covert predicate HAVE is present. Evidence for this position comes from adverbial modification and the scope of quantifiers and negation. However, as Schwarz (2007) notes, the case for a covert clause under these verbs can only be made when the silent lower-clause predicate is HAVE. In cases like *John needs a marathon*, however, where the relation between John and a marathon will not be one of possession, the evidence for a covert clause goes suddenly missing. Schwarz proposes that in these cases, the verb's complement is a property-type nominal (type $\langle e, st \rangle$) which undergoes an existential closure operation to be of type $\langle s, t \rangle$, the type of propositions. This proposition-type nominal then combines with the verb. This anticipates the analysis given here, where existential closure over the property-type nominal is provided by ANTIP. The present proposal differs from Schwarz's in not giving a single denotation to proposition-taking versions of verbs like *want* and their entity-taking counterparts, however.

¹⁰This is to say that there is no modal quantification over type $\langle e \rangle$ objects. We might wonder whether this extends to definite objects, a class that has been described as showing *de dicto/de re* ambiguities in intensional contexts (Quine 1960, Zimmermann 1992), e.g. *John is looking for the dean*. The languages we have considered here, however, –Hindi-Urdu and West Greenlandic–systematically classify definites with wide-scope (or scopally variable) indefinites, not with property-type indefinites. Accordingly, I will assume that the so-called *de dicto* definites are not to be analyzed as property-type; another analysis is required. I have argued elsewhere that definites appear to be *de dicto* when they are used without familiarity with the referent of the description (Deal, 2007).

- (14) Jay sought Whitey Bulger.
≈ Jay is the agent of an actual event e, and all successful-search situations of e contain Whitey Bulger.

$\exists e. Ag(Jay)(e)(w_0) \ \& \ \forall s \in \text{SUCCESS-SEARCH}(e)(w_0) : \text{Whitey Bulger} \leq s$
 [after addition of higher functional structure]



We turn now to the derivation of property-type object positions with intensional verbs, a sentence like *Jay is seeking a book* (nonspecific). Here, as before, the verb combines with ANTIP and the resulting constituent combines with a property-type object. Combining our denotation for the root of the verb *seek* (13) with ANTIP, and then adding a property-type object, we produce (15) after existential closure over events and relativization to the actual world w_0 , provided by perfective aspect.

- (15) $\exists e. Ag(Jay)(e)(w_0) \ \& \ \forall w' \in \text{INTENT}(e) : \exists x. \text{book}(x)(w') \ \& \ \forall s \in \text{SUCCESS-SEARCH}(e)(w') : x \leq s$

Bringing ANTIP together with an intensional verb, we come up with a sort of double modalization. (15) says that there is an actual event, that Jay is its agent, and that in each world compatible with its associated intent there is a book b which is part of all situations which correspond to success for the event. To derive the correct predictions here we will need to suppose that the modal accessibility relation carried by ANTIP, which we have been hypothesizing is a teleological one, will preserve events' accessibility relations from the actual world; we want the successful-search conditions to be the same in the worlds we access via intent as they are in the actual world. (This kind of modal "transitivity" is a desideratum for any accessibility relation we may propose for ANTIP.)

Now, in (15), as in the cases of extensional verbs with property-type object positions under perfective aspect (9b), we have an actual event and various modalized descriptions. However, Dayal (2003) reports that in contrast to extensional predicates with property-type objects, intensional predicates never yield actuality effects. A meaning like (15) will never commit us to the existence of books. Intensional verbs differ in this regard from low modals and from extensional verbs with ANTIP. Why should this be? I think the most likely culprit is the fact that intensional verbs do not describe events in the

same way as extensional verbs do. Rather, they name accessibility relations for locating objects in possible situations. The structure of the event description is different. We know in (15) that there is an actual event which in some possible worlds is associated with an accessibility relation via its goal. Perhaps this information, boldfaced in (15), can be cross-modally exported to the actual world. But this will not get us actual books; note that the event description can be exported without having to export the object variable x . All that we can reason cross-modally about is the existence of an event with an associated goal, which gives us actual-world seeking, but not actual world success.

