RESTRICTION and SATURATION

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CHAPTER 1. MODES OF COMPOSITION

Strawson’s (1959) discussion of ‘subject and predicate’ examines the received view of the basis for distinguishing between the semantics of predicates and terms with reference to Frege’s (1997[1862]) distinction between objects and concepts.

Frege characterizes the distinction between A4s [terms] and B4s [predicates] by means of a metaphor. Objects, he says, are complete, concepts incomplete or unsaturated. “Not all parts of a thought can be complete; at least one must be ‘unsaturated’ or predicative; otherwise they would not hold together.” Of B2s [predicates] he says that it is only because their sense is unsaturated that they are capable of serving as a link. (1959: 152-153)

The idea that semantic predicates are unsaturated (to various degrees) and that this semantic incompleteness is made complete by composing them with semantically complete terms (of appropriate types) is fundamental to formal semantic analyses of natural language. It is the basis of Montague’s (1973) application of type theory in his classic PTQ analysis of English, where all predicative expressions are assigned functional types and the fundamental composition operation is function application.

Strawson’s discussion portrays the opposition between complete objects and incomplete concepts as a unifying theme that can be played out at the level of linguistic acts, linguistic categories, and propositional roles. He considers various approaches to the basis for this metaphor, noting

The main thing which I wish to carry away from consideration of Frege and Geach is the fact that both writers make an absolute distinction between two mutually exclusive classes of expressions, members of each of which can be
combined with suitable members of the other to yield an assertion. Members of
the two classes of expressions alike introduce terms; but members of one class
introduce them assertively, and members of the other class do not. The List IV
distinction of non-linguistic terms merely mirrors, in a confused way, this
discussion in the style of introduction. Essentially the distinction we have arrived
at is a distinction between styles of introduction of terms [Emphasis added]. It
says nothing of any distinction between types or categories of terms, between
kinds of object. (1959: 153)

This monograph is an investigation of different ‘styles of introduction’ or what
we will term modes of composition in the syntax and semantics of indefinites, and their
application in two Austronesian languages (Maori and Chamorro). We start from the
assumption that underlying the semantic composition of predicates with their arguments
is a calculus of saturation. However, we question the assumption that what may appear
syntactically to be a predicate-argument relation is uniformly interpreted by a mode of
composition that saturates the predicate. We conclude that introducing a nonsaturating
mode of composition, (predicate) restriction, allows consideration of analyses that
illuminate constructions in many languages.

In this Chapter we discuss the calculus of saturation and introduce predicate
restriction. We relate these notions to other semantic proposals about the property theory
of indefinites, existential closure, and so-called semantic incorporation. We introduce a
general principle that forces saturation of predicates within a designated domain. The
resulting system permits several options for the semantic composition of indefinites with
their predicates. We show that the calculus of saturation allows for the possibility that an
argument position of a predicate may be targeted by both modes of composition in one
1.1 The Calculus of Saturation

What we are calling the calculus of saturation is illustrated by the standard type assignments assumed in the simple example (1).

(1) John fed Fido.

(2) \( \lambda y \lambda x \text{[feed}'(y)(x)] (f) (j) \)

The logical translation in (2) shows the semantic composition. The verb is given a function (of type \(<e,<e,t>>\) that represents it as semantically incomplete in two respects, corresponding to argument roles assigned by the predicate. In the underlying type theory, semantic completeness is represented by the two types \(e\) (for entities) and \(t\) (for truth-values, standing in for a proposition). The type of the expression in (2) is \(t\), showing that this composition achieves semantic completeness by resolving the two degrees of incompleteness in the predicate by combining the two semantically complete objects \(f\) and \(j\) with the predicate’s semantic content, a function equivalent to a two-place relation between entities.

An important part of (2) is the mode of composition that achieves this semantic completeness by saturating the predicate. This is the operation of function application. This is rendered more explicit by (3), which represents that operation explicitly as \(\text{FA}\), an operation that takes two arguments, the first of which is a function of domain type \(\sigma\) and an expression of semantic type \(\sigma\). The value of the operation is an object of type \(\tau\), the range type of the function.

(3) \(\text{FA}(\text{FA}(\lambda y \lambda x \text{[feed}'(y)(x)], f), j)\)

The boldface portion of (3) represents the first function application, whose value is a
function of type \( <e,t> \).

Underlying the talk of saturation is the Fregean metaphor of unsaturation. The saturation of the predicate removes an incompleteness, yielding a complete thought (a proposition). From this underlying metaphor derives the fundamental effect of saturation:

(4) A saturated argument position is no longer available to semantic composition. (4) states the obvious fact that the first instance of function application in (3) renders the \( y \) position unavailable for further composition. The next instance of function application must target the only remaining source of incompleteness: the \( x \) argument position.

Function application represents one mode of composition that saturates, but it is not the only one. Let us consider the semantic operation of ‘existential closure’. The functional incompleteness of the verb above can likewise be remedied by an operation that simply removes the incompleteness in favor of an existential quantification over the argument, as illustrated in (5), with EC representing the (unary) composition operation generally represented by \( \exists \nu \):

(5) \( \text{EC} \ (\text{EC} \ (\lambda y \lambda x \ [\text{feed}'(y)(x)]) ) \)

If we track the type changes in the expression in (5), we see that they parallel those in (3). The boldface portion represents a reduction from \( <e,<e,t>> \) to \( <e,t> \) and the whole expression is of the complete type \( t \).

The principle in (4) shows that existential closure likewise saturates the predicate, removing semantic incompleteness. The expression in (6), an attempt to provide individuals for composition after closure, does not cohere into a well-formed logical expression.

(6) \( \text{FA} \ (\text{EC} \ (\lambda y \lambda x \ [\text{feed}'(y)(x)]) ), f) \)
It consists of a proposition (truth-value) and an entity. In Frege’s terms, they ‘do not hold together’.¹

Both of the saturating modes of composition are illustrated when we consider a Davidsonian version of (2).

(7) \( \lambda y \lambda x \lambda e \ [\text{feed’}(y)(x)(e)] \ (f) \ (j) \)

Two instances of functional application yield the lambda reduced expression in (8).

(8) \( \lambda e \ [\text{feed’}(f)(j)(e)] \)

However, this expression is not semantically complete. Assuming that events are a sort of entity, then this is an expression of type \(<e,t>\). This is why Davidsonian analyses always invoke existential closure to complete the composition:

(9) \( \exists e \ [\text{feed’}(f)(j)(e)] \)

While it remains to be explained why it must be EC rather than FA that does the saturation of the event argument, that the derivation must achieve saturation follows from the deep Fregean assumption that semantic completeness is the goal of composition.

1.2 Predicate Restriction

We turn now to considering another class of compositions to introduce another, nonsaturating, mode of composition. Assume that the task is to interpret (10), where the noun \textit{dog} is interpreted by a property, taken here as having type \(<e,t>\).

(10) John fed dog.

Given the type assumptions above, this is another composition that does not cohere, not because of a lack of semantic incompleteness but because there is a type mismatch between the incompleteness of the predicate in the first argument (type \(e\)) and the type of the expression provided for composition (type \(<e,t>\)). For this composition to succeed,
There are two candidates. One is the ‘type-shifting’ approach, which assimilates the potential argument to the appropriate type. One example of this is a unary operation that represents a choice function, a function that maps a property onto an entity that has the property (see e.g. Reinhart 1997[1995], Winter 1997, Kratzer 1998). Representing a choice function as CF, a coherent composition can be achieved as in (11).

(11) \[ \text{FA (FA (\lambda y \lambda x \text{[feed’(y)(x)]}, \text{CF(dog’)}), j)} \]

The value of the choice function is an entity. After the choice function applies to the property, the derivation of (11) proceeds exactly as in (3). The choice function makes it possible to saturate an argument position with an argument interpretation of type \(<e,t>\).²

Let us now consider a different mode of composition, which we will call predicate restriction. In this mode, the property argument is interpreted as a restrictive modi®er of the predicate. We define a binary operation that composes a predicate directly with a property to yield a predicate without changing the degree of unsaturation. Assuming that the predicate is interpreted as a function \(f\), the result of restricting the predicate with property \(p\) is the original function with its domain restricted to the subdomain of its original domain to elements that have the property \(p\).³ We call this mode of composition Restrict and illustrate it in (12).

(12) \[ \text{Restrict ((\lambda y \lambda x \text{[feed’(y)(x)]}, \text{dog’})} \]

\[ = \lambda y \lambda x \text{[feed’(y)(x) } \land \text{ dog’(y)]} \]

The most important fact about Restrict is that it does not saturate the predicate. It does not therefore remove the possibility, or indeed the necessity, that the argument position targeted by Restrict can be saturated by either of the saturating composition operations that we have considered. From the point in (12) we can proceed by existential closure.
and then saturating the remaining argument as in (13).

(13) \[ FA (EC (Restrict ((\lambda y \lambda x \ [feed'(y)(x)], \ dog')), j)) = \exists y \ [feed'(y)(j) \land dog'(y)] \]

This composition yields the proposition that John fed a dog, though no interpreted constituent corresponds to an existential quantifier over dogs. The truth conditions are created as a combination of predicate restriction and existential closure.

Note that (13) is logically equivalent to (11). (11) is true just in case some choice function applied to \textit{dog} (and hence yielding an entity that is a dog) will yield a true value for the predicate. (We do not at this point represent the anchoring or existential closure of the choice function explicitly.) The difference is not one of content; the proposition expressed in the two cases is the same. But the semantic composition that leads to the proposition is different in the two cases. In (11) a particular dog is specified, though no conditions are placed on which dog it is. As a result, the predicate is saturated by that entity. In (13), however, no dog is specified; no entity saturates the predicate.

A consequence of the nonsaturating nature of Restrict is that the derivation (14) is possible.

(14) \[ FA (FA ((Restrict ((\lambda y \lambda x \ [feed'(y)(x)], \ dog')), f), j)) = [feed'(f)(j) \land dog'(f)] \]

(14) entails (3), that John fed Fido. The effect of Restrict is to explicitly incorporate the information suggested in (3) only by background knowledge about naming conventions, that Fido is a dog. The composition in (14) shares with (3) and (11) the fact that the predicate is fully saturated by function application to particular entities.

(14) provides us with a way of interpreting an expression like (15) or, suggesting one of the applications of Restrict that we will explore, (16).
(15) John fed (a) dog Fido.
(16) John dog-fed Fido.

Of course, neither of these is well-formed in English. But under the assumptions that we have made here, this is not a semantically interesting property of English. That is, it does not follow from the theory of semantic composition that these are impossible. This is in contrast to (17), where two entities are provided for composition with the same first argument of the predicate.

(17) John fed Fido Spot.

That (17) cannot be coherently interpreted follows from (4), the fact that once Fido saturates the predicate argument, the argument is no longer available for composition. This difference, the fact that saturation is possible after restriction but double saturation is not, will be important to the analysis developed Chapter 3.

1.3 Syntactic Versus Semantic Saturation

We concentrate here on the compositional possibilities for combining a predicate with an argument phrase whose semantic content is a property. This poses a type conflict that we have shown can be resolved in one of two ways, by type-shifting the argument into the appropriate type or by treating the argument phrase as a predicate modifier. We have presented these two options as distinct *modes of composition*, treating them as alternatives available to a language for semantic composition.

We intend this to contrast with the traditional view of type-shifting, which likewise assumes that operations like the choice function type-shift are readily available for use in composition. Partee (1987) discusses type-shifting operations in a framework that assumes that linguistic categories or subcategories should have uniform semantic
types. By defining partial mappings between the denotational types of generalized quantifiers, individuals, and predicates, semantically natural classes of noun phrases can be defined which ameliorate the need for systematic ambiguities of linguistic expressions. Type-shifting operations have become standard semantic tools, but they have generally been invoked as ‘last resort’ operations to save derivations with type mismatches. De Swart (1999) surveys these operations within the assumption that function application is the prime mode of composition. Here we take the alternative approach, noted by de Swart (1999: 282), of developing a richer inventory of basic modes of composition.

We do this because we wish to view choice functions and predicate restriction as options that may be conventionally encoded by a language. This possibility is less salient when they are deployed within a theory that assumes a tight relationship between the interpretation of syntactic arguments and saturation by function application. We think that this assumption is not always a useful one when faced with the crosslinguistic variation in the interpretation of indefinite noun phrases.

To make this point, let us return to consideration of the composition in (14) and the ill-formedness of (15) in English.

The domain of semantic composition for a language is the set of expressions that the syntax of the language admits as well-formed. On our view, the fact that (15) is a semantically interpretable but impossible expression of English is a syntactic fact. For concreteness, let us assume that it follows from Case Theory (see e.g. Chomsky 1981): the syntax of English does not license two DP expressions that can target the same argument of the predicate in semantic interpretation. When we make the notion ‘targeting an argument of the predicate’ less obscure, we reveal a calculus of syntactic
saturation that largely parallels the semantic one. This is the assumption that there is an isomorphism between syntactic saturation and semantic saturation.

This parallel is made explicit in Montague’s classic analysis of English. In PTQ (Montague 1973), the syntactic categories are defined in terms of categorial grammar as functions. The categories of English are systematically related to semantic types, so that function application can be the main mode of composition. At each step in semantic composition, the function that interprets the predicate is applied to the interpretation of the argument expression. After function application, the predicate’s argument is satisfied and the composition must move on to target the next argument for composition. The homomorphism between the syntactic categories and semantic types insures that each argument position will be targeted once in the composition and requires that saturation will be achieved at each point.

When this homomorphism is relaxed, the theory of modes of composition must be enriched. Partee’s (1987) flexible type analysis attempted to maintain the assumption that all noun phrases were assigned to the generalized quantifier type \(<<e, t>, t>\) while still allowing for the occurrence of some of those noun phrases as predicates. The type-shifting operations fed derivations for predicate noun phrases. If we allow the syntactic category to be heterogeneous as to semantic type, with (some) indefinite DP’s assigned a predicate type \(<e, t>\) as their basic type, then type-shifting functions will assimilate those to quantifier or entity type to allow function application to remain the prime mode of semantic composition. For example, consider (18) under the assumption that the phrase *a dog* has only the property of being a dog as its semantic content.

(18) A dog barked: *FA (λx [bark’(x)], ̄λy [dog’(y)])

By assuming a generally available type-shifting operation A that maps the property
content expression *a dog* into the type of generalized quantifiers, yielding an existential quantifier, the composition can continue (with the expected reversal of function-argument relation in generalized quantifiers):

(19) \[ \text{FA (A (λy [dog′(y)]), λx [bark′(x)])} = \text{FA (λP∃y [dog′(y) ∧ P(y)], λx [bark′(x)])} \]

The important point is that even though the category-type isomorphism is relaxed here, the isomorphism between syntactic saturation and semantic saturation is not. Each step in the semantic composition achieves saturation of the predicate’s argument at the point of composition.

This is the sense in which we referred above to our use of the choice function in (11) as a type-shifting option. The choice function maps an expression of type <e,t> into one of type e, insuring that the composition of the property with the predicate will achieve saturation. To return to (19) using the choice function type-shift, we would have the composition in (20).

(20) \[ \text{FA (λx [bark′(x)], CF (λy [dog′(y)])}) = \exists f[bark′(f(dog′))] \]

It is a property of compositions that preserve this parallel between syntactic and semantic saturation that one argument position is saturated before composing another argument. All of the compositions considered above, including those that include Restrict as a mode of composition, show this property. In the derivation in (14), for example, Restrict is followed immediately by Function Application targeting the same argument position. This is also illustrated in the derivation in (13), repeated here as (21).

(21) \[ \text{FA (EC (Restrict (λyλx [feed′(y)(x)], dog′)), j)} = \exists y [feed′(y)(j) ∧ dog′(y)] \]
In this composition, the argument position targeted by Restrict is immediately saturated by existential closure.

Let us consider another possible composition, however.

(22) EC (FA (Restrict (λyλx [feed'(y)(x)], dog'), j))

\[ = \exists y [\text{feed'}(j)(y) \land \text{dog'}(j)] \]

In this composition, we do existential closure after functional application. This is a well-formed composition, which yields a different proposition from the one in (21). It makes John the dog and the existential closure saturates the second argument. The traditional notation that we are using here implicitly incorporates the assumption that arguments must be saturated at the point at which they are targeted in composition. That is an assumption that we will not maintain here in its strongest form. We need a notation that will not require semantic saturation to parallel syntactic saturation. To provide this, we will henceforth adopt the Davidsonian logical representation, which we think perspicuously represents the issue at hand.\(^4\)

Let us return to the derivation in (13) in a Davidsonian form.

(23) Restrict (λyλxλe [feed’(y)(x)(e)], dog’)

The result of this composition is still a function that is unsaturated in two entity arguments in addition to the event argument. The valence of this function should remain the same. However, on our view, the lambda prefix of this predicate is doing two jobs, a semantic and a syntactic one. Semantically, it is tracking the degree of unsaturation of the predicate. Syntactically, however, it determines the order under which the arguments are targeted for composition. The syntactic function of the prefix has been discharged in this derivation by composition using Restrict, even though the semantic function has not been eliminated.
Let us therefore adopt the notational assumption that when an argument is targeted by a composition operation, it is possible to demote it from the top of the prefix to a position just above the event argument. By this convention, (23) will yield (24).

(24) \( \text{Restrict} (\lambda y \lambda x \lambda e [\text{feed}'(y)(x)(e)], \text{dog'}) \)

\[ = \lambda x \lambda y \lambda e [\text{feed}'(y)(x)(e) \land \text{dog}'(y)] \]

This notation now has the right degree of unsaturation, but allows the next argument to be targeted for composition without the saturation of the \( y \) argument.

Returning to the composition in (22), we have a different result under this convention:

(25) \( \text{FA} (\text{Restrict} (\lambda y \lambda x \lambda e [\text{feed}'(y)(x)(e)], \text{dog'}), j) \)

\[ = \text{FA} (\lambda x \lambda y \lambda e [\text{feed}'(y)(x)(e) \land \text{dog}'(y)], j) \]

\[ = \lambda y \lambda e [\text{feed}'(y)(j)(e) \land \text{dog}'(y)] \]

Now the operation of function application saturates the \( x \) argument rather than the \( y \) argument, making John the feeder. The result of this composition is still a predicate unsaturated now in two places—the event argument and the restricted \( y \) argument.

At this point, iterations of existential closure (or a polyvalent, exhaustive closure) suffice to remove the remaining semantic incompleteness by saturation, yielding the appropriate proposition.

(26) \( \text{EC} (\text{EC} (\lambda y \lambda e [\text{feed}'(y)(j)(e) \land \text{dog}'(y)])) \)

\[ = \exists e \exists y [\text{feed}'(y)(j)(e) \land \text{dog}'(y)] \]

What forces existential closure is the principle that semantic completeness is necessary. Here the closure of the restricted argument is forced at the end, after the closure of the event argument.
1.4 Saturation at the Event Level

The view that semantic incompleteness of predicates must be eliminated in composition raises the issue of exactly when in the compositional process their incompleteness must be resolved. Is there some intermediate stage in the process of composition at which the predicate must achieve completeness, in the sense that every one of its arguments must be saturated? We believe there is such a stage, and it occurs when the composition reaches the event argument associated with the predicate. At that stage, which we refer to as the event level, every one of the predicate’s (participant) arguments has already been targeted for composition and has therefore had a chance to become complete. We claim that at the event level, the predicate must achieve completeness: every one of its arguments, except the event argument, must be saturated. We assume the following principle to enforce this:

(27) Predicates must have their participant arguments (semantically) saturated at the event level.

Previous approaches to formal semantics have not felt any need for a saturation requirement of the sort we are proposing. This strikes us as unsurprising. Where syntactic saturation and semantic saturation are assumed to be isomorphic, (27) is not needed. In such systems, semantic composition is accomplished via function application and is therefore saturating. The predicate will automatically become complete when composition has targeted all of its participant arguments.

The situation is different in our system, because Restrict does not saturate when it targets an argument. Given this larger architecture, the rationale for the saturation requirement becomes clear: predicates must achieve semantic completeness. This is no longer guaranteed by the mere process of composition. Once this is acknowledged, the
next question is at exactly what stage of the process unsaturation must be resolved and semantic completeness achieved. We have two reasons for believing that the relevant stage is the event level.

Our first reason concerns the special character of the event argument. In the version of Davidsonian event semantics that we assume here (see Davidson 1967 and Parsons 1999), every semantic predicate has an event argument as its highest argument. (Alternatively, one could adopt Kratzer’s (1995[1998]) view that only stage-level predicates have an event argument as their highest argument, but for simplicity’s sake we do not pursue this route.) The event argument differs from the typical argument in two ways: it designates an event as opposed to a participant, and it is ineligible for saturation by the usual means—it cannot be completed by composition with the meaning of an expression. In this special sense, the event argument must remain semantically incomplete. One way to draw the relevant distinction between the event argument and all other arguments is to assume that the predicate must achieve completeness at the stage when the event argument is about to be integrated into the composition. The result will be that the event argument will escape saturation via composition, but all other arguments of the predicate must be saturated. This, in essence, is our proposal.

Our second reason has to do with the workings of existential closure. There is by now a substantial body of research that holds that there is a semantic domain smaller than the proposition (or its syntactic analogue, the clause) that is existentially closed. Heim (1982: 138) originally proposed that existential closure affects the nuclear scope of a tripartite quantificational structure. Building on this insight, Diesing (1992) develops an algorithm for mapping syntactic structure into logical form in which ‘material from VP is mapped into the nuclear scope’ of a quantificational structure (Diesing 1992: 10; see also
Kratzer 1995). Diesing further assumes that all arguments of the predicate, except the event argument, originate internal to VP. The result is that in her system, every participant argument of the predicate is in principle within the domain of existential closure, because it originates internal to VP and is therefore mapped into the nuclear scope, which is existentially closed. (We pass over Diesing’s treatment of stage-level and individual-level predicates, as it is not strictly relevant for our purposes.)

We see Diesing’s mapping hypothesis, and her view of existential closure in particular, as fully consistent with the idea that the saturation requirement is imposed at the event level, which is designated syntactically to be at the point where a VP becomes the complement to an inflectional head. In our system, existential closure provides one route by which a predicate’s argument can become saturated. The significance of Diesing’s system for us is that it makes existential closure available to all participant arguments of the predicate—just what would be expected if these arguments must be saturated, and their predicate semantically complete, at the event level.

In sum, we assume that the general ban on semantic incompleteness is given a linguistically significant location: at what we refer to as the event level. What is important to us is that closure be forced at that level if it has not already occurred. We do not argue here against the idea that closure may happen sooner. However, given that we are not adopting the assumption that every composition operation that targets a predicate’s argument will result in closure, and hence that (27) is a theorem of a tacit assumption about semantic composition, we make this requirement explicit by adopting (27).5
1.5 Scope Constraints

Based upon the reasoning above, it follows from our system that compositions invoking only Restrict on an argument position will eventually saturate that position at the event level by existential closure. Since Restrict does not saturate the argument position, that position will be existentially closed at the event level if no further composition saturates it (as it would in the case of a derivation like (14)).

Under the standard assumption that negation is interpreted above the event level, it follows from this that any argument that is interpreted by Restrict rather than a saturating operation must be an existentially closed argument with necessarily narrow scope with respect to negation. Consider again the composition in (26). If this were negated, the existential closures would fall in the scope of negation. The effect of (27) is to insure that the (nuclear) scope of negation will be saturated by existential closure, as stipulated for operators in general in Heim’s (1982) system.

When we consider the question with regard to other (generalized) quantifiers, whether nominal or adverbial, we get a similar result. To see this, however, we must make assumptions about the interpretation of quantifiers explicit. A fundamental property of all analyses that assume something analogous to quantifier raising (QR; see May 1985) is that generalized quantifiers are interpreted higher than what we have called the event level. Consider the interpretation of (28). Under the assumption that generalized quantifiers do not combine directly with first-order relations to saturate argument positions, the interpretation of (28) will result from the composition of the two meanings in (29).

(28) John fed every dog.

(29) \( \lambda P \forall x \ [\text{dog}'(x) \rightarrow P(x)], \lambda y \ [\exists e \ [\text{feed}'(y)(j)(e)]] \)
Though it is clear that the same result can be achieved without making the relation between the quantifier and its nuclear scope clear in syntactic representation, we will for concreteness assume that semantic composition is done on structures that result from a syntactic rule of construal like QR. In this way, the existential closure of the nuclear scope of the quantifier assumed in Heim’s (1982) system, as well as the interpretation of the quantification over events as having narrow scope with respect to negation, follows from (27).

This example calls attention to an important point about the interpretation of variables, however. The variable \( y \) in (29) is free in the expression below the event quantifier, but that free variable does not represent semantic incompleteness in the predicate for the purposes of (27). Hence it does not trigger existential closure at the event level. The function of variables in logical representations is to saturate predicates (in both the syntactic and the semantic senses) while allowing the specification of the value of the argument to be dependent upon context of interpretation. This seems to us to be the standard understanding of variables and is not unique to the assumptions made here. However, this understanding is crucial to the discussion below of how the property theory of indefinites is related to the inventory of composition operations that we defend.

1.6 The Property Theory of Indefinites

Since the work of Kamp (1981) and Heim (1982) in discourse representation theory, it has become standard to assume that some or all indefinite DP’s have semantic interpretations equivalent to properties, i.e. of type \(<e,t>\). In building on this tradition, we are interested in the question of whether indefinites necessarily saturate the predicates that they combine with. We believe that they need not and that indefinites are the natural
domain for the composition operation that we call Restrict.

Under the classical Kamp-Heim analysis, indefinites are treated as ‘restricted free variables’. The property that represents their semantic content serves as the restriction on the variable, but their interpretation as variables insures that they will saturate the predicates that they combine with. That is, the ‘restricted free variable’ avoids the type mismatch that we have assumed for property-content arguments. It can, in a sense, be viewed as a kind of type-shifting, analogous to the use of choice functions. We leave for further research the question of what the substantive difference is between the variable approach and the choice function approach assumed here. Both resolve the type mismatch by saturating and shifting scope resolution into the theory of variable closure and binding. If choice function variables are subject only to existential closure, then the difference would be found in contexts where the individual variables associated with indefinites are themselves targeted for binding by operators other than existential closure (as in, e.g., the treatment of donkey anaphora).

In this Section we discuss how our proposals are related to some recent work on the interpretation of indefinites. What unites this work is the idea that some indefinites must be interpreted in ways that insure that they will necessarily have narrow scope with respect to other elements in the sentence. We believe that the cases discussed here can fruitfully be analyzed in terms of Restrict and that the proposals are clarified when issues of semantic saturation are addressed explicitly.