4 ANTIP in English

Distinctions in the morphosyntax of object nominals are used in many languages to encode information very similar to what we've seen for West Greenlandic and for Hindi-Urdu; a special class of objects, usually exhibiting reduced morphosyntax, must have narrow scope with respect to higher operators and is interpreted opaquely as the complement of an intensional verb. A pattern like this can in fact be found in English in the morphosyntax of certain objects of intensional predicates like *want*, *need* and *look for*, as well as apparently extensional predicates like *find* and *count*, as noted by Moltmann (1997). English generally requires the personal forms *someone* and *who* for reference to a (full-grown) human; impersonal *something* and *what* cannot be used. However, for certain verbs, impersonal form objects can be used even with reference to a human. In these cases, however, the object has necessary narrow scope, and opaque interpretation as the object of an intensional verb. Fully personal *someone/who* is not interpreted opaquely, and need not have narrow scope with respect to a higher modal.

- (16) a. Beth is looking for something/#someone, namely a secretary. [opaque interp. with *something*]
 b. Beth is looking for someone/#something, namely Kate/the dean. [transparent interp. with *someone*]
- (17) a. (In order to win the contest), Beth has to find something quite unusual in her class, namely a genius. [*has to* > $\exists x$]
 b. (In order to win the contest), Beth has to find someone quite unusual in her class. [$\exists x$ > *has to*]

The substitution of impersonal *something* for personal *someone* seems to be another instance of a language using pared-down morphosyntax for a narrow-scope-only indefinite object. The cross-linguistic recurrence of patterns like this raises the question of how broadly the ANTIP analysis might be extended. English verbs (like Hindi-Urdu verbs) show no antipassive inflection, and thus we cannot see directly which form of a verb, entity-taking or property-taking, is the more basic one. What we do see in English is that a class of extensional verbs can show intensional behavior when they take indefinite objects; using an impersonal form with human reference disambiguates them in favor

of this intensional meaning. One verb that shows this behavior is *count*, as laid out by Moltmann (1997):

- (18) What / #whom did John count? – 10 men and 15 women.

Moltmann notes that *count* on this reading does not give rise to an existential entailment for the object: even if John counted 15 women in the room, there may only be 14; a miscount might have occurred. Zimmermann (1992) noted similar behavior in the case of *own*. This verb also need not give rise to existential entailments for its object, and also can be used with impersonal objects with human reference. Subsequent to a bachelor auction, for instance, we might ask what Kate owns, and receive the answer *a salesman*. (In this scenario, asking *whom* seems to imply familiarity with the set of bachelors auctioned, to be a question about specific individuals; the impersonal question asks instead for a property characterization of the object owned.)

This body of data suggests that in English, as in West Greenlandic, property-type objects can to some degree be recognized morphologically. More importantly, it suggests that the two languages have in common a general ability to turn an extensional verb into an intensional one, bringing in a property-type object. The presence of an ANTIP head in West Greenlandic captures this function compositionally; adopting it in English affords the same advantage.

5 Conclusions

This paper has aimed to unite two facets of the grammar of indefinite objects, like those in the West Greenlandic antipassive, that must take narrow scope: property-type semantics and modal embedding. Property-type object meanings come about when object nominals are smaller than DP, as others have proposed. In West Greenlandic, property-type objects compose with verbs only when an antipassive morpheme has been suffixed. This suggests that the composition relation between a verb and a property-type object is accomplished with the help of syntactic structure, not via a lexical verb form which takes a property-type object (Zimmermann 1992, van Geenhoven 1998) or via a special mode of composition in the semantics (Chung and Ladusaw, 2004). We saw that the antipassive morpheme must do more than just allow a property-type object; it must also provide a way for the existential quantification over this object to be embedded within the scope of the modality associated with a predicate. This was accomplished via a modalization of antipassive. The modalized antipassive morpheme combines with an intensional verb root which does not itself modally quantify over the object. However, the event described by the intensional predicate lends its telos to ANTIP’s accessibility relation, in effect extending the reach of the verb’s modality over the object position. We saw that the proposal may be extended to English, pointing to an explanation for the wide variety of “intensional verbs” recognized by Moltmann (1997). English need have lexical polysemy no more widespread than West Greenlandic does. Instead of a single verb like *seek* having multiple meanings, opaque and transparent, the transparent meaning is built into the verb root, and the opaque reading results from the verb root

only in combination with antipassive morphology. Opaque/transparent ambiguities in the interpretation of object nominals are in fact structural ambiguities in the analysis of the verbal structure.