The fundamental problem posed for composition when a noun phrase that has only a property as its semantic content is presented by the syntax as an argument to a predicate is a type mismatch. The property, of type \(<e,t>\), cannot combine directly with the predicate, which is looking for a type e argument. Under the assumption, which we
do not make here, that semantic saturation must occur at the point where the predicate is syntactically saturated, there are only two options: immediate type-shifting to type e via a choice function or existential closure. The result allows saturation via function application. The former is illustrated in (20), repeated here in Davidsonian form as (30).

\[(30) \quad \text{FA} (\lambda x \lambda e \text{[bark'(x)(e)]}, \text{CF} ( \text{[dog'(y)]}) = \exists f \exists e \text{[bark'(f(dog')(e)])})\]

The combination of the application of a choice function followed by function application can be viewed as a compound mode of composition which we will call Specify, to contrast it with the nonsaturating Restrict.

Because we are focusing on the saturation of predicates, we see Specify as saturating, even though it reveals a kind of semantic incompleteness in that CF is generally thought of as a variable over choice functions. Hence the need for existential closure of the choice function at some point. That is, (30) entails that a particular dog barked, but doesn’t give any information about which dog barked. This choice function variable differs from the standard use of individual variables in that it cannot become the target of binding by any operator other than existential closure. There is considerable variation in proposals about the possibilities for closure of choice function variables.

The competing proposals are surveyed effectively by Matthewson (1999: 86). Reinhart (1997[1995]) and Winter (1997) assume that all choice function variables may be existentially closed at any point in composition. By contrast, Kratzer (1998) and Matthewson (1999) assume that the semantic incompleteness represented by a choice function variable is addressed only at the end of composition, the ‘widest scope’ level. (Kratzer assumes that choice function variables are never existentially closed but treated as free variables anchored in context; Matthewson assumes existential closure, but only
at the top level.) In both cases, indefinites interpreted with choice functions will have possibilities for wide scope over other operators. Anticipating the analysis of Chapter 2, we will assume with Reinhart and Winter that the choice function variables introduced by Specify may be existentially closed at any level. Hence the scope possibilities of indefinites interpreted by Specify are a superset of those interpreted by Restrict.

The assumption that Specify leads to predicate saturation in the sense of (27) is crucial. Whatever the nature of the incompleteness represented by the choice function variable, it need not be resolved at the event level. Hence there are no necessary limitations on the scope possibilities of indefinite noun phrases interpreted in this way. An indefinite composed by Specify should be able to have either narrow or wide scope with respect to other operators. However, (27) entails that indefinites interpreted by Restrict must be closed by the event level.

The core of our proposal is that property-content indefinites may in principle be directly composed with predicates. Their composition may be either by Restrict or by Specify. We embed this proposal in a theory that allows for syntactic saturation to occur without semantic saturation while still insuring semantic saturation at the event level. We hope that by pointing out the independence of these two assumptions, it is possible to see their relevance to similar proposals for the interpretation of indefinites.

Farkas (1997) discusses the semantic typology of indefinites and points out several cases of indefinites that are usefully analyzed as predicate restrictions, among them are preverbal nominal predicate modifiers in Hungarian. She proposes a semantic interpretation of them that parallels our operation Restrict, allowing them to have only properties as their contents. Her proposal is embedded in discourse representation theory and she further assumes that predicate modifiers do not introduce discourse referents (and
hence are not available to anchor discourse anaphora). We do not assume here that the
dynamic property of introducing a discourse referent is systematically correlated with
mode of composition. In the analysis of Maori in Chapter 2, we will propose that certain
indefinite DP’s are interpreted by Restrict but they are fully dynamic in supporting
discourse and donkey anaphora. In addition, Farkas assumes (1997: 11) that predicate
modifiers saturate the predicate despite their semantic type.

The operation that we call Restrict resembles the account of ‘predicative
indefinites’ in van Geenhoven (1998) as well. Van Geenhoven proposes a distinction
between predicative indefinites, which have only a property as their content, and ‘free
variable’ indefinites, which are given existential force through accommodation. She
claims that predicative indefinites are combined with their predicates in an operation that
she terms ‘semantic incorporation’, which entails that such indefinites have necessarily
narrow scope. There is a clear parallel between our proposed operation Restrict and van
Geenhoven’s semantic incorporation. However, she implements her operation in a way
that renders it saturating. She defines semantic incorporation of a property P into a
verb’s meaning as follows (1998: 132).

\[(31) \quad \lambda P \lambda w \lambda x \exists y [\text{Verb}_w(x, y) \land P_w(y)]\]

On our view, (31) represents a kind of type-shifting of the predicate to resolve the type
mismatch between the semantically incomplete argument and the predicate. It creates a
predicate with a second order incompleteness, allowing the predicate to compose directly
with the property. On this view, the property semantically saturates the predicate. In
addition, the existential closure of the entity variable is stipulated as part of the predicate
interpretation, thus insuring that this entity argument is saturated before composition. By
contrast, Restrict is designed precisely to leave the predicate unsaturated. It is the
saturating character of semantic incorporation that entails the need for van Geenhoven’s ‘recomposition’ strategy (1998: 148) to allow for further composition of material that targets this incorporated argument. By viewing Restrict as not saturating, we believe that we avoid this consequence while still capturing the essential prediction of narrow scope for ‘semantically incorporated’ indefinites.

The idea that indefinite noun phrases, both NP’s and DP’s, may have mere properties as their semantic content is attractive and the idea that some occurrences of indefinite DP’s are treated in this way is relatively uncontroversial.\(^9\) The assumption accounts straightforwardly for their use as predicates in their own right, at least from the point of view of semantics.

The theory that we have presented here builds on this insight but distinguishes the fundamental assumption of property content from the various means by which these noun phrases are enabled to serve as arguments to predicates. As we have seen, there are several ways of resolving the inherent type conflict. We think it is useful to view particular analyses of indefinites as a combination of this fundamental assumption about content type and assumptions about what we have termed modes of composition. Every analysis of indefinites makes assumptions about the type of their semantic content and how that is related to their combinatoric possibilities in composition. We believe that it is important to recognize the fundamental heterogeneity of mode of composition and to exploit that heterogeneity in linguistic analysis.

1.7 Summary
We have concentrated here on two modes of composition for indefinites. Specify assimilates properties to entities to allow semantic saturation to be simultaneous with
syntactic saturation. Restrict represents an alternate route to semantic completeness, one that separates semantic saturation from syntactic saturation.

From these assumptions, two important properties of compositions follow which are important to the remainder of this monograph.

The first property is that Restrict entails narrow scope. The scope of a property-content indefinite is fixed by the constraints governing existential closure of the argument. The scope of an indefinite composed with Restrict is not fixed by Restrict but by the (necessary) existential closure. The assumption here is that this closure must occur by the point at which the composition reaches the event level. As a result, all indefinites interpreted by Restrict must have necessarily narrow scope with respect to elements interpreted above that level. This includes all operators that bind the event variable and those that take scope over that level: negation, adverbial quantification, and nominal quantification. Hence the fundamental diagnostic of an indefinite interpreted by predicate restriction is its necessarily narrow scope.

By contrast, the scope of indefinites interpreted by Specify is fixed by assumptions about the treatment of choice function variables. Here we assume that choice function variables may be existentially closed at any point. Therefore, indefinites interpreted by Specify will have no constraints on their scope interactions with other operators.

The second important property is that between Restrict and existential closure, saturation may occur. The semantic incompleteness of an argument that remains after Restrict must be eliminated by the event level. When it is eliminated by existential closure, the composition yields an interpretation that is equivalent to one that involved Specify and existential closure (of the choice function) at the same point. However, the
logical possibility exists that the argument may be rendered complete by a saturating operation before the level where existential closure would be forced. In a structure interpreted in this way, we would see an apparent doubling of the argument. The argument would be associated with the indefinite that was interpreted by Restrict and also with the saturating term.

In the remainder of this monograph we develop analyses of structures involving semantically incomplete noun phrases in two Austronesian languages.

In Chapter 2, we focus on the analysis of two indefinite determiners in Maori. Maori has two indefinite articles which are indistinguishable truth-conditionally, but which differ from each other in scope possibilities and other aspects of their distribution. We argue that the lexical contrast between the two determiners directly represents the difference in mode of composition for these indefinites, with one systematically interpreted by Restrict and the other by Specify.

In Chapter 3, we examine an incorporation structure in Chamorro. The Chamorro verbs ‘have’ and ‘not have’ obligatorily incorporate a semantically incomplete noun phrase as their internal argument. However, the internal argument can also be associated with an independent DP. We argue that such cases illustrate the possibility of saturation following predicate restriction.
Notes

1. Note that we are not claiming that it is impossible to make them cohere, only that the available composition operation of function application is not able to compose them. If we returned to the definition of existential closure and made it ‘dynamic’, then it would be possible to interpret (6) as cohering, by stipulating the additional condition that the witness of the existential closure is restricted to being the individual introduced. We do not view this as undermining the truth of (4). Instead, to the extent that the modified dynamic existential closure is viewed as an available mode of semantic composition, it is not saturating. The use of dynamic quantification in discourse interpretation is, in our view, crucially not about semantic composition: the definition of the contents of individual linguistic expressions.

2. Similarly, shifting the property into an existential generalized quantifier, or mapping it onto a entity of the kind sort, would accomplish the same thing: assimilate the offending content to an element in the domain of the function.

3. For our purposes, the representations that we give for the result of Restrict assume that this is an additional truth condition. Alternatively, we could give a presuppositional interpretation of Restrict, which returns a partial function with respect to the original total function, so that the property acts as a kind of selectional restriction. This is a presuppositional interpretation of predicate restriction. We do not think that anything in what we say here distinguishes between these two versions of Restrict.

4. Our decision to shift to Davidsonian notation at this point is not a substantive assumption. We think that for purposes of exposition, however, these representations will be more perspicuous in tracking the effects of the assumption that we
make below about saturation at the event level.

5. Because (27) is a theorem of the assumption that closure happens at the point of targeting (or must happen before another argument is targeted), the results of the next Section apply to the traditional theory as well.

6. We do not rule out the possibility that some apparently quantificational DP’s can be interpreted as group entities that directly saturate a position. In such cases, the existential quantification over events can have scope over the content of the determiner. But crucially, in these cases the group entity is taken to directly saturate the predicate.

7. We set aside for the time being the case of a predicate that seeks a type \(<e,t>\) argument. No type mismatch occurs, because the property can directly saturate such a predicate by function application. The relation between Restrict and such second-order arguments will be discussed further in Chapters 2 and 3.

8. Shifting into the type of generalized quantifiers is a logical possibility under the assumption that the predicate can combine with an expression of type \(<<e,t>,t>\). We set this aside with our assumption that generalized quantifiers are interpreted on structures that are the output of quantifier raising. This is not essential, but the case offers no difference for our concerns, because this would be a directly saturating compositional move.

9. In this Chapter, we concentrate on DP arguments. As will be come clear later, we assume that NP’s, which denote properties, can be composed via Restrict. We further assume that the domain of Specify is restricted to DP’s and that the fact that NP’s cannot compose in this mode is principled.
CHAPTER 2. INDEFINITES IN MAORI

In Chapter 1, we advanced the idea that there are two modes of composition, Restrict and Specify, that can target a predicate’s argument and combine it with the meaning of an indefinite noun phrase. Although these operations often lead to truth-conditionally equivalent results, they differ in their immediate impact on the composition. Restrict composes the property supplied by an indefinite with the argument, restricting the domain of the argument but leaving it unsaturated. Specify type-shifts the property to an individual and composes that with the argument, with the result that the argument is saturated—semantically complete.

Our theory of restriction and saturation makes an empirical prediction that it is the purpose of this Chapter to explore. If indefinites and other semantically incomplete noun phrases can indeed be composed via different operations, then one might expect that the morphosyntax could explicitly signal which composition operation to employ. A language could, for instance, use distinctive determiners or distinctive inflectional morphology to flag whether a given indefinite should be composed via Restrict or via Specify.

We show here that this prediction is borne out in remarkable detail in Maori, a Polynesian language of New Zealand. Maori has two articles, *he* and *tētahi* (plural *ētahi*), which are widely recognized to be indefinite in some sense.¹ These articles contrast, but not truth-conditionally, in sentences like the following.

(1)a. Kua tae mai he manuhiri ki taku kāinga.
T  arrive to.here a  guest  to  my  house
    Some visitors came to my home. (Orbell 1992: 49)
(2)a. Homai he wai mo-ku.
give Pass a water T.of-me

Give me some water. (H.W. Williams 1971[1844]: 43)

b. Kawe-a atu tetahi wai mo-ku.
bring Pass away a water T.of-me

Fetch me some water. (H.W. Williams 1971[1844]: 111)

(1-2) illustrate that there are contexts of use in which *he* and *tetahi* seem interchangeable. But there are also contexts in which only one of the two can occur, as we will show later. Significantly, the range of uses of these articles does not lend itself to an account in terms of received semantic contrasts, such as referential versus quantificational (see e.g. Fodor and Sag 1982) or specific versus nonspecific (see e.g. Enc 1991).

The literature on Maori grammar offers numerous attempts to come to grips with the semantic similarity of these articles and their distributional overlap. Biggs (1969: 20 and 113), for instance, had this to say:

The indefinite article *he* is preposed to bases which are being used nominally and indefinitely . . . The specifying definitive *tetahi* and its regular plural form *etahi* may be translated ‘(a) certain’ . . . Note that the indefinite article *he* may not follow any of the locative prepositions *ki, i, hei, kei*. In this position *he* is replaced by *tetahi*.

Like Biggs, Chung (1978: 73) describes the distribution of *he* in purely morphosyntactic terms.

The nonspecific article *he* . . . qualifies nouns only when they are subjects of intransitive clauses.
On the other hand, Bauer (1993: 357) characterizes the contrast between *he* and *tētahi* primarily in semantic terms. In her very careful commentary on definiteness in Maori, she says

Perhaps more importantly, it seems to me that the use of the labels ‘definite’ and ‘indefinite’ obscures the crucial factor in determining the choice between *he* and *tētahi* in those places where choice can occur: *he* is used when the type of object is crucial, and *tētahi* is used when the number of individuals present is significant. (See Bauer 1997: 165-169 for further development of the proposal.) Behind these observations and suggestions lie some deeper questions. Why would a language have two indefinite articles in the first place? Why do *he* and *tētahi* seem semantically so similar but intuitively different? What is the semantic difference between the two, and why is it so elusive?

We claim that the explanation is to be found in the theory of restriction and saturation. In our view, the two indefinite articles of Maori signal different modes of composition: *he* signals that the indefinite is composed via Restrict, whereas *tētahi* signals that it is composed via Specify. This Chapter motivates our proposal with evidence from the distribution and meaning of these two types of indefinites. Our aim is to show how the composition operations interact with other aspects of grammar, including some quite parochial aspects of Maori, to give a principled account of *he*, *tētahi*, and their partial overlap.

If our account is correct, it offers striking confirmation of our claim that semantically incomplete noun phrases can be composed via different operations. It simultaneously offers a challenge to approaches that employ type-shifting mechanisms, either freely or as a last resort, to reconcile the intuition that indefinite noun phrases are
property-denoting with the observation that they often correspond to arguments (see e.g. Partee 1987, de Swart 2001, and others).

Section 2.1 offers a bit of background on Maori grammar. Section 2.2 describes the syntactic similarities between *he* and *tētahi*; Section 2.3 describes their semantic similarities. Section 2.4 documents two striking contrasts. In Section 2.5, we present our account and argue that it is superior to an approach in which function application, mediated by type-shifting, is the only composition operation. Section 2.6 discusses two further distributional contrasts between *he* and *tētahi*, while Section 2.7 sketches some pragmatic contrasts between them. We suggest that all these contrasts are consistent with our account, once other aspects of Maori grammar are factored into the picture. Finally, Section 2.8 concludes.

2.1 A Dash of Maori Grammar

Like other Polynesian languages, Maori is a head-initial language whose syntax is relatively unencumbered by inflectional morphology. Clauses are projected from a category, T(ense), that occurs at the far left and typically indicates tense-aspect-mood. This category is followed by the predicate, which can be of any major category type, and then by the predicate’s arguments. The grammatical relations of the arguments are indicated by prepositions. Consider the sentences below, in which the predicate is a verb (3a), an adjective (3b), or a prepositional phrase (3c).

(3)a. Ka noho a Pāoa i te whare ra.
T sit Pers Pāoa at the house that
Pāoa remained inside. (Jones & Biggs 1995: 167 [22.11])
b. Ka tino koa a Tamahae i te puta-nga mai o tēnei whakaatu.
Very glad Pers Tamahae at the emerge-Nmlz to.here of this news
Tamahae was quite happy when this news got out. (Waititi 1974: 164)

c. Kei te taha moana ngā kōtiro.
T.at the side sea the.pl girl
The girls are at the seaside. (Biggs 1969: 40)

When the predicate is a noun phrase, T indicates whether it is predicational
(glossed Pred) or identificational (Ident). We return to this later.

(4)a. He wahine tino whakapono a Te Puea.
Pred.a woman very believing Pers Te Puea
Te Puea was a very religious woman. (Karetu 1974: 98)

b. Ko Ngahue tana hoa.
Ident Ngahue his friend
His friend was Ngahue. (Waititi 1974: 81)

Three other characteristics of the syntax of clauses should be mentioned at this
point. First, Maori is a VSO language—more accurately, an XSO language. The
unmarked word order of clauses is Predicate-Subject-Other Arguments, though as Bauer
(1993: 89) observes, “a variety of other orders is also possible”. We can afford to remain
agnostic on the issue of how XSO and the other word orders are derived; but see Bauer
(1993: 89-91 and 241-6), Bauer (1997: 54-64), and Chung (1998: 164-73) for some
proposals. Second, Maori is a null argument language. Virtually every kind of argument
can be realized by a null pronoun whose content is not recoverable from agreement—
because Maori has no morphological agreement—but must be inferred from context. In
(5), the parts of the English translation that correspond to Maori null arguments appear in
brackets.
(5) Ka tō-ia anō ki uta, ka waru-hia ano, kātahi ka pai.

T drag-Pass again to shore T thin-Pass again then T good

[The canoe] was dragged ashore and thinned down again, and then [all] was well (lit. [it] was good). (Jones & Biggs 1995: 29 [3.24])

Third and finally, Maori exhibits a clear preference for the passive over the active (see Bauer 1993: 398-401 and the references cited there). This preference is strong enough that many Maori passive sentences are most naturally translated into English as active sentences—a practice that we follow in citing the examples.

(6) Ka patu-a e Raka’, tanu-mia iho ki roto i nga maramara o te waka.

T kill-Pass by Raka’ bury-Pass down at inside DO the.pl shaving of the canoe

Raka’ killed [him] and buried [him] among the shavings of the canoe. (Jones & Biggs 1995: 21 [3.11])

The syntax of noun phrases will be important here and later, in Chapter 3. Following Abney (1987), we assume that the Maori category we informally call the noun phrase is a DP, headed by the category D(eterminer), which occurs at the left. To the right of D are the noun, its complements, and modifiers, all of which we take to form the phrase identified by Abney as the NP complement of D. The examples below illustrate some typical Maori determiners: the definite article te (plural ngā) and the demonstratives.

(7)a. te mea tuatahi ki te whakatū komiti

the person first Infin establish committee

the first one to set up a committee (Karetu 1974: 106)

b. te tūnga-ā-iwi tino teitei o tēnei whenua.

the public.office very high of this land

the highest public office in this land (H.M. Ngata 1994: 306)
c. ñgā anga o aua kai
   the.pl shell of the.pl aforem food
   the shells of that food (Karetu 1974: 48)

The determiners include *he* and *tētahi*, as we show in a moment, but few if any true quantifiers. In Maori the clearest candidate for a determiner quantifier is *ia* ‘each’ (see Bauer 1997: 155-156), which also functions as a demonstrative meaning ‘that, the said’ (H.W. Williams 1971[1844]: 74). The slimness of the inventory of determiner quantifiers is consistent with what is reported by Bach, Jelinek, Kratzer, and Partee (1995) for some other languages.

Possessors in Maori occur as prepositional phrases headed by the preposition *a*, which indicates so-called ‘dominant’ possession, or the preposition *o*, ‘subordinate’ possession. The choice between *a* and *o* is semantically and pragmatically determined (see e.g. Biggs 1969: 43-5; Bauer 1993: 197-216 and 1997: 390-407). Like other prepositional phrases, possessors can serve as predicates of clauses:

(8) Nā te iwi katoa ngā whenua.
    T.of the tribe all the.pl land
    The lands belong to the whole tribe (lit. the lands are of the whole tribe).
    (Biggs 1969: 57)

Within the noun phrase, possessors occur to the right of the noun or else can combine with the definite article to form a complex determiner:

(9a) te ātaahua o tēnei whenua
    the beauty of this land
    the beauty of this land (Waititi 1974: 81)

b. tōu whare
   your house
   your house
Like the surface word order of arguments within the clause, the word order of possessors within the noun phrase is irrelevant here. What matters is that, like Abney, we assume that possessors within the noun phrase occupy the specifier of D at some point. The analysis commits us to the view that D and the possessor are subconstituents of DP but not of D’s NP complement—a point to which we return.

2.2 The Syntax of \textit{He} and \textit{Tētahi}

With the stage set to this extent, we now introduce the indefinite articles, \textit{he} and \textit{tētahi} (plural \textit{ētahi}).

We claimed above that \textit{he} and \textit{tētahi} are realizations of D and in this sense syntactically alike. The claim is, in one sense, uncontroversial. \textit{He} and \textit{tētahi} occur within the noun phrase in exactly the same position as other determiners: at the left edge, followed by the noun, its complements, modifiers, and the possessor. In the examples below, the relevant noun phrases are bracketed.

\begin{enumerate}
    \item (10)a. Kua riro \[he pukapuka a Mere\].
        T be.taken a book of Mere
        A book of Mere’s was taken.
    
    b. Kua riro \[tētahi pukapuka a Mere\].
        T be.taken a book of Mere
        A book of Mere’s was taken.
    
    c. Ka tae-a e koe te whakahiato \[he tāngata ruarua nei hai āwhina\]
        T arrive-Pass by you the assemble a people few this so.as help
        Can you \textbf{assemble} a few people to give us
\end{enumerate}
i a tātau]?
DO Pers us
a hand? (H.M. Ngata 1994: 20)

d. I tiro-hia e mātau [tētahi tikanga hou hai whawhao hua].
T look.into-Pass by us a method new so.as pack fruit

We **experimented** with a new way to pack the fruit.
(H.M. Ngata 1994: 140)

There is another sense in which some caution might be called for. Students of Maori might find the syntactic similarity of *he* and *tētahi* obscured by two curious morphological differences. Although these differences are well-documented in the literature on Maori grammar, there is no consensus on their analytic significance. Here we detour briefly to discuss them, in order to make the point that they are ultimately irrelevant: neither stands in the way of our identifying *he* and *tētahi* as indefinite determiners.

The first difference is that *he* is morphologically unanalyzable, but *tētahi* appears to be morphologically complex. It evidently consists of the definite article *te* plus the numeral ‘one’, whose counting and ordinal form is *tahi* (see Biggs 1969: 48; Bauer 1993: 110 and 1997: 151). As far as we can tell, it is etymologically correct to decompose *tētahi* into *te* plus *tahi*, and the decomposition is probably still more or less salient morphologically. Nonetheless, we believe that the analysis is no longer syntactically or semantically viable in Maori. Here are our reasons for thinking so.

If *tētahi* were semantically analyzable as ‘the’ plus ‘one’ in modern Maori, then the noun phrases projected from it ought to be semantically definite. Now definites are insensitive to the scope of sentential operators like negation, an insensitivity sometimes characterized by saying that they have maximally wide scope. If the noun phrases headed by *tētahi* were definite, then they too should display insensitivity to scope. But
the facts are not consistent with this prediction. Examples like (11) show that noun phrases headed by \textit{tētahi} can have narrow scope with respect to negation.

(11) Kaore anō tētahi tangata kia taha ā te ara.
    T.not yet a person T pass on the path

No one had yet passed along the track. (H.M. Ngata 1994: 304; \textit{observation})

We will return to this point later.

Further, if \textit{tētahi} were syntactically analyzable as ‘the’ plus ‘one’ in modern Maori, then \textit{tahi} ought to have the syntactic distribution of cardinal numerals generally and of the numeral ‘one’ in particular. But the cardinal number ‘one’ that occurs everywhere else in Maori—within noun phrases and as the predicate of clauses—is not \textit{tahi} but \textit{kotahi} (see Biggs 1969: 111, Bauer 1993: 495-7, and Bauer 1997: 276-279):\footnote{2}

(12)a. Kāore [he take kotahi].
    T.not a reason one

There’s no reason at all (lit. there is not one reason).

b. Kāore i mau [tētahi tuna kotahi] i a Tamahae.
    T.not T be.caught a fish one Cause Pers Tamahae

Tamahae didn’t catch one fish. (Waititi 1974: 7)

c. E kotahi tonu [he uri mō-na a tērā
    T one still a descendent T.of-him of that

He had only one issue from that one of his wives (lit. A descendent for

\textit{o ana wāhine}. of his.pl wives

him of that one . . . was only one). (Jones & Biggs 1995: 119 [15.15])

The conclusion seems clear that \textit{tētahi} should not be decomposed into ‘the’ plus ‘one’ for semantic or syntactic purposes. Whatever its internal morphological structure, it is—for these other purposes—simply an indefinite determiner.

The second difference is that \textit{he} has a more limited distribution than \textit{tētahi}. 
Whereas tētahi can occur within any noun phrase at all, he cannot immediately follow a preposition. This restriction has been very widely noticed for standard Maori, where its consequences are dramatic (see e.g. W.L. Williams 1923[1862]: 18; A.T. Ngata 1926: 9 and 18; Hohepa 1967: 104; Biggs 1969: 113; Bauer 1993: 356; and Bauer 1997: 147). In standard Maori, prepositions are used to signal every grammatical relation but the subject. Given that he cannot immediately follow a preposition, what this means for the standard language is that noun phrases headed by he must be subjects. They cannot bear any other grammatical relation.

Such a restricted distribution might seem inconsistent with the idea that he is a determiner. However, closer inspection reveals that there are circumstances under which noun phrases headed by he can serve as direct objects or adjuncts. These exceptional cases strongly suggest that he is a determiner after all, but one whose occurrence is constrained very narrowly by morphology.

(i) In the Ngāti Porou dialect of Maori, spoken on the East Coast of the North Island, it is possible for noun phrases headed by he to serve as direct objects or adjuncts of location, means, and so forth. These grammatical relations are ordinarily signaled by the Maori preposition i, which has a very wide range of uses. What is special about the Ngāti Porou dialect is that it permits the preposition i to have a he indefinite as its object. Interestingly, when that happens, the preposition itself is not pronounced. Consider the he indefinites in (13), which include a direct object (13b) and adjuncts denoting path (13b), means of conveyance (13c), and location (13d).

(13)a. I te whakaahua rātau [he pakipūmeka mo Tokomaru].
They have been filming a documentary on Tokomaru Bay.
(H.M. Ngata 1994: 152)
b. Me haere tātou [he huarahi kē].  
Let us take (lit. go by) another way. (A.T. Ngata 1926: 64)

c. Me eke tātou [he kareti kē].  
We must change carriage (lit. set out in a different carriage). (A.T. Ngata 1926: 85)

d. I tīmata tonu te oriori [he mihi ki te tamaiti].  
The beginning of a lullaby chant is always couched in terms of praise (lit. the lullaby always begins in praise) for the child. (H.M. Ngata 1994: 53)

We see the pattern in (13) as a different strategy for dealing with the restriction that prevents he from occurring immediately after a preposition. Whereas standard Maori reacts to the restriction by barring he indefinites from every grammatical relation except the subject, the Ngāti Porou dialect reacts—in at least some instances—by deleting the preposition when it would occur before he (see Cook 1999: 54-57 and 61-63 for a Hawaiian parallel). On this view, the relevant restriction is fundamentally not syntactic (contra Chung 1978). Rather, it is a morphological ban on the combination of overt preposition plus he—a ban that poses no threat to our claim that he is a determiner.

(ii) Polinsky (1992: 236-7) and Bauer (1993: 309 and 356) have observed that a he indefinite can serve as object of the preposition me ‘like, as’. This appears to be possible in standard Maori (see (14a)) as well as the Ngāti Porou dialect (14b).

(14)a. Ka tū ki uta o te wai, me he Kōtuku.  
She stepped out of the water, like a white heron. (Bauer 1993: 309)
b. Me he kuini tonu tana tū.
   T. like a queen still her bearing

   She has the **bearing** of a queen. (H.M. Ngata 1994: 30)

For Polinsky, the ability of *he* indefinites to serve as objects of *me* provides evidence that *he* is associated with Predication as opposed to Identification. We will come back to her analysis, which is close to ours in certain ways, in Section 2.8.

To sum up, despite their morphological eccentricities, both *he* and *tētahi* are syntactic determiners.

2.3 Their Semantic Similarity

Far more mysterious than the syntactic similarity of these articles is their semantic similarity. We noted at the outset that there is a range of uses in which *he* and *tētahi* seem interchangeable. These uses, which are investigated in this Section, help to make precise the senses in which *he* and *tētahi* are semantically indefinite.

We begin with a wide-scope use of indefinites (in Section 2.3.1) and then proceed to some narrow-scope uses (in Section 2.3.2).

2.3.1 Wide Scope in Episodic Sentences

One classic use of indefinites is to introduce a referential argument in episodic sentences. As should come as no surprise by now, both *he* and *tētahi* can be used this way. Consider the sentences below, which describe single past events. Each sentence contains a noun phrase headed by *he* or *tētahi* (enclosed in brackets) which introduces a referential argument. In (15), the relevant noun phrases are surface subjects of passive verbs.

(15)a. Ka hopu-kia e ia [he poaka], ka whiu-a ki runga ki te ahi.
   T catch-Pass by him a pig T throw-Pass to top to the fire
   Then he caught a pig and threw it on the fire. (Orbell 1992: 20)
b. Ka whakapa-nga atu e Rewi [tētahi rākau] ki te waewae o Tamahae. Rewi touched a branch to Tamahae’s leg. (Waititi 1974: 6)

In (16), they are subjects of (identical) unaccusative verbs. Notice that tētehi (plural ētehi) in (16b) is a dialectal form of tētahi from the Waikato-Maniapoto area (Biggs 1969: 113).


In (17a), from the Ngāti Porou dialect, and in (17b), the relevant noun phrases are direct objects.

(17)a. I takatū mātau [he hākari] mo to rātau hokinga mai. We prepared a feast for their home-coming. (H.M. Ngata 1994: 207)

b. I moe ia i [tētahi Pākehā nō Ingarangi]. She married a Pakeha (European) from England. (Waititi 1974: 40)

In discourse representation theory, the use of indefinites illustrated in (15-17) would be taken to indicate that both he and tētahi can introduce a new discourse referent. Consistent with this, noun phrases headed by these articles can serve as antecedents for discourse anaphora, whether the anaphors are pronouns or definite noun phrases. This can be seen from the examples in (18), each of which begins a stretch of narrative. The indefinites in these examples occur as subjects of the nonverbal predicate tērā ‘over there’. In (18a), he tangata ‘a man’ antecedes the possessive pronoun tana ‘his’, which...
occurs several clauses later. In (18b), tētehi wahine puhi ‘a virgin’ antecedes the noun phrase taua wahine ‘the (aforementioned) woman’, which occurs exactly as many clauses later.

(18)a. Tērā [he tangata], ko Rua-rangi te ingoa,
over.there a person Ident Rua-rangi the name
Once there was a man called Rua-rangi;

ko Tawhaitū te ingoa o tana hoa.
Ident Tawhaitū the name of his friend
Tawhaitū was the name of his wife. (Orbell 1992: 20)

b. Na, tērā [tētehi wahine puhi], ko Pare te ingoa,
now over.there a woman virgin Ident Pare the name
Now once there was a woman, called Pare, who was a puhi (virgin).

he tino rangatira taua wahine.
Pred.a very chie¯y the.aforem woman
This woman was of very high birth. (Orbell 1992: 67)

Further, as our characterization suggests, and as is expected of indefinites generally, the discourse referents contributed by he and tētahi must be new. This amounts to saying that the noun phrases headed by these articles must obey Heim’s (1982) Novelty Condition. We can see the Novelty Condition at work in stretches of Maori narrative in which there are two noun phrases with the same descriptive content. If the second noun phrase is headed by he or tētahi, it must have a reference distinct from the first noun phrase, because the discourse referent that it contributes cannot have already been introduced. Sentence (19a), for instance, literally means ‘some slept and some woke to do their work’. This sentence cannot mean ‘some slept, and (then) they woke to do their work’, though there would be nothing incoherent about such an interpretation. The reason is that each instance of ētehi, not just the first, must contribute
a novel discourse referent. Similarly, (19c) means ‘they appeared at that part of the fort, then rushed and appeared at another part of the fort’. It cannot mean ‘they appeared at that part of the fort and then rushed and appeared at that part again’. The second meaning is impossible because *he wāhi* ‘a part’ must introduce a discourse referent different from the discourse referent of *tēnā wāhi* ‘that part’.

   T sleep a.pl T awake Ident a.pl to their work
   While some slept, others stayed awake to keep up the work.
   (Jones & Biggs 1995: 191 [26.4])

b. Ko ngā rangatira i [tētahi pito], ko ngā tūtūā
   Ident the.pl chief at a end Ident the.pl commoner
   The chiefs were at one end, the common people
   [he pito kē] anō.
   a end different again
   at another end. (Orbell 1992: 162)

c. Ta rāua mahi he whakaputa ake i [tēnā wāhi o te pā],
   their.du work Pred.a appear up at that place of the fort
   They appeared at [that] part of the fort,
   ka rere, ā, ka whakaputa ake [he wāhi] anō.
   T rush and T appear up a place again
   then rushed to another part. (Jones & Biggs 1995: 191 [26.4])

In Heim’s theory, the Novelty Condition is the principal constraint imposed on the wide-scope uses of indefinites. The fact that this Condition exercises its power on noun phrases headed by *he* as well as noun phrases headed by *tētahi* argues that both articles are semantically indefinite.
2.3.2 Narrow Scope in Quantificational Constructions

Another classic property of indefinites—one that plays a major role in current semantic theory—is their ability to have narrow scope with respect to logical operators such as negation, quantification, and the like. In this use too, *he* and *tētahi* seem interchangeable. Because the availability of narrow scope has not been widely noticed for *tētahi*, we will document the evidence with some care. Various quantificational constructions are examined below: conditional sentences, sentences expressing universal quantification or negation, modal sentences, questions, and generic sentences. We begin our discussion of each construction with some brief remarks about syntax. This is where most of the idiosyncracies reside, since—as will become evident—the scope facts are fully general.

Conditional sentences we take to be constructions that express quantification over cases, in the sense of Barker (1991). In Maori, sometimes the antecedent clause is explicitly marked as subordinate by means of a complementizer such as *ki te* or *me(hemea)* ‘if’. Other times the antecedent clause appears to be coordinated with the consequent clause: the two are simply juxtaposed, with the antecedent preceding the consequent and no intervening conjunction or complementizer (see (20b) and (20d)). What is relevant is that indefinites in the antecedent clause can routinely have narrow scope with respect to the quantification expressed by the conditional. Further, narrow scope is available whether the indefinite is headed by *he* or *tētahi*.

The conditional sentences in (20) are typical. The most natural interpretation of these sentences is one in which the indefinite has narrow scope. In (20b), which contains the indefinite *he tangata* ‘a person’, the choice of person is dependent on the choice of case; in (20c), which contains the indefinite *tētahi hara* ‘a crime’, the choice of crime is dependent on the choice of case. In (20d), which contains two indefinites, *he tohora* ‘a
whale’ and *tētahi kaititiro* ‘a lookout’, the choice of whale and the choice of lookout are both dependent on the choice of case. More generally, the indefinites in all these examples have narrow scope.

(20)a. Ki te tae mai [he ope] ki tō kāinga, ā, if arrive to here a visiting party at your house and

If a visitor arrives at your house, and

kāore i te nui ō kai, hei aha atu.
T not T abundant your pl food T for what? away
you don’t have much food, don’t let it worry you. (Karetu 1974: 59)

b. Ka tata [he tangata] ka neke haere aua rākau ki tawhiti.
T approach a person T move go the aforem pl tree to distance

If anyone approached, [those trees] receded to a distance.
(Jones & Biggs 1995: 223 [32.4])

c. Ki te mahi te tangata i [tētahi hara], ka hopu-kina e te ture.
if do the person DO a crime T arrest Pass by the law

A person who commits a crime will be arrested (lit. if the person commits a crime, he is arrested by the law).
(H.M. Ngata 1994: 19)

d. Ka kite-a [he tohora] e [tētahi kaititiro], ka whakatū-ria
T see Pass a whale by a lookout T raise Pass

If a lookout spotted a whale, he would raise

the flag of his house

the flag of his house. (Waititi 1974: 132)

e. Ki te whakawhiti [he Māori] ki tāwāhi ki te kimi
if cross over a Maori to overseas Infin seek

If a Maori went abroad to seek

i [tētahi mātauranga] mō-na, . . . ko Hoani tonu te mea
DO a education T of him Ident Hoani still the person
an education for himself, Hoani was always the first
Notice especially (20d-e), in which both types of indefinites co-occur in the antecedent clause. Examples like these serve to emphasize that narrow scope is just as much an option for tētahi as for he.

A similar picture emerges from sentences expressing universal quantification. We have already mentioned that aside from ia ‘each’, Maori has few if any determiner quantifiers. Universal quantification is more usually expressed outside the determiner system: by katoa ‘all’ or the post-head adverbial tonu ‘still, always’, by reduplication of the noun phrase that expresses the restriction, and so on. Whatever the formal means of expression, indefinites in the same clause as a universal quantifier can routinely have narrow scope with respect to it. Once again, narrow scope is possible whether the indefinite is headed by he or tētahi.

The observation is nicely illustrated by the sentences in (21), which are practically a minimal pair. Each sentence begins with the prepositional phrase i ia tau ‘in each year’, followed by an indefinite subject: he kaiwhakahaere hou ‘a new chairperson’ in (21a) and tētahi tangata ‘a person’ in (21b). The obvious interpretation of (21a) is that a (potentially) different new chairperson is elected each year. The most natural interpretation of (21b) is that a (potentially) different person is lost in the bush each year. In other words, both types of indefinites have narrow scope.

(21)a. I ia tau ka pōti-tia [he kaiwhakahaere hou].
    in each year T elect-Pass a chairperson new
    Each year a new chairperson is elected. (H.M. Ngata 1994: 52)
In each year T be.forgotten a person in the bush. (H.M. Ngata 1994: 44)

Every year, someone gets lost in the bush. (H.M. Ngata 1994: 44)

Two more examples of indefinites that have narrow scope with respect to universal quantification are given below:

(22)a. I tito-a [he waiata] ia tau, ia tau.
     T compose-Pass a song each year each year
     Each year, songs were composed.

b. I ia purei hoiho ka pēke ahau i [tētahi mōwaho].
     at each play horse T back I DO a outsider
     I (usually) back one outsider at every race meeting. (H.M. Ngata 1994: 316)

Sentences expressing negation conform to this pattern as well. Maori has a fairly elaborate syntax of negation. To begin with, negative sentences are syntactically complex: the sentential negatives are main verbs that take the negated clause as complement (see e.g. Hohepa 1969, Chung 1978, Bauer 1993: 139-46, and Bauer 1997: 459-476). Negative sentences are also hosts to raising, the movement operation that turns the subject of an embedded clause (here, the negated clause) into the subject of a higher verb (here, the negative verb). Among other things, raising alters the surface word order so that the subject precedes the predicate that originally selected it; this can be seen in (23a-d). For our purposes, what is noteworthy about these aspects of the syntax of negation is that they do not affect the semantics of scope. Specifically, they have no impact on the ability of an indefinite in a negative sentence to take narrow scope with respect to negation. Narrow scope is possible whether the indefinite is a subject or a nonsubject and whether it has undergone raising or not. Moreover, narrow scope is possible whether the indefinite is headed by he or tētahi. This is what we are interested in.
The examples in (23) show *he* indefinites and *tētahi* indefinites bearing various grammatical relations in negative sentences: as subjects that have undergone raising (in (23a) and (23c)), as subjects that have not been raised ((23e) and (23f)), as direct objects ((23b) and (23d)), and as prepositional objects (23f). In every case it is clear—from the narrative context (in (23d)), from real-world knowledge (‘a cure for AIDS’ in (23f)), or from the English translation supplied in the text—that the indefinite has narrow scope.
with respect to the negation. Notice especially (23f), in which both types of indefinites co-occur. As before, examples like this serve to emphasize that the narrow-scope reading is just as available for tētahi as for he.

We take it to be established, then, that the option of narrow scope extends indifferently to both types of indefinites in Maori. If the generalization is real, of course, it ought to hold for logical operators besides those just described. To make this idea plausible, we now round out the picture with a representative sample of other quantificational constructions in Maori: modal sentences, questions, and generic sentences. It will become clear immediately that the two types of indefinites are just as eligible for narrow scope here as they are elsewhere.

Modality in Maori is usually expressed as a verb or else realized in Tense. Consider the sentences in (24), which are headed by me ‘must, should’, a tense-aspect-mood particle that expresses “a wide range of degrees of obligation” (Bauer 1993: 460; see also Bauer 1997: 136-137). The most natural interpretation of these sentences is that the indefinites have narrow scope with respect to the modal operator. In (24a-c), the translation supplied by the text makes it clear that the choice of warning (24a), food (24b), or thing that gives (24c) is relativized to the choice of possible world. In (24d), the narrative context reveals that it is completely unimportant who will go to show the way. Crucially for us, narrow scope is equally available for both types of indefinites: the indefinites in (24a-b) are headed by he, while those in (24c-d) are headed by tētahi.

(24)a. He tikanga no ērā rā me puta anō [he kupu whakatūpato].
   Pred.a custom T.of those time T come.out again a word warning
   Giving warnings (lit. that warnings should be given) was a custom of those times. (Jones & Biggs 1995: 283 [45.11])
b. Me kohi anō tātau [he kai] mo te mutunga wiki.
   T get.in again we a food T.of the end week
   We’ll have to get in more food for the weekend. (H.M. Ngata 1994: 177)

c. Me whakangāwari [tētahi mea].
   T give a thing
   Something has got to give. (H.M. Ngata 1994: 178)

d. Me haere atu anō [tētahi tangata] o konei hei
   T go away again a person of here so.as
   Someone from here must go as well,
   ārahi atu i a koe.
   direct away DO Pers you
to show you the way. (Orbell 1992: 49)

We turn next to questions. In Maori the syntactically most straightforward
questions are polar (yes-no) questions, which have the same syntax as declarative
sentences. Now in questions generally it is the question operator that has widest scope,
so we would expect indefinites within questions to have narrow scope. This expectation
is borne out for indefinites in Maori whether they are headed by tētahi or he. In (25a),
for instance, whether he tangata ‘a person’ has a referent depends on how the question is
answered. The same holds true for tētahi mea rereke ‘a strange thing’ in (25d).

(25) a. I mate anō [he tangata]?
   T die indeed a person
   Did anyone die?

b. Kua rongo anō koe [he kōrero mo te aituā]?
   T hear indeed you a talk T.of the accident
   Have you heard anything concerning the accident?
   (H.M. Ngata 1994: 64)

c. E pai rānei koe ki te homai i [tētahi hereni]?
   T good Q you Infin give DO a shilling
   Will you lend me a shilling? (A.T. Ngata 1926: 40)
Finally, consider generic sentences. In Maori generic sentences—like polar questions—do not have a distinctive morphosyntax. Context makes clear when a sentence is intended to be interpreted generically. What is relevant for our purposes is that indefinites in generic sentences can have narrow scope with respect to the generic operator. In (26a), for instance, *he koroua* ‘old men’ does not refer to any particular group of old men but rather to whatever old men attend the typical meeting; in (26b), *tētahi tikanga* ‘a plan’ does not refer to any particular plan, but to whatever plan emerges from the typical situation of lacking money. Consistent with everything we have already seen, narrow scope is just as much an option for *tētahi* as for *he*:

(26)a. *Ka tino kōrero [he koroua] i ngā hui.*
Old men talk a lot at meetings.

b. *Ko te pai o te iwi Māori, ahakoa kāore he moni,*
The good thing about the Maori people is, when there’s no money,

  *ka kimi-hia [tētahi tikanga] e kite-a ai he moni.*
  They look for a way to get money. (Waititi 1974: 85)

We conclude that for the purposes of expressing narrow scope in quantificational constructions, *he* and *tētahi* are essentially interchangeable.
2.4 Some Semantic Contrasts

Even though *he* and *tētahi* seem equivalent for many purposes, there are also contexts of use in which only one of the two can occur. This Section is devoted to two contrasts between them that seem fundamentally semantic. One involves a wide-scope use of indefinites (Section 2.4.1) and the other, a narrow-scope use (Section 2.4.2).

2.4.1 Wide Scope in Quantificational Constructions

As was first noticed by Polinsky (1992), the two types of indefinites differ in their ability to have wide scope with respect to logical operators in quantificational constructions. Indefinites headed by *tētahi* can take wide scope with respect to the operator; indefinites headed by *he* cannot.

We illustrate the general point with negation, an operator whose meaning leads to a wide-scope reading for the indefinite that does not entail its narrow-scope reading. Consider the following sentences, all of which contain noun phrases headed by *tētahi*. In (27a), what is asserted is the existence of a person who has the property of not singing; in (27b), the existence of certain kinds of trees that have the property of not growing here; and in (27c), the existence of a hoe that has the property of his not having seen it. In every case, the *tētahi* indefinite has wide scope with respect to the negation.

(27)a. Kāore tētahi tangata i waiata mai.
    T.not a person T sing to.here
    A (particular) person didn’t sing (= There was a person who didn’t sing).

    b. Kaore ētahi momo rākau e tipu i konei.
    not a.pl kind tree T grow at here
    Certain trees will not grow here. (H.M. Ngata 1994: 52)
c. Kāore ia i kite i tētahi hō e takoto ana in roto i ngā karaehe.
not he T see DO a hoe T lie at inside at the.pl grass

He didn’t see a hoe (= there was a hoe that he didn’t see) lying in the grass.
(Waititi 1974: 59)

In contrast, indefinites headed by *he* cannot have wide scope with respect to negation (Polinsky 1992: 237). To see this, consider (28). Quite different from (27), these examples cannot be interpreted as asserting the existence of some individual or individuals—a person in (28a) or men in (28b). They can only be understood to assert nonexistence. The only reading possible for the *he* indefinite, in other words, is one in which it has narrow scope with respect to the negation.

(28)a. Kāore he tangata i waiata mai.
T.not a person T sing to.here

No one at all sang. (But: *A (particular) person didn’t sing.)

b. Kāhore he tāngata i te mahi.
T.not a people T work

Nobody is at work. (But *Some men are not at work.)
(Polinsky 1992: 237)

Unfortunately, the contrast illustrated in (27-28) does not emerge as clearly from our data on the other quantificational constructions of Section 2.3.2. In our only examples of these constructions in which the indefinite has wide scope, the indefinite’s wide-scope reading entails its narrow-scope reading, so the reading of interest here is effectively impossible to pick out. Further research is obviously needed. Meanwhile, it does not seem unreasonable to suppose that these other constructions too conform to the pattern just documented. We therefore state our generalization in its broadest form: indefinites headed by *tētahi* can have wide scope with respect to logical operators in quantificational constructions, but indefinites headed by *he* cannot.
2.4.2 The Existential Construction

The two types of indefinites also differ in their ability to serve as pivots of existential sentences. Indefinites headed by *he* can serve as pivots; indefinites headed by *tētahi* cannot. As far as we know, this contrast has not been observed before, so we discuss it in some depth.

The syntax of the existential construction in Maori may seem intricate at first glance. On the surface there are three sentence types to consider: affirmative existentials, their archaic counterparts, and negative existentials. Significantly, all of these sentences types exhibit the contrast we are interested in.4

In modern Maori, affirmative existential sentences look as though they consist simply of an indefinite noun phrase. These sentences have no overt verb or other predicate, as (29) shows.

(29)a. Āe, he taniwha.
   yes a taniwha
   Yes, there are taniwhas. (Bauer 1993: 78)

b. He aituā ā runga ā te huarahi ā te ata ā nei.
   a accident at top at the road in the morning this
   There was an *accident* on the road this morning. (H.M. Ngata 1994: 3)

c. He tuna no roto i nga awa, ā, he manu
   a eel T.of inside DO the.pl river and a bird
   There were eels in the rivers and birds
   no runga ā nga maunga.
   T.of top DO the.pl mountain
   in the ranges.
   (Jones & Biggs 1995: 195 [27.3])

The lone indefinite noun phrase in this sentence type is a DP, since it can have a possessor in its specifier. In such cases the construction expresses existential ‘have’ (see
e.g. Keenan 1987):

(30)a. He mana tipua o Māui.
Maui possessed **abnormal** powers. (H.M. Ngata 1994: 1)

b. He tūtōhutanga a te rīpoata mo nga mahi kai te heke mai.
The report makes (= has) **recommendations** for future action.
(H.M. Ngata 1994: 381)

We think that existentials of this type are most plausibly analyzed as clauses with
a null existential verb that takes the lone indefinite noun phrase as its argument. But for
our purposes, it does not much matter what analysis is adopted. What is important is that
the lone indefinite must be an indefinite headed by *he* (see e.g. Bauer 1993: 78 and 1997:
34-35). More generally, affirmative existentials can be formed only with *he*, not with
*tētahi* or—for that matter—any other determiner.⁵

Although affirmative existentials do not display an overt existential verb in
modern Maori, an overt verb was evidently present at an earlier stage of the language.
The nineteenth-century scholars H.W. Williams (1971[1844]) and W.L. Williams
(1923[1862]) cite examples in which affirmative existential sentences are formed with
the verb *ai* ‘(there) is’, which is now viewed as archaic.⁶ This verb, revealingly, is
homophonous with the oblique pronoun *aī*, some of whose functions resemble functions
of English ‘there’ (see e.g. Chapin 1974). The examples below are cited by W.L.
Williams. Notice that in (31b), a tensed form of the possessor PP also occurs and the
construction expresses existential ‘have’:

(31)a. Ki te aī he toki
If exist a axe
If there should be an axe. (W.L. Williams 1923[1862]: 40)
b. Ka ai he toki mā-na.
   There is an axe for him, i.e. he has an axe.
   (W.L. Williams 1923[1862]: 40)

The relevant point is that in both of these examples, ai’s argument is an indefinite headed by he. Interestingly, there are hints in the literature that this indefinite had to be headed by he as opposed to any other determiner. In his discussion of the Maori constructions commonly used to express ‘have’, W.L. Williams (1923[1862]: 41) describes one such construction as consisting of “the verb ai...followed by the preposition ma or mo; but this use is permissible only when the noun is preceded by the definitive he.” The statement suggests that in its existential use, ai may well have accepted only he indefinites as pivots, just as is the case for the modern Maori counterparts of this construction (29-30).

What about negative existential sentences? These consist of a negative verb—most usually, kāhore or its variant kāore—that selects an indefinite noun phrase as argument.7 Consider

(32)a. Kāhore he taniwha.
   There are no taniwhas. (Bauer 1993: 78)

b. Ānō kāore he kino i waenganui i a rātou.
   As if there were no quarrel between DO Pers them
   (Jones & Biggs 1995: 285 [45.12])

c. Kāore he take kotahi.
   There’s no reason at all.

d. Kāore he take i tua atu i tēnā?
   Is there no reason beyond that? (Waititi 1974: 149)
As might be expected by this point, the indefinite noun phrase can have a possessor as its specifier, in which case the construction expresses the negation of existential ‘have’:

(33)a. Kāore kē he tamariki ake a Te Puea.
   T.not instead a children own of Te Puea
   Te Puea had no children of her own. (Karetu 1974: 97)

   b. Kaore he hua o te manei o te utu i nga tikanga
   T.not a fruit of the fluctuate of the price at the.pl arrangement
   Fluctuating prices do not help (= have no benefit in)
   whakatakoto kaupapa moni.
   make.lie plan money
   budgeting. (H.M. Ngata 1994: 159)

   c. Na te aha i kore ai he moko o tana kauae me ana ngutu.
   why? T not Pro a tattoo of his chin with his.pl lip
   Why he was not tattooed (= had no tattoos) on the chin and lips.
   (Jones & Biggs 1995: 289 [46.6])

Once again, the key question is what sorts of indefinites can be the argument of kāhore in its existential use. The answer offered by native speakers and supported by textual sources is that he indefinites can serve this function, but tētahi indefinites cannot.8

(34)a. *Kāhore ētahi taniwha.
   T.not a.pl taniwha
   (There are no taniwhas.)

   b. *Kāore tētahi take kotahi.
   T.not a reason one
   (There’s no reason at all.)

   c. *Kāore tētahi take i tua atu i tēnā?
   T.not a reason at behind away DO that
   (Isn’t there any reason beyond that?)
d. ?*/*Kāore kē ātahi tamariki ake a Te Puea.
    T.not instead a.pl children own of Te Puea
    (Te Puea had no children of her own.)

The overall contrast seems clear: indefinites headed by *he* can serve as pivots of existential sentences, but indefinites headed by *tētahi* cannot.