In proposing that intensionality is an important measure syntactically constructed, the present work concurs in a sense with sententialist theories advanced by Quine (1960) and Larson et al. (1997). On the present theory, however, there is no special need for sentential embedding in order to produce modal embedding. (For arguments against the pure sententialist perspective on intensional verbs, see Schwarz (2007)). It is well known that modal quantification occurs in various different points in a syntactic structure (Brennan 1993, Cinque 1999); ANTIP is perhaps the lowest that modal quantification can go. Given this syntactic perspective on the construction of intensionality, the findings here (like those reported by the sententialists) may reflect a deeper constraint on the types of meanings that may be borne by verbs. Verbs may be restricted to denoting properties of events and relations between individuals and properties of events. The great variety of their surface complements might then be due not to unconstrainedness in lexical representation, but to the hidden presence of cross-linguistically highly constrained functional items which extend and diversify the varieties of reference to events in natural languages.

References

- Bhatt, Rajesh (1999) *Covert modality in non-finite contexts*, PhD Dissertation, University of Pennsylvania.
- Bittner, Maria (1987) “On the semantics of the Greenlandic antipassive and related constructions”, *International Journal of American Linguistics* **53**, 194–231.
- Brennan, Virginia (1993) *Root and epistemic modal auxiliary verbs*, Phd Dissertation, University of Massachusetts, Amherst.
- Chung, Sandra, and William A. Ladusaw (2004) *Restriction and saturation*, Cambridge, MA: MIT Press.
- Cinque, Guglielmo (1999) *Adverbs and functional heads: a cross-linguistic perspective*, New York: Oxford University Press.
- Dayal, Veneeta (2003) *A semantics for pseudo-incorporation*, ms., Rutgers.
- Deal, Amy Rose (2007) *Property-type objects and modal embedding*, ms., UMass; available at <http://people.umass.edu/amyrose>.
- Farkas, Donka, and Henriëtte de Swart (2003) *The semantics of incorporation*, Stanford, CA: CSLI.
- van Geenhoven, Verle (1998) *Semantic incorporation and indefinite descriptions*, Stanford, CA: CSLI.
- van Geenhoven, Verle, and Louise McNally (2005) “On the property analysis of opaque complements”, *Lingua* **115**, 885–914.

- Hacquard, Valentine (2006) *Aspects of modality*, PhD Dissertation, MIT.
- Kratzer, Angelika (1996) “Severing the external argument from its verb”, in Johan Rooryck and Laurie Zaring (eds.) *Phrase structure and the lexicon*, Dordrecht: Kluwer Academic Publishers, 109–137.
- Kratzer, Angelika (2003) *The event argument and the semantics of verbs*, ms., UMass.
- Kratzer, Angelika (2007) “Situations in natural language semantics”, in E. Zalta (ed.) *Stanford encyclopedia of philosophy*, 2007 edition, <http://plato.stanford.edu/entries/situations-semantics/>.
- Larson, Richard, Marcel den Dikken, and Peter Ludlow (1997) *Intensional transitive verbs and abstract clausal complementation*, ms., SUNY at Stony Brook and Vrije Universiteit Amsterdam.
- Manning, Christopher (1996) *Ergativity: argument structure and grammatical relations*, CSLI.
- Mohanan, Tara (1995) “Wordhood and lexicality: Noun incorporation in Hindi”, *Natural Language and Linguistic Theory* **13**, 75–134.
- Moltmann, Friederike (1997) “Intensional verbs and quantifiers”, *Natural Language Semantics* **5**, 1–52.
- Quine, W.V.O. (1960) *Word and object*, Cambridge, MA: MIT Press.
- Schwarz, Florian (2007) “On needing propositions and looking for properties”, in *Proceedings of SALT XVI*.
- Stiebels, Barbara (2006) “Agent focus in Mayan languages”, *Natural Language and Linguistic Theory* **24**, 501–570.
- Wharram, Douglas (2003) *On the interpretation of (un)certain indefinites in Inuktitut and related languages*, PhD Dissertation, University of Connecticut.
- Zimmermann, Thomas Ede (1992) “On the proper treatment of opacity in certain verbs”, *Natural Language Semantics* **1**, 149–180.
- Zimmermann, Thomas Ede (2006) “Monotonicity in opaque verbs”, *Linguistics and Philosophy* **29**, 715–761.