2.5 Our Account

Why does Maori have two indefinite articles? The most interesting answer, it seems to us, is that the choice of *he* versus *tētahi* is correlated with some single semantic contrast among indefinites. Such a hypothesis is intuitively appealing. It would explain why there are contexts of use in which these articles are not interchangeable. The puzzle is what the relevant contrast could be.

Since Karttunen (1976), three semantic contrasts have figured prominently in the literature on indefinites: `specific’ versus `nonspecific’, `referential’ versus `quantificational’, and `wide scope’ versus `narrow scope’. (In the following, we set aside the complicated issue of whether indefinites also permit intermediate scope, since the relevant Maori facts are not available to us. For general discussion, see e.g. Farkas 1981, Fodor and Sag 1982, Abusch 1993-4, Reinhart 1997[1995], Winter 1997, and Kratzer 1998.) A moment’s reflection is enough to reveal that none of these contrasts offers a transparent solution to the distributional puzzle that Maori presents us with.

Take the contrast `referential’ versus `quantificational’ as an example. These terms characterize the two interpretations that Fodor and Sag (1982) claim are available to indefinites. Referential indefinites are interpreted as referring expressions—individual constants,—whereas quantificational indefinites are interpreted as existentially quantified. The difference correlates with a difference in scope-taking behavior.
Because quantificational indefinites have scope but referential indefinites are scope-insensitive, only quantificational indefinites can have narrow scope with respect to another operator.

This difference is enough to make it clear that the choice of \textit{te\text{"a}tahi} versus \textit{he} is not transparently correlated with whether the indefinite has a referential or a quantificational interpretation. In Maori, both \textit{he} and \textit{te\text{"a}tahi} can introduce a quantificational indefinite—an indefinite that has narrow scope with respect to an(other) operator. But if that is so, then it seems unlikely that these articles transparently encode the contrast referential versus quantificational.

For essentially the same reason, the choice of \textit{te\text{"a}tahi} versus \textit{he} is not transparently correlated with whether the indefinite has wide or narrow scope. Nor, evidently, is the choice correlated with specificity. Matters here are complicated by the different understandings of the terms ‘specific’ and ‘nonspecific’ (see e.g. Farkas 1995 for an overview). But if we assume that narrow-scope indefinites are nonspecific, then we are led again to the same conclusion. Because both \textit{he} and \textit{te\text{"a}tahi} are nonspecific in some contexts, it seems unlikely that they encode the contrast specific versus nonspecific.

More generally, what prevents these familiar contrasts from being useful to us in their pure form is the high degree of overlap between \textit{te\text{"a}tahi} and \textit{he}. (See Bauer 1997: 151-152 and 165-166 for similar observations.) This overlap includes referential, specific, wide-scope uses (see Section 2.3.1) as well as quantificational, nonspecific, narrow-scope uses (see Section 2.3.2). The nature of the overlap is such that none of the familiar contrasts have much to contribute to an understanding of why one article is used as opposed to the other. If the choice of \textit{he} versus \textit{te\text{"a}tahi} is indeed correlated with some general semantic contrast among types of indefinites, then the contrast must be one that
has not been investigated before.

2.5.1 Restrict Versus Specify

We claim that the choice of *he* versus *tētahi* signals which composition operation is used to enter the meaning of the indefinite into semantic composition. *He* signals that the indefinite is composed via the nonsaturating mode Restrict; *tētahi* signals that the indefinite is composed via the type-shifting mode Specify. In other words, these two articles serve as morphological flags for the modes of composition available to semantically incomplete DP’s. Such a proposal offers a novel solution to the puzzle we have just posed. Because Restrict and Specify often lead to truth-conditionally equivalent results, an account in which each is flagged by a different article will have no trouble dealing with the fact that in many contexts, the articles seem interchangeable.

We now present the specifics of our account. We deal first with the semantic similarity of *he* and *tētahi* and then with the contrasts between them.

Section 2.3 documented two respects in which *he* and *tētahi* are semantically similar: both can introduce a referential argument in episodic sentences, and both can have narrow scope with respect to logical operators. And in fact, Restrict and Specify lead to equivalent results as far as these uses of indefinites are concerned.

Consider first the calculation of the meaning of wide-scope indefinites in episodic sentences. If an indefinite is headed by *he*, as in the constructed example (35) (compare (15a)), then the property that it supplies must be composed via the nonsaturating mode Restrict.
Let us assume for simplicity’s sake that passive verbs like hopu-kia ‘be caught’ are two-place predicates (of type <e,<e,t>>), differing from their active counterparts only in the order in which their arguments are targeted for composition. In the construction of the meaning of (35), therefore, the hunter argument of hopu-kia ‘be caught’ will be targeted for composition first, and the prey argument will be targeted second. What interests us is the step of the compositional process when the prey argument is targeted and composed with the indefinite he poaka ‘a pig’. As he demands, Restrict simply adds the property supplied by poaka as a restriction on the argument, leaving the argument unsaturated. See (36). (Here and throughout, our semantic translations are Davidsonian but for clarity, we give semantic types that represent only the participant arguments, not the event argument.)

On the other hand, if an indefinite is headed by tētahi, as in (37)—a constructed example minimally different from (35),—then the property that it supplies must be composed via the type-shifting mode Specify.
Once again, let us move immediately to the relevant step of the compositional process. As *tētahi* demands, Specify targets the prey argument and type-shifts the property supplied by *poaka* to an individual—more precisely, to a “free function variable that assigns an individual to the restriction predicate” (Winter 1997: 409), where the variable in question ranges over choice functions (see Reinhart 1997[1995] and Winter 1997). In this case, the free function variable assigns a pig individual to the property supplied by *poaka*. Function application then composes the individual with the argument, saturating the argument. The degree of unsaturation of the predicate *hopu-kia* ‘be caught’ is correspondingly reduced by one. This combination of choice function followed by function application is the mode of composition that we call Specify. All this is shown below. (In the examples below, we use $f$ to represent a variable over choice functions.)

(38) $\lambda y\lambda x\lambda e \ [\text{be-caught}'(y)(x)(e)] \quad r$

$\langle e, \langle e, t \rangle \rangle \quad \langle e \rangle$

$\lambda x\lambda e \ [\text{be-caught}'(r)(x)(e)] \quad \text{pig'}$

$\langle e, t \rangle \quad \langle e, t \rangle$

$\langle f(\text{pig'}) \rangle \quad \langle e \rangle$

$\lambda e \ [\text{be-caught}'(r)(f(\text{pig'}))(e)]$

$\langle t \rangle$

A glance at the derivations in (36) and (38) makes two things clear. First, Restrict and Specify do indeed differ in their immediate impact on the composition: Specify saturates the targeted argument, but Restrict does not. Second, even though all the
predicate’s arguments are saturated in (38), both derivations are still incomplete. (36) is incomplete because the argument targeted by Restrict remains unsaturated; (38) is incomplete because the function variable is free.

Our theory claims that both sorts of incompleteness are resolved by the same mechanism: existential closure. In (36), existential closure of a type e argument steps in to amnesty the unsaturation of the argument, with the result that the predicate is now fully saturated: all of its participant arguments have achieved semantic completeness. The result, following existential closure of the event argument, is a proposition that is true in the model M if and only if there is an eventuality of the catching type involving Rewi and a pig individual in M.

\[
\exists e \exists x \[\text{be-caught}'(r)(x)(e) \land \text{pig}'(x)\]
\]

In (38), the predicate is already fully saturated as far as its participant arguments are concerned. Existential closure steps in to bind the free function variable. Once the event argument is closed as well, the result is a well-formed proposition. This proposition too is true in the model M if and only if there is an eventuality of the catching type involving Rewi and a pig individual (supplied by some choice function) in M. (Here we illustrate the option where the choice function variable is closed at the highest level.)

\[
\exists f \exists e \[\text{be-caught}'(r)(f(\text{pig}'))(e)\]
\]

In these cases, in other words, Restrict and Saturate lead to completely equivalent results.

Consider next the calculation of the meaning of narrow-scope indefinites in quantificational constructions.

In discourse representation theory, quantification is a relation between an operator, a domain—the restriction,—and a claim about the domain—the nuclear scope.
Quantification constructions therefore have a tripartite logical structure. Following Kamp (1981), Heim (1982), and many others, we take the varying quantificational force of indefinites in these constructions, first observed by Lewis (1975), to follow from two assumptions. First, indefinites have no inherent quantificational force—they are restricted free variables. Second, indefinites in quantificational constructions can inherit their quantificational force by relating to the operator in a predictable way. Indefinites in the restriction can act as if bound to the operator, either because the operator binds unselectively (as in Heim 1982), or because the restriction is existentially closed (see Kratzer 1995[1988]: 158). Indefinites in the nuclear scope can be existentially closed within that scope. The result, in both cases, is the narrow-scope reading of indefinites.

This thumbnail sketch is enough to reveal why narrow scope is possible for indefinites in quantificational constructions whether they are composed via Restrict or via Specify. As we have seen, each composition operation gives rise to some semantic incompleteness—each leaves some relevant variable unbound. When existential closure intervenes within the tripartite structure to remedy this incompleteness, the narrow scope reading of the indefinite emerges.

For instance, in the constructed conditional in (41) (compare (20d)), the quantification is over cases and both types of indefinites occur in the restriction.

(41) Ka kite-a [he tohora] e [tētahi kaititiro], ka karanga atu rātou.  
T see-Pass a whale by a lookout T call away they  
If a lookout spotted a whale, they would call out.

Let us focus for the moment on the semantic composition of the restriction. First, Specify targets the perceiver argument, type-shifts the property supplied by kaititiro ‘lookout’ to an individual, and composes that with the argument. The perceiver argument is now saturated, by a function variable that happens to be free. Next, Restrict
targets the object-of-perception argument and composes it with the property supplied by
\textit{tohora} ‘whale’, leaving the argument unsaturated. The compositional process has now
reached the event level, so existential closure must apply. Closure binds the free function
variable and saturates the object-of-perception argument, as shown in

(42) \[ \lambda y \lambda x \lambda e \ [\text{be-seen'}(y)(x)(e)] \quad \text{lookout'} \]
\[ \lambda y \lambda x \lambda e \ [\text{be-seen'}(y)(x)(e)] \quad \text{whale'} \]

The ultimate result will be that both indefinites have narrow scope with respect to the
quantification over cases. (Unselective binding within the restriction would produce
comparable results.) The proposition corresponding to (41) is true in the model M if and
only if every case of the seeing sort involving a lookout and a whale in M is also a case
of the calling sort in M.

The compositional process works similarly for indefinites in the nuclear scope
(see (21-23)), though we do not show this here. The generalization should be clear by
now: existential closure within the tripartite structure of quantification leads to narrow
scope for an indefinite, whether the indefinite has been composed via Restrict or via
Specify.
We are now ready to proceed to the two contrasts documented in Section 2.4: tētahi but not he can have wide scope with respect to operators in quantificational constructions, and he but not tētahi can introduce the pivot of an existential sentence. Crucially, Restrict and Specify are not equivalent as far as these uses of indefinites are concerned. Only Specify can lead to wide scope for an indefinite; and only Restrict is usable in the existential construction.

To see why, consider first the issue of wide scope in quantificational constructions. We have just finished discussing the role of existential closure in producing narrow-scope indefinites in these constructions. From that discussion, it should be evident what must happen in order for an indefinite to have wide scope with respect to the operator: it must be able to evade closure within the tripartite structure of quantification. The next question is under what circumstances closure can be evaded.

In our theory, semantic composition cannot proceed past the event level unless every argument of the predicate is saturated (see Section 1.4). That is how we capture the intuition that an event must have all its required participants in order to count as semantically complete. Notice that it does not matter whether the predicate’s arguments are saturated via composition with an expression or via existential closure. What is important is that one way or another, every argument of the predicate must achieve saturation at the event level.

Now, arguments targeted by Specify automatically satisfy this requirement: they are saturated. But arguments targeted by Restrict can meet the demand only by submitting to existential closure at the event level. The practical consequence is that indefinites composed via Restrict never have an opportunity to scope out of the tripartite structure of quantification, because the arguments with which they have been composed
are required to be saturated, and therefore must be existentially closed, at an earlier stage of composition.

What about the free function variable introduced by Specify? Both the Reinhart-Winter view and the Kratzer-Matthewson view of such choice function variables allows for them to be grounded at the highest level. We assume, with Reinhart (1997[1995]) and Winter (1997), that the choice function can be existentially closed at any point. This assumption is crucial in allowing tētahi to have narrow scope with respect to other operators. (Hence our analysis is inconsistent with the restrictions imposed by Kratzer (1998) and Matthewson (1999).) The closure of these function variables follows from a well-formedness condition on the output of semantic composition, not a requirement imposed at any specific intermediate stage of the compositional process. When this view is combined with the assumption that existential closure is optional (i.e. nonexhaustive), the result is that the full range of scope possibilities is open to indefinites composed via Specify. The reason is that the free function variable introduced by Specify can submit to closure or not at any point when closure is made available.

To illustrate the point, consider the constructed example below, in which the tētahi indefinite can have wide or narrow scope with respect to negation (compare (23c) and (27a)).

(43) Kāore tētahi tangata i mahi.
T.not a person T work
No one worked/ A particular person didn’t work.

Suppose the indefinite is composed via Specify, as tētahi demands. Then existential closure can step in to bind the free function variable either at the event level or after the negation has been composed. The first option leads to (44a); the second, to (44b).

(44)a. $\neg \exists f \exists e [\text{work}'(f(\text{person'}))(e)]$
b. $\exists f \rightarrow \exists e \ [\text{work' (f(person'))(e)}]$

On the other hand, if the indefinite in (43) were replaced by a *he* indefinite (see (28b)), then the only possible composition would be (45). After this indefinite was composed via Restrict, the requirement that all the predicate’s arguments must be saturated at the event level would force the targeted argument to be existentially closed at that level.

(45) $\neg \exists e \exists x \ [\text{work’(x)(e)}]$

Finally, let us turn to the second contrast between *he* and *tētahi*: *he* indefinites can be pivots of existential sentences, but *tētahi* indefinites cannot.

Since the work of McNally (1992), there has been a growing consensus among semanticists that the definiteness effect exhibited by the pivot of the existential construction is best accounted for by assuming that the pivot must have a property as its content (see e.g. Farkas 1997, van Geenhoven 1998, de Swart 2001, and others). McNally encodes this requirement directly in the type structure of the existential verb (for similar proposals, see Musan 1996 and Dobrovie-Sorin 1997). We likewise assume that the definiteness effect is due to a requirement that the pivot must be a property. However, for reasons that will become clear in Chapter 3, we do not enforce this in the type assignment to the existential predicate. We propose instead that the only composition operation that can target the internal argument of the existential verb is Restrict.

Once this proposal is in place, it follows immediately that other composition operations cannot target this argument. In particular, Specify cannot. We illustrate the point with the compositions of (32a) and (34a), which are repeated below.
(32)a. Kāhore he taniwha.
   T.not a monster
   There are no taniwhas. (Bauer 1993: 78)

(34)a. *Kāhore ētahi taniwha.
   T.not a.pl taniwha
   (There are no taniwhas.)

Suppose we assume that kāhore means ‘not exist’, where the negation in question is sentential negation (see Chapter 3). Then the composition of (32a), omitting types, is

\[
\lambda x[\text{exist}'(x)] \quad \text{monster}'(x)
\]

\[
\lambda x[\text{exist}'(x) \land \text{monster}'(x)]
\]

\[
\exists x[\text{exist}'(x) \land \text{monster}'(x)] \quad \neg
\]

\[
\neg \exists x[\text{exist}'(x) \land \text{monster}'(x)]
\]

The composition of (34a) does not proceed past the initial step, because the existential verb’s demand that its argument must be composed via Restrict is not satisfied.

\[
\lambda x[\text{exist}'(x)] \quad \text{monster}'(x)
\]

\[
f(\text{monster}')
\]

???

Summing up, the theory of restriction and saturation accounts straightforwardly for the semantic similarities and differences between he and tētahi. It does so by identifying each article with a different mode of composition available to indefinites.
2.5.2 Some Approaches Not Taken

At this juncture, it seems appropriate to ask whether the distribution of _he_ and _tētahi_ could also be accounted for _without_ appealing to a difference in composition operations. We observed earlier that the choice between these two articles is not transparently correlated with any of the familiar semantic contrasts referential versus quantificational, wide scope versus narrow scope, or specific versus nonspecific. But could _he_ and _tētahi_ be paired with these familiar notions in some other, more successful way?

We think the answer is no. The problem we see is this: any appeal to familiar notions that is flexible enough to allow _he_ and _tētahi_ to overlap will be unable to account for the differences between them. As illustrations of the point, here are two plausible alternatives to our account. Both alternatives assume that there is just one composition operation—function application. Our claim is that in the end, both prove to be unsatisfactory.

Our first alternative is that _he_—like English bare plurals—must have narrow scope, but _tētahi_—like English _a_—has no scope restrictions.

Such an alternative could account for the distribution of _he_, if we assume that the requirement of narrow scope is vacuously satisfied when no quantification is involved. Then the ‘wide’ scope uses of _he_ in episodic sentences would pose no difficulty; they would simply be reconfigured as (vacuously) narrow scope uses. The narrow scope uses of _he_ in quantificational constructions would follow automatically. So would _he_’s ability to introduce pivots of existential sentences, which necessarily have narrow scope (see Heim 1987), and its inability to have wide scope with respect to operators such as negation.

Where this alternative would fail is in accounting for the distribution of _tētahi_—
specifically, its inability to introduce pivots of existential sentences. If \textit{tētahi} had no scope restrictions at all, then it should be compatible with the pivot, just like English \textit{a}. But \textit{tētahi} is excluded from the pivot, as we saw in Section 2.4.2

Our second alternative involves type-shifting, either as a free option or else as a last resort. It goes like this: Indefinites headed by \textit{he} denote properties (\textit{<e,t>}), whereas indefinites headed by \textit{tētahi} denote generalized quantifiers (\textit{<<e,t>,t>}). Any type mismatches encountered in the semantic composition of these indefinites can be remedied by the type-shifting operations of Partee (1987).

Such an alternative could account for all the uses of indefinites for which \textit{he} and \textit{tētahi} seem interchangeable. The reason is obvious: whenever an indefinite might seem to be of the wrong type to be composed via function application, the mismatch would be remedied by type-shifting. For instance, even though \textit{he} indefinites would denote properties, they could be composed with the arguments of typical predicates (e.g. \textit{read}) once they had been type-shifted to generalized quantifiers by Partee’s operation A, which takes properties to generalized quantifiers.

The difficulty with such an account is that it would be too successful. Type-shifting might well enable \textit{he} to take wide scope with respect to operators in quantificational constructions, even though wide scope is, in fact, not an option. Type-shifting would certainly enable \textit{tētahi} to introduce the pivot of an existential sentence, even if we assume, with McNally (1992), that the internal argument of the existential verb must have a property as its content. The type mismatch would simply be remedied by Partee’s BE, which takes generalized quantifiers to properties.

More generally, Maori seems to us to pose a dilemma for approaches to semantic composition in which there is just one composition operation—function application—
and mismatches are remedied by type-shifting, either freely or else as a last resort. The dilemma is that there are uses of indefinites in this language for which the repair strategy of type-shifting must be turned off.

The theory of restriction and saturation avoids this dilemma, because it recognizes multiple composition operations, and thereby allows for the possibility that the morphosyntax might signal which composition operation to employ. In our account of Maori, the claim that *he* indefinites must be composed by Restrict entails that no other composition operation can be substituted. Similarly for *tētahi* indefinites and Specify. In our view, the success of this account provides some compelling empirical motivation for our theory.

2.6 Two Further Syntactic-Semantic Contrasts

If our account of *he* and *tētahi* is correct, it should generalize to all contrasts between the two, even when other factors are also at play. To suggest that this is so, we now survey the other contrasts that we are aware of and argue that they either follow from our account or else are compatible with it.

This Section deals with two syntactic-semantic contrasts between *he* and *tētahi* that are well known from the literature on Maori. The first involves the ability of indefinites to serve as subjects; the second, their ability to serve as predicates. The next Section deals with two pragmatic contrasts.

2.6.1 A Constraint on Subjects

Now is the time to acknowledge that the two types of Maori indefinites are not equally free to serve as subjects of clauses. Setting aside existential sentences and other impersonal constructions, every Maori predicate can have a subject headed by *tētahi*, but
not every predicate can have a subject headed by *he*. This pattern has been the focus of some attention since it was first observed by Kenneth Hale and Patrick W. Hohepa in MIT class lectures in 1969 (see e.g. Chung 1978: 73-74; Hooper 1984: 44; Polinsky 1992; Bauer 1993: 356; Biggs 1997: 2-4; and Bauer 1997: 149-150). Our presentation of the facts basically follows Chung, Mason, and Milroy (1995: 437-441) (henceforth CMM), although we take some shortcuts, as will be acknowledged in a moment.

The basic descriptive generalization is that in episodic sentences, no subject that is an external argument can be introduced by *he*. This constraint has a direct impact on the three types of Maori predicates whose subject is an external argument: transitive verbs, unergative verbs, and individual-level predicates.

(i) In Maori, the subject of an (active) transitive verb is always an external argument. Hale and Hohepa originally noticed that when the subject of these verbs is indefinite, the indefinite can headed by *tētahi* but not *he*. Compare (48) and (49).

(48)a. *I whiu tētahi wahine i tāna mōkai ki te moana.*
   T throw a woman DO her pet into the ocean
   A woman threw her youngest child into the ocean. (CMM 1995: 431)

   b. *Ka mutu te tōhi ki te Kuini, ka whai ake ētahi atu tōhi.*
      T ended the toast to the Queen T follow up a.pl away toast
      When the toast to the Queen was over, other toasts followed it. (Waititi 1974: 74)

   c. *Ka kī tētehi, nā-na te tāne.*
      T say a T.of-her the man
      One said he (lit. the man) was hers. (Jones & Biggs 1995: 117 [15.13])

(49) *I whiu he wahine i tāna mōkai ki te moana.*
   T throw a woman DO her pet into the ocean
   (A woman threw her youngest child into the ocean.) (CMM 1995: 437)

(ii) In Maori, the unergative verbs include intransitive verbs that denote
speaking or communication, intentional activity, or manner of motion.⁹ CMM observe that for these verbs too, the subject cannot be an indefinite headed by he. Compare the grammatical sentences in (50), in which the subjects are tētahi indefinites, with the ungrammatical sentences in (51).

(50)a. E kōrero ana tētahi wahine.
   T speak a woman
   A woman was speaking.

   b. E mahi ana tētahi tangata.
   T work a person
   A man is working. (CMM 1995: 431)

   c. Ka katakata ētahi, ka umere ētahi, ka kohete ētahi.
   T laugh a.pl T applaud a.pl T scold a.pl
   Some laughed, some applauded, some scolded. (Waititi 1974: 86)

(51)a. *E kōrero ana he wahine.
   T speak a woman
   (A woman was speaking.) (CMM 1995: 439)

   b. *E mahi ana he tangata.
   T work a person
   (A man is working.) (CMM 1995: 431)

(iii) Finally, consider the individual-level predicates of Maori. These, we assume, include all noun phrase predicates, the prepositional phrase predicates headed by the tensed forms of the possessor prepositions, most adjectives, and a very few verbs (e.g. mōhio ‘know’; see CMM).¹⁰ The observation that the subjects of these predicates cannot be indefinites headed by he goes back to Hohepa (1969: 15), who cast it in somewhat different terms. Notice, once again, that indefinites headed by tētahi are allowed.
(52)a. Ko Kawiti tētahi o ngā tino rangatira o Ngā Puhi.
Ident Kawiti a of the.pl very chief of Ngā Puhi

One of the true leaders of Ngā Puhi was Kawiti. (NTTR 1990: 32)

b. He wai Māori hoki tētahi mea i mau-ria.
Pred.a water ordinary also a thing T take-Pass

Another thing that was taken was fresh water. (Waititi 1974: 117)

c. Nā-na tētehi tamāhine pai rawa.
T.of-him a daughter excellent indeed

He had a most beautiful daughter. (Orbell 1992: 147)

d. He porohita ētahi pōro.
Pred.a round a.pl football

Some footballs are round. (H.M. Ngata 1994: 161)

e. Ka mōhio-tia e Pita tētahi mahi toi.
T know-Pass by Pita a practice art

Peter will understand a skill.

(53)a. *Ko Kawiti he tino rangatira o Ngā Puhi.
Ident Kawiti a very chief of Ngā Puhi

(A true leader of Ngā Puhi was Kawiti.)

b. *Nō Te Arawa he rangatira.
T.of Te Arawa a chief

(The Te Arawa tribe had a leader.)

c. *I makariri he kōhatu.
T cold a stone

(A stone was cold.) (CMM 1995: 447)

d. *Ka mōhio-tia e Pita he mahi toi.
T know-Pass by Pita a practice art

(Peter will understand a skill.) (cf. CMM 1995: 447)

Importantly, whatever constraint is responsible for the badness of (49), (51), and (53) does not extend to subjects that are internal arguments. That is why, when we discussed wide scope indefinites in episodic sentences in Section 2.3.1, all the standard
Maori examples that we cited involved subjects that are internal arguments: subjects of passive verbs, unaccusative predicates, or prepositional phrase predicates of location. A few more examples are given below.\(^{11}\)

(54)a. Ka karakia-tia e ia i reira ētehi rākau kahikatea e ono.  
T enchant-Pass by him at there a.pl tree kahikatea T six  

He bewitched (some) six kahikatea trees there.  
(Jones & Biggs 1995: 223 [32.4])

b. Ka whati mai te ētahi ngaru tino nui.  
T break to.here a wave very big  

An enormous wave broke. (Waititi 1974: 121)

c. Kei roto ētahi o ngā hipi i ngā awaawa.  
T.at inside a.pl of the.pl sheep DO the.pl valley  

Some of the sheep were in the valleys. (Waititi 1974: 16)

(55)a. I konei ka whakatō-kia e Hoturoa he pōhutukawa.  
at here T plant-Pass by Hoturoa a pohutukawa  

Here Hoturoa planted a pohutukawa. (Jones & Biggs 1995: 49 [3.69])

b. Tuhera ana mai he ara mō-na i te wai.  
open to.here a road T.of-him at the water  

A path opened up for him through the water. (Orbell 1992: 42)

c. I roto i te kirimini he tikanga kia kauā e neke-hia  
T.at inside DO the agreement a arrangement T not T move-Pass  

Contained in the agreement was a condition not to move  

te whare.  
the house  

the house. (H.M. Ngata 1994: 9)

What is the account of this pattern? We think that the most promising approach is to attribute the ungrammaticality of (49), (51), and (53), to a language-particular specificity constraint. It is well known that there are languages of the world that demand that subjects must be specific in some sense (see e.g. Reuland 1987 and Diesing 1992:}
80-84 on Dutch). What is less commonly recognized is that there are also languages that impose this requirement only on certain subtypes of subjects. For instance, Chamorro has a specificity constraint that affects only subjects that are external arguments—the subjects that could be viewed as prototypical (see Chung 1998: 111-117). What is striking about the Chamorro constraint is that the types of predicates affected are essentially the same as the Maori predicates whose subjects cannot be introduced by *he*.

Our hypothesis, then, is that Maori demands that the external argument must be specific. This constraint permits the external argument to be composed with indefinites headed by *teātahi*, since these indefinites are plausibly viewed as specific in our account: they are composed as individuals. But the constraint forbids the external argument to be composed with indefinites headed by *he*, because these indefinites are not specific: they are composed as properties.

For this hypothesis to be convincing, the specificity constraint must draw the right distributional distinctions not just for indefinites but for all other types of noun phrases as well. We think it does this, and for an interesting reason: there are no other types of Maori noun phrases that are plausibly characterized as nonspecific. The language has no negative noun phrases or noun phrases headed by weak quantifiers such as ‘many’, ‘few’, and the like, because those operators are expressed as higher predicates, not noun phrase internally (see Bauer 1997: 290-300). We mentioned earlier that Maori does have universally quantified noun phrases. These are plausibly viewed as specific, because their domain of quantification is contextually determined (see Enc 1991: 10-11). Consistent with this, universally quantified noun phrases can occur as external arguments, as (56) shows.
(56)a. I whiwhi [ia tama] ki ngā takoha.
   T receive each boy to the.pl present
   Each boy received presents. (Bauer 1997: 300)

   b. Ka pakipaki [ngā tāngata katoa].
   T clap the.pl people all
   Everyone clapped. (Bauer 1997: 299)

   In short, the only Maori noun phrases plausibly characterized as nonspecific are just those that cannot occur as external arguments; namely, indefinites headed by he.

   There are further intricacies to the specificity constraint, but it would not be productive for us to pursue them here.\(^{12}\) We therefore simply conclude that in Maori, the external argument must be specific, and that this demand can be satisfied by indefinites headed by tētahi but not he. Within our theory, the contrast follows from the fact that indefinites headed by tētahi are composed as individuals, but indefinites headed by he are not.

### 2.6.2 Two Types of Predicates

Both types of Maori indefinites can serve as predicates of clauses, but there is a difference. In predicate position, indefinites headed by he are always predicational (see Polinsky 1992); indefinites headed by tētahi are always identificational. The semantic generalization glosses over some syntactic complexity that we will not be able to resolve. Nonetheless, it should be clear even at the outset that the semantic generalization is compatible with our account.

We asserted in Section 2.1 that clauses in Maori are projected from T, which—among other things—indicates whether a noun phrase predicate is predicational or identificational. In essence, the distinction is drawn this way: noun phrases that are predicational are introduced by he, whereas noun phrases that are identificational are
introduced by *ko*.

We illustrate the generalization first with identificational predicates, since their syntax is quite straightforward. Clauses with identificational predicates begin with *ko*, which we take to occupy T. *Ko* is followed by the predicate, which is transparently DP, and then by the subject. As mentioned in Section 2.1, certain dependents of the predicate XP can occur either within XP or else to the right of the subject. We simply ignore this in what follows. Some examples of clauses with identificational predicates are shown in (57). Note that the DP predicate is bracketed.\(^{13}\)

\begin{enumerate}
\item[(57)a.] Ko [koe] anake te koretake!
\begin{align*}
\text{Ident} &\quad \text{you alone the useless} \\
&\quad \text{The useless one is you! (Waititi 1974: 7)}
\end{align*}
\item[b.] Ko [Kura] tana ingoa.
\begin{align*}
\text{Ident} &\quad \text{Kura her name} \\
&\quad \text{Her name was Kura. (Waititi 1974: 40)}
\end{align*}
\item[c.] Ko [te wā tuarua] tēnei i tatau hē-tia ai e koe taku utu.
\begin{align*}
\text{Ident} &\quad \text{the time second this T count wrong-Pass Pro by you my pay} \\
&\quad \text{This is the second time you have \textit{miscalculated} my pay.} \\
&\quad \text{(H.M. Ngata 1994: 280)}
\end{align*}
\item[d.] Ko [nga kainga i nga tahatika o Waikato] nga wāhi
\begin{align*}
\text{Ident} &\quad \text{the.pl village at the.pl bank of Waikato the.pl place} \\
&\quad \text{The home of Mahuta . . . was the villages on the banks of} \\
&\quad \text{i noho ai a Mahuta.} \\
&\quad \text{T live Pro Pers Mahuta} \\
&\quad \text{the Waikato River. (Jones & Biggs 1995: 163 [22.3])}
\end{align*}
\end{enumerate}

The phrase structure of clauses with identificational predicates seems unproblematic. We assume that it looks like
The point of interest is that indefinites headed by *tētahi* can serve as identificational predicates in clauses introduced by *ko*.\(^\text{14}\)

\[(58)\]

\[
\begin{array}{c}
\text{TP} \\
\text{T'} \\
\text{[subject]} \\
\text{T} \\
\text{ko} \\
\end{array}
\]

But indefinites headed by *he* cannot. Traditional Maori grammars are quite explicit about the fact that a *he* indefinite cannot occur immediately after *ko* (see e.g. W.L. Williams 1923[1862]: 25 and A.T. Ngata 1964: 24). In other words, sentences such as

\[(59)a.\] Ko [tētehi pakanga kaha] tēnā.  
Ident a battle strong that  
It was a fierce battle. (Jones & Biggs 1995: 369 [64.6])

\[(59)b.\] Ko tōna kāinga ko [tētahi ana i Kaipara].  
Ident its home Ident a cave at Kaipara.  
As for its home, it was a cave at Kaipara. (Karetu 1974: 41)

The explanation traditionally given for the fact that a *he* indefinite cannot occur immediately after *ko* is that *he* cannot immediately follow a preposition, and *ko* is a preposition (see e.g. Biggs 1969: 54-56 and Bauer 1997: 28 and 147). However, the evidence for treating identificational *ko* as a preposition is slight.\(^\text{15}\) Just as good an account can be given, we believe, by appealing to the semantics of *ko* as opposed to its syntactic category. Suppose that *ko* has a meaning like the English identificational copula: it expresses a two-place relation between individuals, as shown in

\[(60)\]  
\[
\text{I}(x,y) \leftrightarrow x = y
\]

Then the ability of *tētahi* indefinites to serve as identificational predicates follows immediately from the fact that they are composed as individuals, via Specify. Similarly,
the inability of he indefinites to serve as identificational predicates seems natural, given that they are composed as properties, via Restrict.

We turn next to predicational noun phrases, whose syntax is more complicated. Clauses with predicational noun phrase predicates begin with he, whose syntactic category and function here are precisely what is at issue. This he is followed by a phrase that is evidently NP as opposed to DP, and then by the subject (see e.g. Reedy 1979: 31, Polinsky 1992: 233-234, and Bauer 1997: 28-29 and 147). In the examples below, we have arbitrarily chosen to bracket the predicate NP.

(61)a. He kōrero ātaahua tēnā.  
Pred.a speech beautiful that  
That’s a beautiful saying. (Karetu 1974: 61)

b. I whakaaro-hia [he tohu no te mate] te ngārara.  
Pred.a think-Pass Pred.a sign T.of the death the lizard  
Lizards were often regarded as (lit. it was thought that lizards were) omens of death. (H.M. Ngata 1994: 259)

c. He whanaunga a Mōtai-tangata-kotahi ki a Tū-parahaki.  
Pred.a relation Pers Mōtai-tangata-kotahi to Pers Tū-parahaki  
Mōtai was related (lit. a relative) to Tū-parahaki. (Jones & Biggs 1995: 151 [20.3])

d. He tohunga ia e mōhio ana ki nga mahi mākutu.  
Pred.a skilled.person he T know to the.pl work bewitch  
He was a priest skilled in black magic. (Jones & Biggs 1995: 221 [32.2])

Now because he occurs first in the clause and is followed by an NP constituent, two syntactic analyses are possible in principle: he might occupy T, just as ko does, or it might be the head of a DP predicate, just like tētahi in clauses of type (59). The complication is that each analysis has some evidence supporting it.

The clearest evidence that he occupies T in clauses such as (61) is that he can also introduce predicates that are verbs or adjectives (see e.g. Reedy 1979: 43-47, Waite
1994, and Bauer 1997: 77, 498). This is one standard way to form clauses when the verb or adjective is individual-level, or when it has a generic or habitual interpretation. Consider

(62)a. Engari ra koe, he mōhio ki te wai o konei.
   But that you Pred.a know to the water of here
   But you are knowledgeable about the water here. (Orbell 1992: 43)

b. He tika te kōrero ā tō koroua.
   Pred.a correct the speech of your grandfather
   What your grandfather said is correct. (Karetu 1974: 59)

c. He mate te taina o Hata.
   Pred.a die the yo.sibling of Hata
   Hata’s younger sister is sickly/*dead.

d. He mate tonu ngā kai o Whakatāne i te waipuke.
   Pred.a die still the.pl food of Whakatane Cause the flood
   The crops at Whakatane were always being destroyed by floods.
   (Orbell 1992: 42)

It seems clear that one would want to say that the *he* in clauses like these occupies T. That would make it natural to view clauses with predicational noun phrase predicates as consisting of this T followed by a NP predicate (as proposed, in essence, by Reedy 1979: 61).

On the other hand, there is also evidence that predicational noun phrase predicates are DP predicates headed by *he*. The evidence is that the they can have a possessor introduced by one of the prepositions *a* or *o*. If we continue to assume that such possessors occupy the specifier of D (see Section 2.1), that would make it natural to view the predicates below as DP’s headed by *he*. The bracketing in (63) is intended to suggest this.
(63)a. [He momo mate o te kiri] te pāpaka.
Pred.a type sickness of the skin the eczema

**Eczema** is a skin ailment (lit. ailment of the skin).
(H.M. Ngata 1994: 120)

b. [He toa taua o Te Ati Awa] tēnei tangata a Te Wharepouri.
Pred.a champion war of Te Ati Awa this man Pers Te Wharepouri

This man Te Wharepouri was a warrior of Te Ati Awa.

c. [He kaipeita rongoi] a ia o te taiwhenua.
Pred.a painter famous Pers she of the landscape

She is a well-known landscape **painter** (lit. painter of landscapes).
(H.M. Ngata 1994: 321)

Conceivably, the most straightforward solution is that predicational noun phrase predicates have a dual syntactic analysis: the *he* that introduces them can be analyzed either as the content of *T* or else as the indefinite article (see Bauer 1997: 29 for a similar conclusion). This solution may or may not be ideal. In any event, the important point for our purposes is that this *he* cannot be replaced by *te tahi*. Sentences such as *Te tahi ko rero a taahua te na* and the like (cf. (61a)) are ungrammatical.

Notice now that if we move away from the syntax and consider the semantics of these clauses, the situation seems much clearer. One would want *T*, whatever it happens to be, to have a meaning like the English predicational copula: it should express a two-place relation between an individual *x* and a property *P*, as shown in

(64) \[ \Pi(x, P) \iff P(x) \]

We are now in a position to see that depending on the syntax, the distribution of *he* and *tētahi* here either follows from our account or else is consistent with it. Suppose that in clauses with predicational noun phrase predicates, *T* is not overt and the predicate is a DP. Then the ability of this DP to be a *he* indefinite follows from the fact that *he* indefinites are composed as properties. Similarly, the inability of this DP to be a *tētahi*
indefinite follows from the fact that ōtahi indefinites are composed as individuals, via Specify. On the other hand, suppose that he occupies T in clauses of this type. Then the fact that it is homophonous with the indefinite article he is presumably no accident: the two are alike in that the expression that is their NP complement must be composed as a property.

In sum, the uses of he and ōtahi to introduce predicates may well follow completely from our account. At minimum, they pose no difficulty for it.16

2.7 A Dash of Pragmatics

The theory of restriction and saturation has something to contribute to an understanding of the pragmatic differences between he and ōtahi. Below we discuss two differences in the discourse functions, broadly construed, of these indefinites as arguments. Although these differences involve preferences, not absolute requirements, they are nonetheless real, so it is significant that they fit comfortably into our analysis.

2.7.1 In Narrative Discourse

According to CMM (1995: 434), he indefinites in narrative discourse cannot be used to introduce characters that are in the spotlight—central focuses of narration. Rather, these indefinites can only be used to introduce characters that are in the background—relatively minor figures. The correctness of this observation is borne out by textual sources (e.g. Orbell 1992, Jones & Biggs 1995, selected portions of Ngā Tāngata Taumata Rau). In almost every instance, the characters introduced by he indefinites do not play a major role in the narration but are quite unimportant (out of focus). Their insignificance is revealed by the fact that they are usually nameless (though (18a) is an exception) and do not persist in the narrative beyond one or two subsequent mentions.
A typical example is (65), taken from a chapter of Jones & Biggs (1995) that tells the story of Whatihua and his first wife, Rua-pū-tahanga. After Whatihua takes a second wife, Rua-pū-tahanga becomes angry and runs off with their child. He pursues her; she abandons the child and keeps running; he reaches the child. The narrative continues

(65) Tae noa mai [he tāngata] hei whakarere-nga iho mā-na i tana
When others (lit. people) arrived to take the child,

tamaiti, kua tata te whiti o te wahine ra i te pūaha o Kāwhia.
she was almost across the harbour mouth. (Jones & Biggs 1995: 81 [8.4])

The people introduced by the *he* indefinite in (65) are minor figures, serving only to get the child out of the way as the pursuit continues. They are never referred to again. For similar examples, see CMM (1995: 433-435).

In contrast, *tētahi* indefinites can be used to introduce characters whether they are in the spotlight or in the background. The following pair of examples is intended to suggest the range of possibilities. In (66), taken from the story of two cannibals, Whare-tīpeti and Tapaeu, a *tētahi* indefinite is used to introduce a minor figure. After it is discovered that Whare’ and Tapaeu have killed people and eaten then, some other men resolve to kill them. The narrative continues

(66) I tino ū ai rāua ki ta rāua take, na te patu-nga
Their resolve was strengthened when Whare’

a Whare’ rāua ko Tapaeu i [tētehi], he whanaunga
of Whare’ they du Ident Tapaeu DO a Pred a relative
and Tapaeu killed yet another person, [who was] a kinsman
Like the people in (65), the kinsman of Te Ruina introduced by tētahi in (66) is nameless and never mentioned again. The narrative reveals that to the extent that he matters at all, he matters not as a character but as a further instance of a cannibalistic act.

Compare this with (67), the beginning of the biography entry for Te Hiko Piata Tama-i-hikoia in Ngā tāngata taumata rau (1990), in which tētahi is used to introduce the central character—Te Hiko himself:

(67) Ko Te Hiko Piata Tama-i-hikoia [tētahi tino rangatira o Te Wairarapa] Ident Te Hiko Piata Tama-i-hikoia a very chief of Te Wairarapa

One of the leading Wairarapa chiefs from the 1840s

mai i te tau 1840 ki 1880.
from at the year 1840 to 1880
to the 1880s was Te Hiko Piata Tama-i-hikoia. (NTTR 1990: 189)

These and similar examples make it clear that unlike he, tētahi in narrative discourse is insensitive to the issue of where the spotlight is focused.

One might wonder whether this particular contrast might follow from a more fundamental semantic contrast, such as the ability to introduce a discourse referent. Suppose, contrary to what we claimed earlier, that he indefinites were simply unable to introduce a discourse referent. Then subsequent anaphoric reference to them would be impossible, and they would effectively be limited to characters in the background.

We should emphasize that such a scenario cannot be right. All the evidence known to us argues that he and tētahi are equally able to introduce a discourse referent. The discourse referents introduced by the two types of indefinites can serve as the antecedents of discourse anaphora, as we have already seen (in Section 2.3.1).
also antecede various kinds of bound variable pronouns, including the null subjects of
infinitive clauses (represented as PRO in (68)), and donkey pronouns (69).

(68)a.  
Ki te tū [he wahine] ki te kōrero PRO  
if stand a woman Infin speak  
If a woman stands up to speak

b.  
Ka haere [ētahi] ki te hoko taonga PRO i ngā toa.  
T go a.pl Infin buy goods at the.pl store  
Some people went to buy goods in the stores. (Waititi 1974: 98)

(69)a.  
Ki te hoatu e te tangata [he takoha] ki a koe, e pīrangi ana ia  
if give by the person a gift to Pers you T desire he  
If a person gives you a present, he usually wants

  kia whakaaro koe he tino tao pro.  
  T think you Pred.a very precious.thing
  you to think it is valuable.

b.  
Ka kite-a he tohora e [ētahi kaititiro], ka whakatū-ria pro  
T see-Pass a whale by a lookout T raise-Pass  
If a whale was spotted by a lookout, he would raise

  te haki o tōna kāinga.  
  the flag of his house
  the flag of his house. (Waititi 1974: 132)

We return to this issue in Chapter 3.

Our theory offers a more promising approach to this difference in the narrative
functions of he and tētahi. Most traditional narrative discourse is about individuals. In
such narratives, the usual expectation is that a character in the spotlight is an individual.
But it matters far less whether characters in the background are individuated. If we
accept this, then the reason why he indefinites are not used to introduce characters in the
spotlight is that these indefinites are never composed as individuals; they are composed
as properties, via Restrict (see Bauer 1997: 148 for a similar suggestion). But because
Although tētahi indefinites are composed as individuals, via Specify, they can introduce any of the cast of characters, major or minor.

### 2.7.2 In the Museum

A more minimalist kind of discourse can be found in the museum, on the identifying cards or labels accompanying objects on exhibit. In 1994 we briefly visited the Te Papa Tongarewa Museum of New Zealand in Wellington and spent an enjoyable hour or two in the Maori collection. Objects in the Maori collection are accompanied by identifying labels and descriptive text in two languages, Maori and English. It was the labels that caught our linguistic attention. Whereas the English-language labels almost always consisted of bare NP’s (e.g. ‘Short Club Weapon’, ‘Shell Trumpet’), the Maori-language labels often consisted of DP’s, and many were indefinite. Our informal impression was that there was a significant correlation between the type of indefinite on the label and the nature of the object(s) on display.

Though we have not been able to return to New Zealand to check the facts more systematically, we are fortunate to have had our initial impression solidified and expanded by some enlightening commentary from the Museum staff. On the basis of this, we tentatively characterize the situation as follows. When an object is exhibited alone in a display case or is the only object of its type on display, then it would typically be labeled by an indefinite headed by he, not tētahi (e.g. He Mere ‘Short Club Weapon’, He Tiki ‘Greenstone Pendant’). On the other hand, when several objects of the same type are exhibited together in a display case, the entire display, or each object in it, would typically be labeled by an indefinite headed by tētahi, not he (e.g. Ėtahi Tiki ‘Greenstone Pendants’, Tētahi Tiki ‘A Greenstone Pendant (in a display of several such pendants)’).
Assuming that this contrast is real, it too can be given a rationale in terms of the theory of restriction and saturation. When an object is exhibited on its own, what is highlighted is the prototype that the object represents. Labeling such an object with he serves to reinforce this, because he indefinites are composed as properties, via Restrict. But when several objects of the same type are exhibited together, what is highlighted is the fact that each object is an (arbitrarily selected) instance of the prototype. Labeling such objects with tētahi is appropriate, because tētahi indefinites are composed as (relevant but arbitrarily selected) individuals, via Specify.

Given our limited grasp of the museum situation, these remarks are purely speculative. We include them here to make a larger point. There are other real-world situations outside the realm of narrative discourse proper where he and tētahi contrast. Subtle though these kinds of contrasts are, an analysis in terms of modes of composition has the potential to elucidate them.

2.8 Conclusion

We would like to close this Chapter by placing our account of Maori indefinites in a somewhat broader perspective.

Our account of he and tētahi in terms of modes of composition is close in spirit to some other characterizations of these articles that have been offered previously. For instance, Polinsky (1992) attempts to unite the uses of he by claiming that it is underspecified for the features [referential] and [definite]. Bauer (1993: 357, 1997: 172), in her discussions of he and tētahi, asserts that what is important about these articles is not their (in)definiteness but rather that he focuses on the type of object whereas tētahi focuses on the individual object. Our approach differs from Polinsky’s
and Bauer’s, most notably in affirming that he and tētahi are indeed indefinite determiners. Nonetheless, it should be clear that all three approaches have some conceptual common ground. Polinsky’s characterization of he as nonindividuated and Bauer’s characterization of he in terms of type are close to our notion of predicate restriction. Bauer’s characterization of tētahi in terms of (the number of) individuals resonates with our appeal to choice functions. Viewed from this perspective, our principal contribution to the analysis of he and tētahi is to have developed a theory—the theory of restriction and saturation—within which the non-truth-conditional but strongly felt contrast between these articles can be understood.

Of course, if our theory is on the right track, it should generalize beyond he and tētahi to all cases of morphologically distinguished indefinites whose semantic distribution is more limited than that of indefinites in general. The observation raises a question. What sorts of limited distributions can a language-specific indefinite have, and how successful is our theory at accounting for them?

The question deserves more serious contemplation than we are prepared to give it here. Still, as the beginnings of a response, we now suggest how our approach would handle two further examples of language-specific indefinites with a limited semantic distribution. Our examples are bare plurals in English (see e.g. Carlson 1977, van Geenhoven 1998, and many others) and the two types of indefinites in St’át’imcets (Lillooet Salish; see Matthewson 1999).

It has been known since Carlson (1977) that English bare plurals always have narrow scope with respect to (other) operators (see van Geenhoven 1998: 84-93 and the references cited there.) For instance, (70) means that it was not the case that Maxie saw ghosts in the attic, not that there were ghosts in the attic that Maxie didn’t see.
Maxie didn’t see ghosts in the attic.

In Carlson’s view, English bare plurals are names of kinds that acquire an existential interpretation when they combine with a stage-level predicate. Because the predicate both relates the kind to the targeted argument and supplies the existential force of that argument, the bare plural cannot scope beyond it—it must have narrowest scope. Building on this aspect of Carlson’s approach, van Geenhoven (1998) develops a theory of indefinites in which English bare plurals are property-denoting expressions that undergo semantic incorporation: their meaning is “absorbed by a verb as the predicate of that verb’s internal argument’s variable” (1998: 132). Van Geenhoven’s semantic incorporation is discussed further in Chapter 3. The important point here is that for her, as for Carlson, the narrow scope of bare plurals follows from the claim that their existential force is contributed by the predicate.

Our approach derives the distinctive narrow scope of bare plurals from their mode of composition. We claim that in English, bare plurals must composed via the nonsaturating mode Restrict. From this hypothesis, it follows that bare plurals have essentially the same semantic distribution as he indefinites in Maori: they can introduce a referential argument in episodic sentences, they must have narrow scope with respect to operators, and so on (see Section 2.5). More generally, in recognizing Restrict as a distinct composition operation, our theory provides one way of accounting for language-specific indefinites that must have narrow scope.

A more intricate empirical challenge is presented by the two types of indefinites in St’át’imcets (Lillooet Salish), which are investigated in depth by Matthewson (1999). These indefinites contrast interestingly with the two types of Maori indefinites that have preoccupied us in this Chapter. Wide-scope indefinites, which are headed by a
morphologically complex determiner, must have wide scope with respect to any operator present in the translation. Matthewson establishes convincingly that these expressions are indeed semantically indefinite but cannot have narrow scope, intermediate scope, or distributive readings. Polarity indefinites, which are headed by the determiner *ku*, must meet two requirements: they must occur within the c-command domain of an operator and they must have narrow scope.  

The focus of Matthewson’s discussion is the wide-scope indefinites. She argues for a choice function analysis in which these indefinites introduce a free variable over choice functions—a variable that must undergo existential closure, but only at the highest level. In this way, her analysis invokes the closure mechanism of Reinhart (1997[1995]) and Winter (1997), but achieves empirical results far closer to those of Kratzer (1998).

When Matthewson’s analysis is recast in terms of our approach, what emerges is the following. We claim that wide-scope indefinites in St’át’imcets must be composed via Specify, the type-shifting mode that composes the property supplied by the indefinite as a free variable over choice functions. These indefinites therefore have the exactly same mode of composition as *tētahi* indefinites in Maori. Their distributional differences from *tētahi* indefinites we propose to derive from the workings of existential closure in these two languages. Our hypothesis is this. In Maori, closure must be freely available at any point (see Section 2.5), whereas in St’át’imcets, closure can intervene only as a last resort, to rescue a composition that would otherwise be ill-formed.

More generally, we view it as a language-specific option whether existential closure is implemented freely or only as a last resort. When closure is freely available, as in Maori, the result is the full range of scope possibilities predicted by Reinhart (1997[1995]) and Winter (1997) and exhibited by *tētahi* indefinites. When closure is
available only as a last-resort mechanism, as in St’át’imcets, the result is the obligatorily wide scope predicted by Kratzer (1998) and exhibited by the wide-scope indefinites of that language.

The claim that existential closure is parameterized in this way bears on our account of the other indefinites of St’át’imcets—the polarity indefinites headed by ku. Recall that these indefinites must both occur within the c-command domain of an operator and have narrow scope. The narrow-scope requirement is what is of interest here. According to Matthewson (1999: 122), “it is not yet clear whether ku unambiguously forces narrowest scope, or merely disallows widest scope”. Significantly, once it is granted that existential closure in St’át’imcets is a last resort, our approach is flexible enough to handle either possibility.

If ku forces narrowest scope, we would analyze the narrow-scope requirement in terms of mode of composition: polarity indefinites must be composed via Restrict. The narrowest scope of these indefinites would then follow in exactly the same way as for he indefinites in Maori. On the other hand, if ku merely disallows widest scope, we would analyze the narrow-scope requirement in terms of closure: whatever their mode of composition, polarity indefinites must be existentially closed within the scope of an operator. Notice that both possibilities are consistent with the view of closure as a last resort mechanism, invoked only to evade compositional ill-formedness of one kind or another.

In short, our approach allows for a range of language-specific indefinites with limited distributions. The observation raises a question. Are there any language-specific systems of indefinites that our approach would rule out? Tantalizingly, the answer seems to be ‘yes’. If existential closure is indeed parameterized as we have just proposed, then
no language should simultaneously have indefinites of the *tētahi* type and wide-scope indefinites of the St’át’imcets type. In other words, no language should have two types of morphologically distinguished indefinites, one of which can occur everywhere except as the pivot of the existential construction and the other of which must invariably have wide scope. The reason is that in our theory, both types of indefinites would be composed via Specify, differing only in the details of existential closure. But in a given language, closure must either be freely available or else available only as a last resort—not both.

This strikes us as a clear prediction of our approach. We have no idea whether it is correct.

In sum, our approach to indefinites in Maori can be generalized to some other language-specific indefinites with a limited distribution. But it cannot account for every conceivable system of such indefinites. Whether this is a positive or negative aspect of our theory remains to be seen.
Notes

1. Standard grammars and dictionaries of Maori translate both *he* and *tētahi* as English ‘a’. Whether the literature considers these articles to be indefinite is a more complex issue. While A. T. Ngata (1964: 13) explicitly identifies both articles as indefinite, W.L. Williams (1923[1862]: 16-17) refers to them as definitives. Williams’s full list of definitives reveals that he uses this term like generative linguists use the term *determiner*. Biggs (1969) uses the term definitive to refer to morphologically complex determiners formed from the definite article *te* ‘the’. In his classification, *tētahi* is a definitive but *he* is not. It is unclear whether Biggs thought of this as a morphological term, a semantic term, or both. Bauer (1993: 110) refers to both *he* and *tētahi* as indefinite. However, in later work (1997: 164-169), she suggests that the primary function of Maori determiners is not to signal (in)definiteness but rather the contrast between type of object versus individual object(s).

2. Two points. (i) It is often observed that cardinal numbers in Maori can precede or follow N within the noun phrase. In fact, cardinal numbers have the syntax of adjective predicates. When a cardinal number follows the head noun, it is, as Bauer (1997: 279) notes, typically the predicate of a relative clause. When a cardinal number precedes the head noun, it can usually be analyzed as a higher predicate that takes the noun phrase as its subject. We say ‘usually’ because the syntax of numbers, already a complex area of Maori syntax, has been complicated further by interference from English; see Bauer (1997: 275-289) for discussion. (ii) The entry for *tahi* in H.W. Williams’s *Dictionary of the Maori Language* (1971[1844]: 359) gives the meaning of *te tahi* as (not ‘the one’ but rather) ‘the first (month)’.
3. A further syntactic difference between *he* and *tētahi* is that *tētahi*’s complement can undergo NP ellipsis, but *he*’s complement cannot. Among the other Maori determiners whose complements can undergo NP ellipsis are the demonstratives and the possessive pronouns but not the definite articles. The pattern is reminiscent of the English pattern of NP ellipsis.

4. Bauer (1997: 33-34) identifies a further construction used to express ‘have’, which she refers to as the existential possessive. Her discussion reveals that this construction differs from other existentials in that there is no argument that exhibits a definiteness effect. Instead, the subject is a definite noun phrase that includes a possessor and the predicate is a noun phrase introduced by *he*. If the possessor combines with the definite article to form a complex determiner, NP ellipsis is possible:

(a) He hōiho tōna.
   Pred.a horse his
   He has a horse (lit. his (possession) is a horse). (Bauer 1997: 33)

5. Sentences that contain the nonverbal predicate *tērā* ‘over there’ are sometimes translated as existential sentences in English. But we do not analyze them as existential sentences in Maori, since—among other things—they do not exhibit a definiteness effect. A related sentence type containing *tērā* is analyzed by Bauer (1997: 660-601) as a preposed adverb construction in which the subject can raise to a position right after the adverb. As Bauer points out, this construction is sometimes used to introduce new protagonists into the discourse. But it too does not exhibit a definiteness effect. Consider

(a) Tērā [te ara pōharuha] e ahu ana ki te one.
   over.there the road muddy  T lead to the beach
   There is a **muddy** road leading to the beach. (H.M. Ngata 1994: 290)
(b) Te ōraia [ia] e whānau tamariki.
over.there again she T give.birth children
(This was her way of saying that) she would have more children.
(Jones & Biggs 1995: 109 [13.2])

(c) Te ōraia te hungawai tāne o Toa-angina kua mau herehere
over.there the in.law male of Toa-angina T be.taken prisoner
Shortly before this they had captured Toa-angina’s

i a rātou i mua tata atu.
Cause Pers them at front near away
father-in-law. (Jones & Biggs 1995: 293 [46.14])

6. The verb *ai* occurs in several fixed expressions in modern Maori, e.g. *e ai ki te kōrero* ‘it is said, people say’.

7. The negative *kāhore* is also the negative most often stranded in the Maori version of Stripping, the ellipsis process that otherwise leaves behind only a noun phrase. (The English version of Stripping produces sentences of the type *Jill likes pizza, but not Jack.*) Though Maori examples of Stripping involving a negative may look superficially like negative existentials, they are not existential sentences and do not exhibit a definiteness effect.

8. For their judgements on the use of indefinites in negative existential sentences, we are indebted to J.W. Milroy, Tamati Reedy, and the late Bruce Biggs. We also acknowledge Ray Harlow and the late Bruce Biggs for their help and support.

Two further points: (i) The claim that *he* indefinites but not *tētahi* indefinites can be pivots of the existential construction is implicitly supported by our reading of many hundreds of pages of Maori material (most of it accompanied by English translation). These sources contain hundreds of examples of existentials in which a *he* indefinite serves as the pivot. But we have found only one example in which a *tētahi* indefinite serves as the pivot:
(a) Ka kai a au i te mātene mehemea anake kaore [tētahi atu momo mīti].

I only eat mutton if there is no other kind of meat available.

(H.M. Ngata 1994: 292)

Notice that tētahi atu momo mīti ‘another kind of meat’ denotes a kind. If kinds are analyzed as properties, as suggested by McNally (1992), this example is not problematic for the proposal in the text.

(ii) In Maori, noun phrases with plural preposed possessors can occur as pivots of the existential construction. An example is:

(b) Kaore aku moni.

I’ve got no money. (H.M. Ngata 1994: 246, kind)

Ray Harlow has observed (personal communication) that noun phrases of this sort have an indefinite construal as well as a definite construal. We claim that the indefinite construal is required in examples like (b).

9. Though the classification of predicates as unaccusative or unergative has semantic correlates, it is not a purely semantic classification (see Perlmutter & Postal 1984, C. Rosen 1984, and Levin & Rappaport 1995). Bauer’s (1997: 148-149) remarks concerning the ability of the motion verb rere ‘run, rush’ to have a subject introduced by he should be read in this light.

10. Although (53a) is grammatical as a cleft construction, that is irrelevant. Bauer (1991) argues that cleft constructions in Maori are complex constructions in which the focus (introduced by ko) is a higher predicate and the rest of the construction is its subject, a null-headed relative clause (see also Bauer 1993: 220-221 and 1997: 665-667). On this analysis, the grammatical reading of (53a) is one in which he introduces the noun phrase predicate of the null-headed relative clause, so the sentence literally means ‘The
one who was a true leader of Nga Puhi was Kawiti’. See Section 2.7.2.

11. Biggs (1997: 3) observes that the internal argument of a transitive verb in the actor-emphatic construction can be a *he* indefinite.

(a) Mā-u pea e tiki he wai mo tātau?  
T.of-you perhaps T.fetch a water T.of us  
Won’t you fetch some [water] for us? (Orbell 1992: 43)

This construction is probably a complex sentence type and the internal argument is probably a derived subject; see e.g. Chung (1978: 175-183), Bauer (1997: 501-507), and others.

12. As shown by CMM but not discussed in the text, the specificity constraint does not hold in quantificational constructions. One example is given below; see CMM for others.

(a) Kōrero ana [he wahine], whakaturi ana ia i a ia.  
speak a woman make.deaf he DO Pers himself  
When a woman speaks, he makes himself deaf.

One way of accounting for this is to reconfigure the specificity constraint as a constraint on judgement types, in the sense of Brentano (see Ladusaw 1994). We would say that in Maori, every sentence with an external argument must express a categorical judgement. Obviously, to pursue this here would take us too far afield.

13. Some of the English translations of the examples in this subsection have been altered from the original to make it more transparent which Maori constituent is the subject and which, the predicate.


15. The only clear independent evidence that *ko* is a preposition is that it
marks future location in North Auckland dialects (Bauer 1997: 222). Some apparent morphosyntactic evidence that *ko* is a preposition is provided by the fact that, like some other prepositions, it cannot be followed by the personal article *a* (Bauer 1997: 28). However, this last fact can also be described in purely phonological terms: immediately following a proclitic that ends in a vowel other than /i/, the personal article is not pronounced.

16. Notice that the discussion in Sections 2.6.1 and 2.6.2 makes a prediction about the ability of the two types of indefinites to occur as subjects of predicational noun phrase predicates—i.e. predicates introduced by *he*. Recall that for us such predicates are individual-level, so their subject is an external argument. We therefore predict that such a subject can be a *tētahi* indefinite. But, thanks to the specificity constraint, it should be able to be a *he* indefinite only in quantificational constructions (see note 12).

Initial investigation suggests that this prediction is realized. *Tētahi* indefinites can indeed be the subjects of noun phrase predicates introduced by *he*. One example is (52b) in the text; another is given below.

(a) He tītī tētahi kai tino reka ki te korokoro Māori.
   Pred.a muttonbird a food very sweet to the throat Māori
   A food quite tasty to Māori palates is muttonbird. (Waititi 1974: 117)

On the other hand, the only textual examples we have found in which a *he* indefinite serves as the subject of a *he* predicate are quantificational constructions. Two examples are cited below.

(b) He aha kē atu he kōrero māku?
   Pred.a what? else away a speech T.of.me
   What else could I say? (H.M. Ngata 1994: 123)
At all times, someone was placed on the hill:

haŋa kaitataara.
so.as lookout
as a lookout. (H.M. Ngata 1994: 261)

17. We are grateful to Tamahou Temara, Information Of®cer at the Te Papa Tongarewa Museum of New Zealand, for answering our e-queries about the use of he and teŋa on identifying labels for exhibit objects.

18. In addition, noun phrases on identifying labels can be de®nite or preceded by ko.

19. English bare plurals also have a generic interpretation. So do Maori indefinites headed by he, as we saw in Section 2.3.2.

20. In Matthewson’s view (1999: 105), St’āt’imcets has no de®nite determiners—only indefinite determiners. But she also shows (1999: 108-109) that the expressions she calls wide-scope indefinites can be associated with discourse referents that are familiar or unique. It is not clear to us what empirical differences there are between her view and the hypothesis that so-called wide-scope indefinites are ambiguous between a de®nite interpretation and a wide-scope indefinite interpretation.
CHAPTER 3. OBJECT INCORPORATION IN CHAMORRO

In Chapter 2 we presented some Maori evidence for our theory of restriction and saturation. We argued that the two types of indefinites in Maori differ in their mode of composition: indefinites headed by *he* are entered into composition via Restrict, whereas indefinites headed by *tētahi* are entered into composition via Specify. The difference explains the otherwise puzzling distribution of *he* and *tētahi*—a distribution that involves substantial overlap as well as some telling differences. The analysis confirms a key prediction of our theory. If semantically incomplete noun phrases can be composed via different operations, then one might expect that the morphosyntax could explicitly signal which composition operation to employ. Maori *he* versus *tētahi* offers just such a case.

This Chapter examines another key prediction of our theory, one concerned with saturation. Consider our claim that there are modes of composition that can target a predicate’s argument without saturating it. Specifically, when a semantically incomplete noun phrase is composed with an argument via Restrict, the argument is narrowed in meaning but the predicate’s degree of unsaturation is not reduced. If that is so, one might expect the argument to be available in principle for saturation by the meaning of a further noun phrase.

Our theory thus leaves open a door usually assumed to be completely closed. Since Frege 1997[1862], semantic approaches to predication have assumed that the composition of an expression with a predicate’s argument automatically saturates the argument—makes it semantically complete. The predicate’s degree of unsaturation is reduced, and further composition with respect to the argument is precluded. The assumption is pervasive even in the strand of research that seeks to analyze indefinites as
property-denoting (for recent examples, see Farkas 1997, van Geenhoven 1998, and de Swart 2001). In syntactic approaches to predication, roughly the same assumption can be discerned in the principles that ensure a one-to-one mapping between semantic roles and syntactically characterized expressions, such as GB’s Theta Criterion (Chomsky 1981) and LFG’s Completeness and Coherence Principles (Bresnan 1982).

In contrast, we predict that it should be possible for an argument to be linked to, and coherently composed with, more than one expression—a scenario that we refer to as **multiple linking**. The possibility arises because our theory distinguishes between composition operations on the one hand and the issue of semantic completeness on the other. But we also claim that the only nonsaturating mode of composition is Restrict, which composes an argument with the property supplied by a semantically incomplete noun phrase. The claim leads to a more refined prediction. For multiple linking to succeed, all expressions composed with the targeted argument, except the last, must be composed via Restrict and hence must be semantically incomplete. Otherwise, the result will be oversaturation of the argument—a forbidden outcome.

Multiple linking as we have just characterized it is obviously not the norm. Typically, the syntax and the semantics conspire to make available exactly one expression to be composed with a targeted argument, so that the mapping between arguments and expressions appears to be one-to-one. We nonetheless believe that multiple linking does occur, under just the conditions predicted by our theory. The purpose of this Chapter is to support our contention with evidence from Chamorro, an Austronesian language of the Mariana Islands.

Like many other Austronesian languages, Chamorro has a version of the construction known as object incorporation. Consider (1), in which the incorporating
verb is \textit{gāi}—‘have’ and the incorporated object is surrounded by brackets.

(1)a. Man-gā-[ga'] hām.
   agr-have-pet we
   We have pets.

b. Hayi gā-[patgun]?
   who WH[nom].agr.have-child
   Who has a child?

What is distinctive about Chamorro incorporation from an Austronesian perspective is that the incorporated object can be doubled by an independent noun phrase, which we refer to as the \textit{extra object}. In (2), the extra object appears in boldface.

(2)a. Gāi-[ga'] yu’ kätu, lao matai.
   agr-have-pet I cat but agr.die
   I had a pet cat, but it died.

b. Hayi gā-[patgun] hao?
   who? WH[nom].agr.have-child you
   Whose child are you (lit. Who has a child, namely, you)?

This Chapter investigates the syntax and semantics of Chamorro object incorporation, with the goal of establishing three points. First, the incorporated object is semantically incomplete in our terms: it denotes a property rather than an individual or a generalized quantifier. It can therefore be composed via the nonsaturating mode Restrict. Second, the extra object is not a syntactic complement of V, but instead is an adjoined constituent. Third and finally, both the incorporated object and the extra object are composed with the same argument—the verb’s internal argument. This triad of results conforms perfectly to the expectations of our theory, since our theory predicts the possibility of compositions in which an argument is restricted by one expression—here, the incorporated object—and can then be saturated by another—the extra object.

Section 3.1 offers a bit of background on Chamorro grammar. Section 3.2
introduces incorporation in Chamorro, while Section 3.3 establishes that the incorporated object is semantically incomplete. Sections 3.4 and 3.5 investigate the syntax and semantics of the extra object. Our strategy in these Sections is to build a case that the extra object is not a syntactic complement of V but nonetheless is composed with the verb’s internal argument. Section 3.6 presents our account and contrasts it with some alternatives offered by other approaches. Section 3.7 takes a closer look at restriction without saturation. We use evidence from Chamorro and Maori to identify the point in the compositional process at which unsaturation must be resolved and semantic completeness achieved. Finally, Section 3.8 concludes.

A word about syntax before we begin. The analysis of Chamorro incorporation to be constructed in this Chapter relies on evidence from syntax as well as semantics. But we do not fully explore the syntax of incorporation in this language. Nor do we take a firm stand on the issue that has engaged students of noun incorporation since Kroeber (1909; 1911) and Sapir (1911), namely, whether the incorporated noun has a syntactic life independent of the complex verb containing it. For our purposes, it does not much matter what module of grammar is responsible for deriving the complex verb of incorporation clauses. We discuss some of the evidence favoring a syntactic derivation in Appendix A.

3.1 A Dash of Chamorro Grammar

Like its distant relative Maori, Chamorro is both a head-initial language and a null argument language. Clauses are projected from a category Infl(ection) which occurs at the left and indicates tense-aspect-mood. This category is followed by the predicate, which can be of any category type, and then by the predicate’s arguments. Consider the
examples below, which illustrate various realizations of Infl as well as predicates that are verbs (3a-b), adjectives (3c), and nouns (3d).

(3)a. Ginin pumuti i kannai-ña.  
Imperf agr.be.hurt the hand-agr  
His hand had gotten hurt.

b. Debi di ta-abiba maseha díkiki’ na hatdin.  
ought agr-encourage any small L garden  
We should all tend some sort of small garden.  (Saipan Tribune 12/15/98)

c. Parehu ha’ yan iya Kagman yan Matuis.  
agr.same Emp with Kagman and Matuis  
[As Gonno] is like Kagman and Matuis.  (Saipan Tribune 11/23/99)

d. Sais añas idat-ña i pätgun.  
six years age-agr the child  
The child’s age was six years.  (Onedera 1994: 21)

When the predicate is a noun or preposition, it is followed first by its complements and then by the subject. When the predicate is a verb or adjective, word order is more flexible, but the unmarked and most frequent order is Verb-Subject-Object-Other Arguments.

(4)a. Ha-konni’ esti i dos ma’estru istudianti-nñiha pära ufan-hanao  
agr.take this the two teacher student-agr Fut agr-go  
These two schoolteachers took their students on an outing  
pära Sadduk yan Milak Sigua.  
to River and Falls Sigua  
to Sigua River and Falls.  (Onedera 1994: 59)

b. Pumoddung huyung dos na granu pugua’ gi ädyu i matitik, gi kestat.  
agr.fall out two L piece betelnut Loc that the torn Loc sack  
Two betelnuts fell out of that torn thing, out of the sack.

Following Chung (1998), we adopt a view of Chamorro clause structure in which the subject occupies Infl’s specifier, which is projected to the right. Once again, we can
afford to remain agnostic on the derivation of surface word order. But see Chung (1998) for evidence that VSO arises when the subject is lowered to adjoin to the right of a verb or adjective.

The inflectional morphology of clauses will be important in what follows. Predicates in Chamorro are inflected for progressive aspect via reduplication. In addition, predicates that are verbs or adjectives are inflected for the person and number of the subject via agreement prefixes (or infixes) that also indicate tense, mood, and finiteness. It will be relevant later that there are two agreement paradigms: one for transitive verbs (= verbs with a surface direct object) and the other for intransitive verbs and adjectives. In the examples in (5), the verbs *li’i* ‘see’ and *tungu* ‘know’ are inflected with agreement from the transitive paradigm, while the other predicates are inflected with agreement from the intransitive paradigm.

(5)a. Ha-li’i’ si tata-hu na tumótohgi gi pāpa’ trongku-n niyuk.
   agr-see Unm father-agr Comp agr.stand.Prog Loc under tree-L coconut
   She saw my father standing under a coconut tree. (Cooreman 1982: 6)

b. Pues maolik yānggin ti ma’a’ñao hao sa’ maolek-ña ha’
   so agr.good if not agr.afraid you because agr.good-Compar Emp
   So it’s good if you’re not afraid, because it’s better too

   lokkui’ na un-tungu’.
   also Comp agr-know
   that you know (it). (*Anakko’ Despidida* 7)

Definite arguments and some adjuncts are inflected for morphological case, via particles that occur at the left edge of DP and are sometimes fused with the definite article. There are three morphological cases. The unmarked case is used for subjects, direct objects, possessors, and most objects of prepositions, as well as DP’s that are topic or focus. The local case is used for locative and temporal phrases. The oblique case is
used elsewhere. Some grammatical relations, including subject and direct object, are signaled by case marking alone. Others are signaled by case marking plus a preposition.

(6) Si Manglona ilek-ña na fuera ha’ di i katta-nña finene’na guåtu
    Unm Manglona say-agr Comp besides Emp the letter-agr first there
    Manglona said that besides his first letter to
    gias Winkel gi Juniu, ha-tugi’i tâ’lu i High Commissioner.
    Loc Winkel Loc June agr-write.to again the High Commissioner
    Winkel in June, he had written to the High Commissioner again.
    (Marianas Variety 12/4/79)

Also important will be the internal structure of noun phrases. Once again, we assume that the category informally known as the noun phrase is a DP, headed by the category D(eterminer), which occurs at the left. Chamorro has a standard inventory of determiners. Among the realizations of D are the definite article i, the null indefinite (nonspecific) article, the demonstratives, pâlu ‘(contrastive) some’, the strong quantifiers todu ‘all’ and kâda ‘each’, and various weak determiners that also function as adjectives (see Chung 1998).

(7) a. i fina’denni’
    the hot.sauce
    the hot sauce

b. âdyu i palao’an
    that the woman
    that woman

c. meggai na biahi
    many L time
    many times

To the right of D is its complement, NP, which we take to consist of N followed by N’s complements. Notice that adjectives, relative clauses, and other nominal modifiers must follow D but can adjoin to either side of NP. These word order options
are evidence that N and its complements form a maximal projection from which D is excluded.

(8)a. ädyu i [yä-hu] na lepblu that the WH[obj].like-agr L book that book which I like

b. ädyu i lepblu [ni yä-hu] that the book Comp WH[obj].like-agr that book which I like

c. i [yänggin mattu i batku siha] na hotnát the if agr.arrive the ship Pl L work the work when the ships came in (Cooreman 1983: 88)

d. ni háfäfa ha’ na distrosu [fïña’tinas-ña i gera]. not any Emp L destruction WH[obj].make-agr the war no destruction that the war had wrought (Cooreman 1983: 176)

Farther to the right within DP is the possessor, which bears a certain morphosyntactic resemblance to the subject of a clause. Like a subject, the possessor occurs in the unmarked morphological case, and N is inflected for its person and number via agreement suffixes. Further, just as the subject typically separates V from its complements in surface word order, the possessor must separate N from its complements. The word order of arguments within DP, in other words, is N-Possessor-Other Arguments.

(9)a. i haga-nmami the daughter-agr our daughter

b. i bisita-ña si Francisco as Teresa the visit-agr Unm Francisco Obl Teresa Francisco’s visit to Teresa

Following Abney (1987) (see also Chung 1998), we claim that the possessor occupies the
specifier of D, which is the position within DP analogous to the subject’s position within
IP. This claim will be crucial later.

3.2 Incorporation

We turn next to object incorporation.

Chamorro has two existential verbs, guåha ‘exist’ and taya’ ‘not exist’, which
occur in a familiar kind of impersonal construction (see Chung 1987). In this
construction, the subject is a null expletive and the existential verb has an internal
argument that exhibits the definiteness effect.

(10)a. Guåha famagu’un gi giput.
     agr.exist children     Loc party
     There were children at the party.

     b. Gi mismu tiempu, guåha parehu na sinisedi giya Solomon Islands.
        at same time agr.exist same L experience Loc Solomon Islands
        At the same time, there’s a similar thing happening in the Solomon
        Islands. (Saipan Tribune 6/20/00)

     c. Debi di u-guåha más industria fuera ki turista yan magagu.
        ought agr-exist more industry except tourist and clothing
        There should be more industries aside from tourism and the garment
        industry. (Saipan Tribune 8/3/99)

     d. Gi paingi taya’ guini ni únunu ha’.
        Loc last.night agr.not.exist here not one Emp
        No one was here last night.

When the verb’s internal argument is a DP with a possessor in its specifier, the
construction expresses existential ‘have’ (see e.g. Keenan 1987).

(11)a. I taotao mo’na guåha tanu’-ñiha yan lugat-ñiha.
     the people first agr.exist land-agr and place-their
     The ancient spirits have their lands and places (lit. As for the ancient
     spirits, there are lands and places of theirs). (Cooreman 1982: 1)
b. Guāha gá’-ña kātu si Jose.
   agr.exist pet-agr cat Unm Jose
   Jose has a pet cat.

c. Taya’ chansa-kku mu-na’lu tatti.
   agr.not.exist chance-agr In®n-return back
   [The doctors kept saying that] I had no chance of coming back [to life].
   (Saipan Tribune 8/12/99)

Existential ‘have’ can also be expressed by two verbs of possession, gāi- ‘have’
and tāi- ‘not have’, which are morphologically related to guāha and taya’. These verbs
of possession select two arguments, a possessor and an internal argument corresponding
to the possessed. The possessor argument is linked to the subject DP. The internal
argument, we claim, is linked to an object that must be incorporated. Consider

   agr.have-children that L woman
   That woman has children.

b. Kāna ha’ todus man-gāi-[kommun sanhālum].
   almost Emp all agr-have-toilet inside
   Almost all [residents] have indoor toilets. (Saipan Tribune 5/30/00)

c. Tāi-[problema] i próhimu.
   agr.not.have-problem the fellow
   The guy had no problem [spelling Saipan]. (Saipan Tribune 12/16/99)

From a crosslinguistic standpoint, object incorporation in Chamorro conforms to
some familiar patterns. To begin with, incorporation is productive. Although the verbs
of possession are the only two Chamorro verbs to serve as hosts of incorporation, the
construction is fully productive as far as the incorporated object is concerned. The N of
the incorporated object can be any common noun at all, including relational nouns as
well as a wide range of other concrete and abstract nouns, whether indigenous or
borrowed words. The list below is intended to give some sense of the range of
possibilities.

(13)  tái-[familia]  ‘have no family’
gäi-[nana]  ‘have a mother’
gäi-[tali]  ‘have a rope’
gäi-[balakbak]  ‘have luggage’
gäi-[hugeti]  ‘have a toy, have toys’
gäi-[iyu]  ‘have a possession’
gäi-[tiyan]  ‘have a stomach’
täi-[tanu’]  ‘have no land’
gäi-[giput]  ‘have a party’
gäi-[salappi’]  ‘have money’
gäi-[malinik]  ‘have a headache’
gäi-[nina’siña]  ‘have power’
täi-[rispetu]  ‘have no respect’
gäi-[madduk]  ‘have a hole’
gäi-[tiempu]  ‘have time’
täi-[bali]  ‘have no value’

Further, as in Greenlandic (see e.g. Sadock 1980), incorporation has phonological consequences: the verbs of possession are realized not as independent words but rather as stressed prefixes attached to the N of the incorporated object. The resulting complex word is nonetheless a verb, since it has all the morphological trappings of verbs, including inflection for tense-aspect-mood and finiteness, morphological agreement with the subject, and so on (14a-b). It also, like other verbs, has a morphological causative form (14c).

(14)a.  Un dia siña ha’ gumäi-[familia] hao.
      one day can Emp agr.have-family you
      One day you might come to have a family.  (Saipan Tribune 8/31/99)

    if    Unreal agr-listen me agr-not.have-problem now
    If you had listened to me, you wouldn’t have problems now.
c. Hagu ha’ yu’ mu-na’-gāgai-[sālappi’].  
   you Emp me WH[nom]-make-have-money.Prog  
   It’s because of you that I have money (lit. You cause me to have money).

Finally, incorporation clauses are intransitive, and this is transparently revealed by the morphosyntax. The complex verb’s agreement with the subject must be chosen from the intransitive paradigm.

(15)a. Man-gāi-[famagu’un].  
   agr-have-children  
   They have children.

b. Lāmeggai pāra ufan-tāi-[che’chu’] dispues.  
   a.little.more Fut agr-not.have-work later  
   Even more people will have no work later.  
   *(Saipan Tribune 6/13/00)*

Compare the realizations of agreement in (15) with those exhibited by the intransitive verbs in (16) and the transitive verbs in (17).

(16)a. Man-malagu.  
   agr-run  
   They ran.

b. Pāra ufan-malagu.  
   Fut agr-run  
   They will run.

(17)a. Ma-bāba i petta.  
   agr-open the door  
   They opened the door.

b. Pāra uma-baba i petta.  
   Fut agr-open the door  
   They will open the door.

Further, if the subject is pronominal, it can be realized as a weak pronoun (see (18)). This is an option available only to subjects of intransitive clauses, as the examples in (19)
are intended to suggest.

    agr-have-car  we
    We own a car.

    b. Tāi-[pasiensia] hāo! 
    agr-not.have-patience  you
    You have no patience!

(19)a. Man-mamokkat hām tatti. 
    agr-walk  we  back
    We walked back.

    b. In-silébra (*hām) i giput. 
    agr-celebrate.Prog  we  the party
    We were celebrating the party.

The intransitivity of incorporation clauses argues that the incorporated object is not a surface direct object—not, in other words, a DP complement of V. The intuition has been explored many times in the literature (see e.g. Mithun 1984, Baker 1988, and others). Let us now try to flesh it out for Chamorro.

3.3 The Incorporated Object is Semantically Incomplete

Crucial to the account of Chamorro developed in this Chapter is our claim that the incorporated object is semantically incomplete: it denotes a property rather than an individual or a generalized quantifier. This claim is supported by syntactic evidence that reveals that the incorporated object—more precisely, the nominal phrase in which the incorporated N originates—is NP but not DP. We present the evidence here.

To begin with, the incorporated object can be larger than just N. It can be a compound noun, as (20) shows.
(20)a. Kao gàï-[batku-n airi] hao?
   Q agr.have-ship-L air you
   Do you have an airplane?

b. Yânggin tâi-[insurance hinemlu’] hao
   if agr.not.have-insurance health you
   If you don’t have health insurance (*Saipan Tribune* 8/19/99)

The incorporated object can also consist of a noun followed by modifiers of
various sorts. In (21), the modifier is the noun phrase *hayu* ‘wood’. Notice that we have
bracketed the entire incorporated object, including the modifier.

(21) Man-gâï-[guma’ hayu].
   agr.have-house wood
   They have a wood house.

In (22), the modifiers are adjective phrases: a simple adjective in (22a) and adjective
phrases with more elaborate internal structure in (22b-c).

(22)a. Si Miguel tâi-[kareta asut].
   Unm Miguel agr.not.have-car blue
   Miguel doesn’t have a blue car.

b. Malâgu’ yu’ gumâï-[amigu siha taiguennao giya hagu].
   agr.want I Infin.have-friend Pl like.that Loc you
   I want to have friends like you.

c. Ti prisisu na un-gâï-[kabesanti kalaktus taiguhi i scientist]
   not agr.necessary Comp agr-have-mind sharp like.that the scientist
   It’s not necessary for you to have a mind as sharp as a scientist’s
   pära un-kumprendi.
   Fut agr-understand
   for you to realize [this]. (*Saipan Tribune* 12/8/98)

In (23), the modifiers are relative clauses.
(23)a. Sueddu-ni nuebu na man-utuhun ni täi-[edukasion salary-L the new L AP-start Comp WH[nom].agr.not.have-education

[The minimum wage] is the salary of new starting [workers] who don’t

ni maolik].
Comp WH[nom].agr.good

have an education that is good. *(Saipan Tribune 9/14/99)*

b. Täi-[amiga ni yä-hu] si Carmen.
agr.not.have-friend Comp WH[subj].like-agr Unm Carmen

Carmen has no women friends who I like.

(24)a. Ni bangku täi-[kunfiansa gi check gubietnu].
even bank agr.not.have-confidence Loc check government

Even banks don’t have confidence in government checks.
*(Saipan Tribune 3/6/01)*

b. Todu i taotao ni man-gäi-[nisisidat put gualu’], ha-midídiyi.
all the person Comp WH[nom].agr-have-need for farm agr-survey.for

All the people who had need for farmland, they would survey for.
*(Cooreman 1983: 53)*

c. Ni unu gäi-[aturidat mam-a’tinas areklu].
not one WH[nom].agr-have-authority Infin.AP-make rule

No one has any authority to make rules. *(Saipan Tribune 6/1/99)*

The incorporated object can even contain a coordinate structure. Depending on
how (25a) is parsed, the incorporated object is either a noun modified by conjoined
nominals or else itself a coordinate NP. In examples of type (25c), which are acceptable
to some speakers, the incorporated object is unambiguously a coordinate NP.

(25)a.  
ädyu siha i man-gäi-[chetnut kurason yan diabetes]  
that Pl the WH[nom].agr-have-wound heart and diabetes  
those who have heart disease and diabetes (Saipan Tribune 1/20/00)

b.  
Kao man-gäi-[fotgun kandit yan kahun ais] siha?  
Q agr-have-stove electricity and box ice they  
Do they have an electric stove and a refrigerator?

c.  
Gäi-[rilos oru yan guäguan na alahas siha].  
agr.have-watch gold and expensive L jewelry Pl  
She has a gold watch and expensive jewelry.

The full range of expansions points to the conclusion that the incorporated object has at least the internal structure of NP.

At the same time, the incorporated object is clearly smaller than DP. It cannot be headed by an overt determiner, such as the demonstrative in (26a) or the universal quantifier in (26b).

(26)a.  
*Kao hagu gäi-[ädyu na kareta]?  
Q you WH[nom].agr-have-that L car  
(Do you own that car?)

b.  
*Si Juan gäi-[todu i läpis].  
Unm Juan agr.have-all the pencil  
(Juan has all the pencils.)

Nor can it consist of any of the pro-forms widely assumed to occupy D, such as personal pronouns (see e.g. Postal 1969a) or interrogative pronouns.

(27)a.  
*Pära un-gäi-[häm].  
Fut agr-have-us  
(You would have us.)
b. *Gāi-[hafa]?
   agr.have-what?
   (What does he have?)

c. *Gāi-[kuantu na famagu’un] hao?
   agr.have-how.many? L children you
   (How many children do you have?)

Finally, the incorporated object cannot contain a possessor, even one whose presence is
signaled only by morphological agreement (see (28b)).

   Unm Antonio agr.have-car-L Dolores
   (Antonio has Dolores’ car.)

   agr.have-book-agr I
   (I have your book.)

If we maintain that possessors occupy the specifier of D, then the ungrammaticality of
the null possessor in (28b) serves to confirm that the incorporated object is not DP—or,
for that matter, any projection of D.

In short, as far as internal structure is concerned, the incorporated object is NP but
not DP. Let us continue to assume that this NP is composed with the verb’s internal
argument but finesse all related syntactic questions, including the question of how the N
of the incorporated object comes to combine morphologically with V. (For some
evidence that syntactic head movement is involved, see Appendix A.) This minimal
commitment to the syntax puts the focus on the point of greatest relevance to us: as a
NP, the incorporated object is property-denoting and therefore semantically incomplete.
3.4 The Extra Object

The plot now thickens. Alongside the structures just exhibited, Chamorro also permits the incorporated object of *gäi*- or *täi*- to be doubled by an independent noun phrase. This amounts to saying that Chamorro has a version of what Mithun (1984) called classificatory noun incorporation (CNI). Consider the examples below, which are also intended to suggest that the extra object has all the internal structure of DP. In (29a), the extra object is *un ga’lagu* ‘a dog’; in (29b), the bare indefinite *kadena* ‘necklace’; and in (29c), *i finañagumu* ‘your offspring’.

(29)a. Gäi-[ga’] un ga’lagu ennao na patgun.
   agr.have-pet a dog that L child
   That child has a pet dog.

   b. Si Margarita täi-[iyu] kadena.
      Unm Margarita agr.not.have-possession necklace
      Margarita doesn’t have a(ny) necklace.

   c. Lao hayi gäi-[patgun] i finañagu-mu ?
      but who? WH[nom].agr.have-child the offspring-agr
      But who does your child belong to (lit. Who has your offspring as child)?
      (Saipan Tribune 8/10/99)

As is typical of CNI, the extra object in these incorporation structures looks morphologically like a direct object—more precisely, like a DP complement of the complex verb. The extra object occurs in the unmarked morphological case, which is realized as *si* for proper nouns but not overtly realized otherwise. Compare the extra objects in (30) with the ordinary direct objects in (31).

(30)a. Hämi gäi-[ga’] ennao na ga’lagu.
       we WH[nom].agr.have-pet that L dog
       We own that dog.
Further, if the extra object is pronominal, it can be realized as a weak pronoun. Compare the extra objects in (32) with the ordinary direct objects in (33).

(32)a. Hayi gäi-[ma’estra] hao?
who? WH[nom].agr.have-teacher you
Whose teacher are you?

b. Si Julia yu’ gäi-[patgun].
Unm Julia me WH[nom].agr.have-child
Julia has me as child.

(33)a. Hayi um-ayuda hao?
who? WH[nom]-help you
Who helped you?

b. Ni unu yu’ um-ê’e’kunguk.
not one me WH[nom]-listen.Prog
No one was listening to me. (Saipan Tribune 7/1/99)

Although the morphological profile just illustrated is not unique to direct objects, it is limited to argument DP’s, subjects and direct objects in particular. That might make it tempting to assume that the extra object simply is the direct object of an incorporation clause. We argue below, however, that such an assumption cannot be correct. Other morphological evidence, and all the syntactic evidence, converges to reveal that the extra object is not a complement of V.
3.4.1 The Extra Object is a Syntactic Adjunct

Consider, to begin with, the evidence against direct objecthood that is supplied by verb agreement. If the extra object were a DP complement of the complex verb, we would expect the verb’s agreement with the subject to be chosen from the transitive paradigm. But the verb is consistently inflected with agreement from the intransitive paradigm, whether or not an extra object is present. Compare (15) with the following.

    we WH[nom].agr-have-clothes the WH[nom].agr.be Loc top chair
    We are the ones whose clothes are on the chair.

b. Man-gāi-[ga’] hām nuskuantus ga’lagu yan in-pépeksai siha.
    agr-have-pet we several dog and agr-raise.Prog them
    We have several dogs and are raising them.

The agreement pattern suggests that the extra object is not a direct object after all.

The conclusion is confirmed by three convincing pieces of syntactic evidence that the extra object is not a complement of V.

First, the extra object differs from a complement of V in that it is inaccessible to movement. Like English, Chamorro freely allows complements of V to undergo Wh-movement (see Chung 1998 and the references cited there). Direct objects are eligible for movement in the standard Wh-constructions, which in Chamorro include constituent questions (such as (35a)), focus constructions (35b), and relative clauses (35c).

(35)a. Hafa na atumobit i chi’lu-mu lahi ha-súsugun t?
    what? L car the sibling-agr male WH[OBJ].agr-drive.Prog
    Which car was your brother driving?
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b. Tres na famagu’un Dolores in-li’i’ t.
   three L children Dolores WH[OBJ].agr-see
   It was three of Dolores’ children that we saw.

c. Kao guāha [siha más [ni ti fina’na’gue-mmu t]]?
   Q agr.exist Pl more Comp not WH[OBJ].teach-AGR
   Is there anyone who you haven’t taught?

PP complements of V can undergo Wh-movement in constituent questions (36a) and focus constructions (36b), although they cannot be relativized.

(36)a. Ginin hayi na ma-sakki ennao i kareta t?
   from who? Comp agr-steal that the car
   From whom did they steal that car?

b. Ginin i famagu’un na in-kenni’ i ga’lagu t.
   from the children Comp agr-take the dog
   From the children we took the dog.

Now if the extra object were a complement of V, then it too should be eligible for Wh-movement. But, contrary to expectations, when the extra object is moved, the result is severely ungrammatical—almost unparsable. Consider the following.

(37)a. *Manu gāi-[kareta] t si Antonio?
   which? WH[OBJ].agr-have-car Unm Antonio
   (Which car does Antonio own (lit. Which does Antonio have as car)?)

b. *Hafa nalepblu gāi-[iyo]-mmu t?
   what? L book WH[obl].have-possession-AGR
   (Which books do you have?)

c. *Tres guihi na kätu gāi-[ga’] t.
   three there L cat WH[OBJ].agr-have-pet
   (Three of those cats, he has (as pets).)
d. *Kao guåha [famagu’un siha guini [ni pära Q agr.exist children Pl here Comp Fut
(Are there any children here who you will
un-gäi-[istudianti] t ]? WH[obj].agr-have-student
have as students?)

e. *Guåha [tres ha’ na taotao [ni si Antonio täi-[parentis] t ]). agr.exist three Emp L person Comp Unm Antonio agr.not.have-relative
(There are just three people who Antonio isn’t related to.)

The inaccessibility of the extra object to movement argues that it is not a complement of V.

Second, the extra object differs from a complement of V in that it constitutes an island. Although Chamorro does not freely allow movement out of noun phrases, possessors can escape from the DP whose specifier they occupy under certain well-defined circumstances. Movement of the possessor is permitted, for instance, when the host DP is a complement of V and D happens to be null. The fact that such movement is possible reveals that DP complements of V are not, in general, islands. (For further discussion, see Chung 1998.)

(38)a. Hafa na klasi-n pitsonas siña un-na’malik [sininte-nña t ]? what? L sort-L person can agr-improve feeling-agr
What kind of person’s feelings can you improve?

Whose leg did you treat with the medicine?

If the extra object were a DP complement of V, then its possessor ought to be accessible to movement under just the same circumstances. But in fact, nothing can be moved out of the extra object, even the possessor, and even when D happens to be null.
(39)a. *Hayi un-gäi-[ma’estra] [ch’ilu-ña t palao’an] ?
   who? agr-have-teacher sibling-agr female
   (Whose sister will you have as teacher?)

   b. *Si Dolores ädyu na palao’an i [gäi-[doktu] hao
      Unm Dolores that L woman the agr.have-doctor you
      (Dolores is the woman whose brother is your

      [ch’ilu-ña t ]].
      sibling-agr
doctor.)

The strong ungrammaticality of (39) is evidence that the extra object is an island. Islandhood is, of course, more characteristic of adjuncts than of complements—a point that we will come back to.

Third and finally, the extra object does not have the combinatorial possibilities of a complement. Like many other languages, Chamorro permits conjoined verbs to share a complement, as long as the complement satisfies the subcategorization and selection requirements imposed by each conjunct. This familiar pattern is illustrated in

(40)a. [Ha-chiku yan ha-toktuk] si Juan i famagu’un.
   agr-kiss and agr-hug Unm Juan the children
   Juan kissed and hugged the children.

   b. [Man-rito  toka yan mam-a’mámaolik] mákina.
      agr.AP-repair.Prog and agr.AP-fix.Prog machine
      He repairs and fixes machines.

If the extra object were indeed a complement, then it should be able to participate in constructions of this sort. More precisely, it should be able to be shared by conjoined verbs, at least one of which is a complex verb with an incorporated object. But as might be expected by now, such a pattern is forbidden. (41) shows that the extra object cannot be shared by conjoined verbs. This is so even when every conjunct is a complex verb
with an incorporated object, as in (41a).³

       I  WH[nom].agr-have-friend and WH[nom].agr-have-doctor  Unm Rita
       (Rita is my friend and my doctor (lit. It’s me who has Rita as friend
       and doctor).)

       we  agr-have-pet and agr-raise.Prog that  Pl  L dog
       (We own and are raising those dogs.)

In short, the extra object lacks some of the morphology and all of the syntax of a
DP complement of V. We take this to indicate that it is not, after all, a complement of V.
It follows from this that the extra object is not a complement of gäi-, of täi-, or of the
complex verb that includes the incorporated object.

The conclusion raises the question of where the extra object fits in the phrase
structure of incorporation clauses. Following the clear precedent of Baker (1988; 1996),
we hypothesize that the extra object is a syntactic adjunct—a hypothesis consistent with
its islandhood. Further details of the phrase structure are discussed in Appendix A. For
our purposes here, what matters is that the extra object is not a complement but rather
syntactically adjoined.

3.5  The Extra Object is a Semantic Argument

We are now ready for the surprise in our triad of results. Despite its status as an adjoined
constituent, the extra object is not semantically an adjunct—not (merely) a restrictive
modifier. Instead, it is composed with the verb’s internal argument and can, in fact,
saturate that argument.

The line of reasoning that brings us to this conclusion runs as follows. We
investigate three semantic restrictions exhibited by the extra object. Each restriction is
best accounted for if we assume that the verb imposes semantic demands on its internal argument and the extra object must satisfy those demands. But that hypothesis amounts to the claim that the extra object is composed with the internal argument—the same argument with which the incorporated object is composed.

Section 3.5.1 discusses a definiteness effect exhibited by the extra object. Section 3.5.2 examines the distribution of un ‘a, one’, which we claim is an affirmative polarity item. Finally, Section 3.5.3 probes the relation between the extra object and the verb’s other argument—the possessor.

3.5.1 A Definiteness Effect

One kind of evidence that the extra object is composed with the verb’s internal argument comes from an unexpected contrast between gäi- ‘have’ and täi- ‘not have’. The reader might already have noticed that the extra object associated with gäi- ‘have’ can be any kind of DP at all. The extra object can be a pronoun or proper noun, for instance.

(42)a. Kao si Rita gäi-[patgun] hao?
   Q Unm Rita agr.have-child you
   Are you Rita’s child?

   b. Guahu gäi-[istudianti] si Sally.
      I WH[nom].agr-have-student Unm Sally
      Sally is my student.

It can also be a DP headed by the definite article or a demonstrative. These options are illustrated in (43).

(43)a. Hayi gäi-[diskuidu] i ma-suséedi
      who? WH[nom].agr.have-negligence the WH[nom].agr.Pass-experience.Prog
      [I keep on asking myself] whose fault the current situation
pa’gu.
now
is. (Saipan Tribune 2/22/01)

who? WH[nom].agr.have-fault this
[We can’t trade accusations about] whose fault this is.
(Saipan Tribune 12/16/99)

c. Si Miguel gäi-[che’lu  lä’amku’ na palao’an] esti i gaigi
Unm Miguel agr.have-sibling older L woman this the WH[nom].agr-be
Miguel’s older sister is this person

gi  akague-kku.
Loc left-agr
on my left.

The extra object of gäi- can be a DP headed by a strong quantifier. Consider

agr.have-possession all kind-L car
He owns all kinds of cars.

b. Si Dolores gäi-[amiga] guennao na iskuela känä ha’ todu ma’estra.
Unm Dolores agr.have-friend there L school almost Emp all teacher
Almost all teachers are Dolores’ friends at that school.

Finally, the extra object can be a weak DP, such as a bare indefinite or a DP headed by a numeral or a weak quantifier like meggai ‘many’.

(45)a. Meggai na taotao man-gäi-[gima’] guma’ simentu.
many L person WH[nom].agr-have-house house cement
Many people have concrete houses.

b. Kao gäi-[iyu] hao dos na kareta?
Q agr.have-possession you two L car
Do you own two cars?
    agr.have-relatives many Unm Antonio
    Antonio has many relatives.

    What is unexpected is that the extra object associated with tāi- ‘not have’ does not pattern the same way. Instead, it exhibits a definiteness effect. Pronouns and pronoun nouns are not permitted, as (46) is intended to suggest.

    Unm Julia agr.not.have-child me
    (I’m not Julia’s child.)

b. *Hagu, kao guāha siha ni man-tāi-[ma’estra] hao ?
    you Q agr.exist Pl Comp WH[nom].agr.not.have-teacher you
    (As for you, are there any people who haven’t had you as teacher?)

    we WH[nom].agr-not.have-child Unm Rita
    (Rita isn’t our child.)

DP’s headed by the definite article, a demonstrative, or a strong quantifier are not permitted either.

    Unm Antonio agr.not.have-car that
    (Antonio doesn’t own that car.)

b. *Si Carmen tāi-[ga’] esti naga’lagu.
    Unm Carmen agr.not.have-pet this L dog
    (Carmen doesn’t have this dog.)

    Unm Antonio agr.not.have-possession all kind-L car
    (Antonio doesn’t own all kinds of cars.)

    The only sorts of DP’s that can serve as extra objects of tāi- are the weak DP’s.

Among these are bare indefinites and DP’s headed by a numeral or a weak quantifier.¹
Also included among the weak DP’s, significantly, are negative concord items. Some relevant examples are

(49)a. Tāi-[familia]  ni hayi  si Antonio.  
agr.not.have-family  not anyone  Unm Antonio  
Antonio has no family at all.

b.  Si  Joaquin  tāi-[amigu]  ni hayina ma’estru.  
Unm Joaquin  agr.not.have-friend  not one  L  teacher  
Joaquin doesn’t have any teacher friend.

c. Tāi-[lateria]  esti na tenda  ni háfafa  ha’  na lateria.  
agr.not.have-canned.goods  this  L  store  not anything  Emp  L  canned.goods  
This store doesn’t have any canned goods,

ädyu  ha’  i lateria-n  gollai.  
that  Emp  the canned.goods-L  vegetables  
except canned vegetables.

d.  Si  Dolores  tāi-[patgun]  ni un granu.  
Unm  Dolores  agr.not.have-child  not a  piece  
Dolores has no children at all.
This child doesn’t have even two toys.

The ability of negative concord DP’s to occur as extra objects of tāi- is instructive in two respects. First, because Chamorro does not permit negative concord items to serve as predicates of clauses, we can be sure that the DP’s in (49) are indeed extra objects and not part of an embedded or conjoined clause of some sort (see note 4). The examples in (49) thus make it completely clear that an extra object can be associated with tāi-, despite the fact that many conceivable sorts of extra objects are ungrammatical (see (46-47)). Second, because negative concord in Chamorro is licensed by sentential negation, (49) confirms that it is sentential negation that is included in the meaning of tāi-. (The same is true of the negative existential verb taya’ ‘not exist’ and the negative locative verb taiguí ‘not be (in a location)’.) This point will be useful later.

The definiteness effect illustrated in (46-49) is quite robust. It is reminiscent of restrictions on the internal argument of ‘have’ that were observed within the European structuralist tradition by Benveniste (1966) and within the generative tradition, broadly construed, by Keenan (1987), Freeze (1992), Szabolcsi (1994), Partee (1999), and others. The challenge is to account for the fact that in Chamorro, the extra object of tāi- ‘not have’ exhibits a definiteness effect, but the extra object of gāi- ‘have’ exhibits no such restriction. Notice that matters are made more complicated by the fact that the existential verbs guāha ‘exist’ and taya’ ‘not exist’, which are morphologically related to gāi- and tāi-, do not contrast in a similar way (see Section 3.2). Both existential verbs impose a definiteness effect on their internal argument, as can be seen from the following.5
There were three pumpkins. (Mannge’ na Alaguan Kalamasa 3)

There hadn’t been two or three weeks since they’d known each other.  
(Cooreman 1982: 7)

(51)a. *Guāha todu man-malangu.
agr.exist all WH[nom].agr-sick
(There was everyone who was sick.)

b. *Taya’ todu klasi-n hugeti-ña si Joe.
agr.not.exist all sort-L toy-agr Unm Joe
(Joe doesn’t have all sorts of toys (lit. There weren’t all sorts of toys  
of Joe’s.)

What explains these patterns? We can begin to construct an account by recalling  
the approach to the existential construction pursued by McNally (1992), Musan (1996),  
Dobrovie-Sorin (1997), and others, according to which the definiteness effect is traced  
ultimately to argument structure. The key idea is that existential verbs demand an  
internal argument that is a property—a demand that in the normal case is satisfied only  
when the argument is saturated by an indefinite or other weak DP.

Within our theory, there are two ways of expressing the generalization that a  
predicate demands an argument that is a property. We could assume that the predicate’s  
semantic type encodes this information directly. On such a view, the type of a one-place  
predicate that demands a property as argument would not be <e,t>, but rather <<e,t>,t>.  
Alternatively, we can assume that the predicate has one of the standard semantic types,  
but imposes the further requirement that the argument must be composed via the  
nonsaturating mode Restrict. On this view, the generalization that the argument must be  
a property follows from the fact that properties are the only expressions that Restrict can
Although these options lead to the same result in simple cases, their theoretical repercussions are quite different. The first alternative raises the troubling issue of the proliferation of semantic types. But the second seems benign from the standpoint of type theory. Further, the second alternative is expected within our overall approach: it is simply the predicate analogue of the requirement to ‘compose via Restrict’ that Maori he places on argument expressions. This alternative also has empirical advantages, as we will show in a little while. It is therefore the alternative that we adopt.

The decision leads to the following proposal. The existential verbs *guāha* ‘exist’ and *taya* ‘not exist’ are alike in requiring that their internal argument must be composed via Restrict. But the verbs of possession differ from one another precisely along this dimension. *Tūi*- ‘not have’ requires that its internal argument—the argument corresponding to the possessed—must be composed by Restrict; *gāi*- ‘have’ makes no such demand. Finally, and crucially, the extra object is composed with the internal argument and can saturate it.

Such a proposal accounts right away for the contrast we are interested in. *Gāi*- permits its extra object—an adjoined constituent—to be any kind of DP at all, whereas *tāi*-’s extra object must be semantically incomplete: it must exhibit a definiteness effect. But if we adopt this proposal, then we must also accept the broader conclusion that the internal argument of the verbs of possession is multiply linked. The reason is that the internal argument is linked not only to the extra object but also to another expression, the incorporated object—or so we have assumed from the beginning.

Importantly, it does not seem possible to alter the argument structures of the verbs of possession to negotiate around this result. Assuming, as seems reasonable, that a verb
with the meaning ‘have’ or ‘not have’ has at most two arguments, the possessor and the possessed, it is clearly the latter argument that corresponds to the extra object and the incorporated object. The only way to maintain the full analysis that we have built up so far is to accept multiple linking: the extra object is composed with the same argument that the incorporated object is composed with.

3.5.2 An Affirmative Polarity Item

Further evidence that the extra object is composed with the verb’s internal argument comes from the distribution of un ‘a, one’. This determiner is apparently an affirmative polarity item, by which we mean that it cannot fall under the scope of sentential negation (see Ladusaw 1979).

The inability of affirmative polarity DP’s to fall under the scope of sentential negation should, in principle, give rise to two empirical patterns. On the one hand, in negative contexts in which the DP can take wide scope with respect to the negation, that reading should be forced. On the other hand, in negative contexts in which the DP is, for some reason, prevented from taking wide scope, ill-formedness should result.

It has proved surprisingly difficult to determine the the status of Chamorro un—or, for that matter, English some—with respect to the first of these patterns. We have encountered one or two speakers whose judgements are firm that in sentences of type (52), the indefinite headed by un must take wide scope with respect to negation.

(52)a. Ti ma-prensa un chinina-hu.

not agr-iron a shirt-agr

They didn’t iron a shirt of mine (= There was a shirt of mine that they didn’t iron).
b. Si Jose ti man-ayuda un palao’an
   Unm Jose not agr.AP-help a woman
   Jose didn’t help a woman (= There was a woman who Jose didn’t help).

Compare the sentences below, which illustrate that un need not take wide scope with respect to other operators, such as the universal quantifier or the intensional operator. In (53a), every child asked me for a potentially different penny; in (53b), they want us to seek some new car or other, not a particular car.

(53)a. Käda patgun ha-gagao yu’ un séntimus.
   each child agr-beg me a penny
   Each child begged a penny from me.

b. Man-malägu’ siha na pära bai infan-man-aligao un nuebu na kareta
   agr-want they Comp Fut agr-AP-seek a new L car
   They want us to look for a new car

   giya Guam.
   Loc Guam
   in Guam.

For most speakers, however, judgements on the scope of un with respect to negation are far less consistent than what is reported in (52). Various factors may contribute to this. To begin with, speakers’ intuitions about the meaning might conceivably be obscured by morphosyntactic uncertainty over what verb form—transitive or antipassive—to employ in sentences of type (52) (see Chung 1998: 114-115 and note 19 for discussion). Further, judgements are complicated by the fact that in Chamorro—as in English—the same negatives that express sentential negation can be used instead to express denial of the proposition. But affirmative polarity items are sensitive only to sentential negation, not to denial of the proposition. We have not yet managed to find a path around these complications. With that said, we will proceed as though the judgements in (52) were fully general.
Fortunately, the status of *un* with respect to the second empirical pattern is much clearer. We demonstrate this by returning briefly to the existential construction. It is well known that the internal argument of an existential verb is scopeless: it must take narrowest scope with respect to all operators, including negation (see Heim 1987). In the McNally-style approach that we have adopted, the scopelessness of the internal argument follows from the claim that it must be composed via Restrict. It must therefore be a property, and properties are scopeless. The analysis leads to the expectation that in negative existential sentences, the internal argument should never be linked to an affirmative polarity DP. The reason is that such a DP could not satisfy the existential verb’s demands and its own demands at the same time. It could not, in other words, simultaneously be composed via Restrict and take wide scope with respect to negation.

*Un* conforms straightforwardly to this pattern. Recall that negative existential sentences in Chamorro are formed from the verb *taya’* ‘not exist’. The meaning of this verb includes sentential negation, as can be seen from the fact that it licenses negative concord.

(54)  
\[
\text{aggr.not.exist not one \ WH[nom].agr.AP-read about not anything Emp }
\]
\[taya’ \ ni \ unu \ man-aitai \ put \ ni \ háfafa \ ha’.
\]
There wasn’t anyone who read about anything.

The point of interest is that *taya’* cannot have an internal argument that is an *un* indefinite. This is exactly what we expect.

(55)a.  
\[
\text{aggr.not.exist a \ problem }
\]
\[*taya’ \ un \ problema.
\]
(There isn’t a problem.)
b. *Taya’  un gä’-ña ga’lagu.
   agr.not.exist a  pet-agr dog
   (He doesn’t have a dog (lit. There isn’t a pet dog of his).)

In contrast, the other existential verb, guäha ‘exist’, also demands an internal argument
that is composed via Restrict, but that argument can be an un indefinite. We claim that
the difference is that guäha presents no sentential negation for un to contend with.

(56)a. Guäha  un letchun gi  päpa’ kareta.
   agr.exist a  piglet  Loc under car
   There’s a piglet under the car.  (Lechon! Lechon! Lechon! 1)

b. Guäha  un kareta-ña si  Antonio ni  nueva.
   agr.exist a  car-agr  Unm Antonio Comp WH[nom].agr.new
   Antonio has a new car (lit. There’s a car of Antonio’s that’s new).

The overall pattern confirms that un is indeed an affirmative polarity item.

What is the distribution of this affirmative polarity item in incorporation clauses?

Interestingly, the same contrast emerges as in the existential construction, but this time
with respect to the extra object. In clauses formed from the verb täi- ‘not have’, whose
meaning includes sentential negation, it is impossible for the extra object to be an un
indefinite. This is shown in (57).

   Unm Carmen agr.not.have-child a  son
   (Carmen has no son.)

b. *Täi-[ga’]  un ga’lagu ennao na  patgun.
   agr.not.have-pet a  dog  that  L child
   (That child doesn’t have a dog.)

But in clauses formed from the other verb of possession, gäi- ‘have’, the extra object is
not restricted in this way.
a person agr.have-child a son
A man had a son.

b. Gäi-[ga’] un ga’lagu ennao na patgun.
agr.have-pet a dog that L child
That child has a dog.

The parallel between the existential sentences in (55-56) and the incorporation clauses in (57-58) invites us to give the same account for täi- in (57) as we gave for taya’ in (55). Specifically, suppose we continue to maintain that the internal argument of täi- must be composed via Restrict. That demand ought to conspire with the presence of sentential negation to predict the impossibility of the affirmative polarity DP’s in (57). But for the account to succeed, we must also maintain—crucially—that the extra object is composed with the internal argument and can saturate it. The hypothesis is one that we have arrived at before. It amounts to the claim that the internal argument of täi- is multiply linked: both the incorporated object and the extra object are composed with it.

3.5.3 A Curious Restriction

Our last piece of evidence that the extra object is composed with the verb’s internal argument comes from pronominal anaphora.

The incorporation clauses that we have been investigating obey what seems at first glance to be a rather curious restriction on anaphora. The restriction can be stated as follows: the subject of the verb of possession cannot be coindexed with the possessor of the extra object.

This curious restriction can be seen at work in the sentences in (59). In these—and, for that matter, in many other examples cited in this Chapter,—the subject is topicalized in order to neutralize the information structure constraints that take effect.
when both subject and object occur to the right of the verb (see Chung 1998). Even so, the results here are ill-formed, because the subject is coindexed with the possessor of the extra object. The subject in (59a) is the definite noun phrase i antigu na rai Ihiptu ‘the ancient king of Egypt’, the subject in (59b) is the quantified noun phrase käda patgun ‘every child’, and so on. Throughout, the possessor of the extra object is a null pronoun whose presence is overtly signaled by morphological agreement. Notice that we have chosen not to represent the null pronoun as pro, but instead simply coindex the possessor agreement with the subject.

(59)a. *I antigu na rai Ihiptu gâi-[asagua] i mismu chi’lu-ña.
   the ancient L king Egypt agr.have-spouse the own sibling-agr
   (The ancient king of Egypt was married to (lit. had as spouse) his own sister.)

   each child agr.have-teacher Unm mother-agr
   (Every child has his mother as a teacher.)

c. Si Bill Gates gâi-[iyu] batku-n airi /*i batku-n aire-ña.
   Unm Bill Gates agr.have-possession ship-L air / the ship-L air-agr
   Bill Gates owns an airplane/*his airplane.

d. Si Joe tâi-[iyu] meggai na hugeti(*-ña).
   Unm Joe agr.not.have-possession many L toy-agr
   Joe doesn’t have many toys (*of his).

What is the evidence that this restriction specifically excludes coindexing between the subject and the possessor of the extra object? To begin with, we can restore the grammaticality of (59) by removing the possessor and its associated agreement, as is shown in (59c-d). But the problem with (59) is not just that a possessor is present. We have already seen that the extra object, like all other DP’s, permits a possessor in its
specifier (see (29c)). In (60a), the possessor is the proper name Antonio; in (60b), it is a null pronoun whose presence is signaled only by agreement.

(60)a. Kao hagu gäi-[istudianti] i patgun Antonio ?
   Do you have Antonio’s child as student?

   [Did Jose move to Guam?] What I thought was that my son had his wife as teacher.

Further, the problem with (59) is not just that coindexing holds between the subject and some other subconstituent of the clause. Coindexing with the subject is generally allowed, of course. And coindexing with the subject is possible in incorporation clauses that are semantically quite close to (59), as long as the relation does not also involve the possessor of the extra object. Here are two illustrations of the point.

Consider first (61).

(61)a. Si Carmen gäi-[haga ni gofatungo-ña].
   Carmen has a daughter who is her best friend.

   b. Taya’ ni unu gäi-[ma’estra ni más agr.not.exist not one WH[nom].agr.have-teacher Comp more
   No one has a teacher who is his younger sister.

In these examples, the incorporated object is a complex noun phrase containing a relative clause, and the predicate of the relative clause is a DP with a possessor in its specifier. Even though the subject of the verb of possession is coindexed with the possessor, the
result is grammatical, presumably because no extra object is involved.

Consider next (62). Under special discourse circumstances, it is possible for the complex verb of incorporation to be modified by an adjunct that expresses location. The most obvious difference between this location phrase and an extra object is that the location phrase surfaces in the oblique morphological case.

(62) Tāi-[patgun] si Dolores nu guahu.
    agr.not.have-child Dolores Obl me
    Dolores has no child in me [said to dissociate yourself from Dolores].

In (63), the location phrase has a possessor in its specifier, and that possessor is coindexed with the subject. Even though the surface pattern differs minimally from (59b), the result is grammatical, because—as before—no extra object is involved.

(63) Kāda patgun i gāi-[ma’estra] as nana-ña i.
    each child agr.have-teacher Obl mother-agr
    Every child has a teacher in his mother.

The conclusion seems clear that what is specifically excluded is coindexing between the subject and the possessor of the extra object.

The account that we tentatively suggest of this curious restriction proceeds from two assumptions, one particular and the other general. The particular assumption is that a verb of possession expresses the meaning that its two arguments are related as possessor to possessed. The general assumption is that the assertion of a predicate is informative only when its meaning is not already presupposed. Some such pragmatic principle, we believe, lies behind the observation that a sentence like (64) is strange when uttered with neutral, noncontrastive intonation but acceptable when the subject receives contrastive stress.

(64) Jane killed the dead person.
Uttered with neutral intonation, (64) is infelicitous, because there is a component of the meaning of the asserted predicate, *killed*, that also occurs in the presupposition, as part of the meaning of the internal argument—namely, the meaning expressed by *dead*. But when the subject *Jane* is focused, then the meanings of both *killed* and *dead* are relegated to the presupposition, and no conflict arises.

From these assumptions, it is immediately obvious in outline how to account for the restriction illustrated in (59). In order for a verb of possession to be asserted felicitously, the information that its two arguments are related as possessor to possessed should not form part of the presupposition (cf. de Jong 1987). We claim that this is precisely what goes wrong in (59). As a consequence of the coindexing between the subject and the possessor of the extra object, the subject and the extra object are presupposed to be related as possessor to possessed.  

Observe now that a third assumption—familiar by now—is needed to complete the picture. In order for the account to work, the extra object must actually be composed with an argument of the verb—the argument corresponding to the possessed. This assumption is crucial. Notice that we cannot achieve the desired results by maintaining merely that the argument is composed with the *incorporated object*. The reason is that the incorporated object and the extra object need not have the same denotation, and it is the extra object whose possessor participates in the coindexing.

To sum up, multiple linking occurs in incorporation clauses. The extra object is composed with the verb’s internal argument—the same argument that the incorporated object is composed with.
3.6 Our Account

We consider it established, then, that multiple linking occurs in object incorporation in Chamorro. Both the incorporated object and the extra object are composed with the verb’s internal argument. From the standpoint of familiar approaches to predication, this is a surprising—almost unprecedented—result. But it is completely expected within the theory of restriction and saturation that we have developed in this book.

This Section presents the specifics of our account. We first show how our analysis handles the Chamorro facts discussed so far. We then briefly compare it with some other semantic approaches to incorporation, notably, those offered by van Geenhoven (1998) and Bittner (2001).

There are three main ingredients to our account of incorporation in Chamorro. First, the theory of restriction and saturation. Second, the claim that the incorporated object is semantically incomplete. And third, the idea that the Chamorro verbs of possession, *gäi* ‘have’ and *täi* ‘not have’, are two-place predicates that differ in the following way: *täi*- demands that its internal argument must be composed via Restrict, but *gäi*- does not.9

To see how our account works, consider first how semantic composition proceeds in the simplest incorporation clauses—clauses that contain an incorporated object but no extra object, such as

(65)  *Gäi-[kareta] si Antonio.*

    agr.have-car Unm Antonio

    Antonio has a car.

Because the incorporated object *kareta* ‘car’ is semantically incomplete, the property that it supplies is composed with *gäi*’s internal argument via Restrict. Importantly, this
operation does not reduce the predicate’s degree of unsaturation. See (66).

\[
\lambda y \lambda x \lambda e \ [\text{have}’(y)(x)(e)] \quad \text{car’}
\]

\[
\langle e, <e,t> \rangle \quad \langle e,t \rangle
\]

\[
\lambda x \lambda y \lambda e \ [\text{have}’(y)(x)(e) \land \text{car’}(y)]
\]

\[
\langle e, <e,t>, \rangle
\]

Next, the individual supplied by si Antonio is composed with the external argument via function application, an operation that saturates that argument and reduces the predicate’s degree of unsaturation by one. Finally, at the event level, the unsaturation of the internal argument is amnestied by existential closure, and semantic completeness is achieved. What emerges is

(67) \[
\exists e \exists y \ [\text{have}’(y)(a)(e) \land \text{car’}(y)]
\]

\[
\langle t \rangle
\]

We have given a Davidsonian rendering of have. We assume that the existential closure of the event argument in (67) represents temporary location, and that in the stronger sense of possession, the verb is inherently generic (cf. Chierchia 1995). In the examples below, we show the inherent generic.

The compositional process has the same outlines when the verb of the incorporation clause is tāi- ‘not have’, as in

(68) Tāi-[kareta] si Antonio.

\[
\text{agr.not.have-car Unm Antonio}
\]

Antonio doesn’t have a car.

There are two relevant differences. First, tāi- demands that its internal argument must be composed via Restrict. This demand is met when the property supplied by kareta is composed, as (69) shows. Second, tāi- expresses sentential negation, which must be entered into semantic composition at the sentential level, after the predicate has achieved semantic completeness. In a system in which semantic composition tracks syntactic
structure, there are various ways of arranging this; see Ladusaw (1992) for one proposal. What is of interest here is the outcome: the incorporated object must have narrow scope with respect to the negation.

\[(69) \quad \lambda y \lambda x \text{Gen}_e \left[ \text{have}'(y)(x)(e) \right] \quad \text{car}' \]
\[<e, <e,t>> \quad <e,t> \]

\[\lambda x \lambda y \text{Gen}_e \left[ \text{have}'(y)(x)(e) \land \text{car}'(y) \right] \quad a \]
\[<e, <e,t>> \quad <e> \]

\[\lambda y \text{Gen}_e \left[ \text{have}'(y)(a)(e) \land \text{car}'(y) \right] \]
\[<e,t> \]

\[\exists y \text{Gen}_e \left[ \text{have}'(y)(a)(e) \land \text{car}'(y) \right] \quad \neg \]
\[<t> \]

\[\neg \exists y \text{Gen}_e \left[ \text{have}'(y)(a)(e) \land \text{car}'(y) \right] \]
\[<t> \]

Consider next incorporation clauses in which the incorporated object is doubled by an extra object, such as

\[(70) \quad \text{Si Carmen gāi-[ga']} \quad i \quad \text{ga’lagu.} \]
Unm Carmen agr.have-pet the dog
Carmen has the dog as pet.

For our purposes, the key stage in the semantic composition of this example occurs after Restrict has composed the expression \text{ga’} ‘pet’ with \text{gāi}-’s internal argument. At that point, the internal argument is (still) unsaturated, so it can be targeted by a further composition operation. Function application composes it with the individual supplied by \text{i ga’lagu} ‘the dog’, saturating the argument and reducing the predicate’s degree of unsaturation by one. This is shown below. (In Section 1.3, we introduced the notational convention of demoting an argument’s lambda prefix after Restrict has applied, to allow
composition of other arguments to proceed. In (71), it is crucial to note that this is a possibility rather than a necessity, since the extra object saturates the argument after Restrict, but before the subject is targeted.)

$$\text{(71)} \quad \lambda y \lambda x \text{Gen}_e [\text{have}'(y)(x)(e)] \quad \text{pet'}$$

$$\langle e, \langle e, t \rangle \rangle \quad \langle e, t \rangle$$

$$\lambda y \lambda x \text{Gen}_e [\text{have}'(y)(x)(e) \land \text{pet}'(y)] \quad d$$

$$\langle e, \langle e, t \rangle \rangle \quad \langle e \rangle$$

$$\lambda x \text{Gen}_e [\text{have}'(d)(x)(e) \land \text{pet}'(d)]$$

$$\langle e, t \rangle$$

The result is multiple linking: more than one expression has been coherently composed with the argument.

It is important that multiple linking can succeed only if predicate restriction precedes saturation. No other order of composition will allow a given argument to be targeted by more than one composition operation (see Section 1.2). Compare (71) with the failed derivation (72), in which an attempt is made to reverse the order. Once function application composes the individual supplied by $i\ \text{ga}'\text{lagu}$ with the internal argument, the argument becomes saturated and is unavailable for further composition. It is then impossible for the property supplied by $ga'$ to be composed with it.

$$\text{(72)} \quad \lambda y \lambda x \text{Gen}_e [\text{have}'(y)(x)(e)] \quad d$$

$$\langle e, \langle e, t \rangle \rangle \quad \langle e \rangle$$

$$\lambda x \text{Gen}_e [\text{have}'(d)(x)(e)] \quad \text{pet'}$$

$$\langle e, t \rangle \quad \langle e, t \rangle$$

The only workable order is one in which saturation is delayed until the argument is
composed with the last expression to which it is linked (or until even later, when
existential closure occurs). Before then, it can be targeted only by the nonsaturating
mode Restrict.

Finally, let us turn to the corresponding incorporation clauses in which the verb is
täi- ‘not have’. Here the spotlight shifts to täi-’s demand that its internal argument must
be composed by Restrict—a demand that is responsible for some subtle contrasts.

Consider, for instance, the contrast in grammaticality illustrated in (73).

(73)a. Si Antonio täi-[ga’] ga’lagu.
Unm Antonio agr.not.have-pet dog
Antonio doesn’t have a(ny) dog as pet.

b. *Si Antonio täi-[ga’] esti na ga’lagu.
Unm Antonio agr.not.have-pet this L dog
(Antonio doesn’t have this dog as pet.)

We claim that the difference between these examples is that (73a) has a well-formed
semantic composition but (73b) does not. In (73a), both ga’ ‘pet’ and ga’lagu are
semantically incomplete expressions, so they can be composed with täi-’s internal
argument via Restrict. Each instance of composition conforms to the demand that
Restrict must be employed.

(74) \[ \lambda y \lambda x \text{Gen}_e \ [\text{have’}(y)(x)(e)] \quad \text{pet’} \]
\[ <e, <e,t>> <e,t> \]

\[ \lambda y \lambda x \text{Gen}_e \ [\text{have’}(y)(x)(e) \land \text{pet’}(y)] \quad \text{dog’} \]
\[ <e, <e,t>> <e,t> \]

\[ \lambda y \lambda x \text{Gen}_e \ [\text{have’}(y)(x)(e) \land \text{pet’}(y) \land \text{dog’}(y)] \]
\[ <e, <e,t>> \]

In (73b), however, esti na ga’lagu ‘this dog’ cannot be composed via Restrict, because it
denotes an individual. It therefore cannot be composed with tāi-’s internal argument at all, even though it is linked to this argument, and even though the argument is (still) unsaturated at the relevant point in semantic composition. The end result is that there is simply no way to integrate this expression into the interpretation without violating the condition on tāi-.

\[(75) \quad \lambda y \lambda x \text{Gen}_e [\text{have'}(y)(x)(e)] \quad \text{pet'}
\]
\[
\lambda y \lambda x \text{Gen}_e [\text{have'}(y)(x)(e) \land \text{pet'}(y)] \quad \text{d}
\]
\[
\langle e, \langle e, t \rangle \rangle \quad \langle e, t \rangle \quad \langle e \rangle
\]

The contrast illustrated in (76) is similar.

(76)a. Tāi-[ga’] ni un ga’lagu ennao na patgun.
agr.not.have-pet not a dog that L child
That child doesn’t have any dogs at all as pets.

b. *Tāi-[ga’] un ga’lagu ennao na patgun.
agr.not.have-pet a dog that L child
(That child doesn’t have a dog as pet.)

As before, what separates these examples is that (76a) has a well-formed semantic composition but (76b) does not. In (76a), semantic composition proceeds in essentially the same way as was just discussed for (73a). The only difference—which we ignore—is that the negative concord determiner ni un has a domain-widening effect on the denotation of ga’lagu ‘dog’ (see Kadmon and Landman 1993). In (76b), on the other hand, the compositional process becomes problematic when it is time to compose the indefinite un ga’lagu ‘a dog’ with tāi-’s internal argument. The operation that combines the two must be Restrict, because that is what tāi- demands. But if Restrict is employed,
then the property supplied by un ga’lagu will ultimately fall under the scope of sentential negation, contrary to what the affirmative polarity determiner un demands. See (77).

(77)  \[\lambda y\lambda xGen_e [\text{have}’(y)(x)(e)] \quad \text{pet’}\]

\[\langle e, <e,t>\rangle \quad \langle e,t\rangle\]

\[\lambda y\lambda xGen_e [\text{have}’(y)(x)(e) \land \text{pet’}(y)] \quad \text{dog’}\]

\[\langle e, <e,t>\rangle \quad \langle e,t\rangle\]

\[\lambda x\lambda yGen_e [\text{have}’(y)(x)(e) \land \text{pet’}(y) \land \text{dog’}(y)] \quad c\]

\[\langle e, <e,t>\rangle \quad \langle e\rangle\]

\[\lambda yGen_e [\text{have}’(y)(c)(e) \land \text{pet’}(y) \land \text{dog’}(y)]\]

\[\langle e,t\rangle\]

\[\exists yGen_e [\text{have}’(y)(c)(e) \land \text{pet’}(y) \land \text{dog’}(y)] \quad \neg\]

\[\langle t\rangle\]

By this point it should be evident that Restrict, with its ability to compose without saturating, is the key to our account of incorporation in Chamorro. The observation leads to a worry. In our theory, what would prevent an incorporation clause in Chamorro from containing absurdly many extra objects, all semantically incomplete and therefore able to be composed via Restrict? To restate the worry in crosslinguistic terms, what would prevent an incorporated object from being doubled by one or more extra objects even in languages, such as Greenlandic or Maori, which simply do not permit this?

While these are legitimate questions, we see no reason to expect the answer to be found in the theory of restriction and saturation—or, for that matter, in any other aspect of semantic theory. The research tradition in which our approach is grounded takes the
role of semantics to be to interpret syntactic structure, not to dictate what structure is presented for interpretation. But in the troubling scenarios just described, there are no interpretation issues in the strict sense. The problem is rather that the wrong structure—more accurately, too elaborate a structure—has been presented for interpretation.

Putting matters this way suggests that it is the responsibility of the syntax, broadly construed, to determine whether incorporation in a given language is an instance of CNI. And, in fact, it is easy to imagine the kinds of language-specific considerations that might come into play. For example, suppose that a language has incorporation but does not allow DP’s to be adjoined. In such a language, the Chamorro route to extra objects would automatically be closed off. Considerations of this sort could well lie behind the fact that semantically incomplete noun phrases in Maori—whether indefinites headed by *he* or incorporated objects—are never doubled by an independent DP (see Sections 2.4.1 and A.2.2.1). On the other hand, in languages that have incorporation and independently allow free adjunction of DP’s, such as Mohawk (see Baker 1996), one might well expect to find CNI.

It is harder to tell a convincing story about why the syntax might prevent an incorporated object in Chamorro from being doubled by more than one extra object. Given that extra objects are syntactically adjoined, the limitation to one seems mysterious. Nonetheless, such limitations are known to occur elsewhere. In the theory of polysynthetic languages developed by Baker (1996), overt DP ‘arguments’ are actually adjuncts coindexed with, and licensed by, a null argument. The relevant point is that a given null argument can license no more than one DP adjunct—a stipulation that Baker builds directly into his adjunct licensing condition (1996: 139-142).

Syntactic licensing might ultimately be responsible for the Chamorro limitation
on extra objects as well. In this connection, we should note that extra objects differ from other DP adjuncts in Chamorro—for instance, appositives—in that they occur in the unmarked morphological case (see Section 3.4). Revealingly, this case is used to signal various grammatical relations that cannot be iterated—subject, direct object, possessor, topic, focus, and the like.

In short, in the system we envision, the syntax and the semantics work together to prevent the overgeneration of extra objects. The syntax is responsible for excluding extra objects that are syntactically ill-formed; the semantics is responsible for excluding extra objects, such as those in (73a) and (76a), whose meanings cannot be coherently composed.

We close this Section by briefly comparing our account with two other semantic approaches to incorporation: van Geenhoven’s (1998) analysis in terms of semantic incorporation and Bittner (2001)’s analysis in terms of surface composition as bridging. These other accounts are designed to handle incorporation in Greenlandic, which differs crucially from Chamorro incorporation in not being a version of CNI. Incorporated nouns in Greenlandic can be associated with stranded modifiers, but they cannot be doubled by an independent DP. Given this, it is unsurprising and in no way negative that these other accounts do not generalize immediately to Chamorro. The comparison is nonetheless instructive, because it serves to highlight the distinctive contribution of the theory of restriction and saturation to our account.

Van Geenhoven’s (1998) analysis of incorporation in Greenlandic is representative of her overall approach to indefinites that must take narrow scope. In her approach, the incorporated noun supplies a predicate that is absorbed by the verb as a restriction on its internal argument. This absorption, which she calls *semantic*
incorporation, bears some resemblance to our operation Restrict. Where van Geenhoven’s approach differs from ours is in her claim that the existential force of the incorporated noun is contributed lexically, by the verb meaning. The result is that “the internal argument’s variable is existentially bound” from the beginning, although “the verb leaves a slot for a predication over this variable” (van Geenhoven 1998: 143).

This is what prevents semantic incorporation from generalizing smoothly to incorporation in Chamorro. To appreciate the point, consider how van Geenhoven’s system would assemble a semantic translation for the Chamorro sentence (70), which is repeated below.

(70) Si Carmen gā-[ga’] i ga’lagu.
Unm Carmen agr.have-pet the dog
Carmen has the dog as pet.

One would begin by combining the meaning of the incorporating verb gā- ‘have’ with the meaning of incorporated object ga’ ‘pet’, as shown in simplified form in (78). Notice especially the translation of ‘have’, which conforms fully to van Geenhoven’s view of the semantics of incorporating verbs.

(78) \( \lambda P \lambda x \exists y \left[ \text{have}'(y)(x) \land P(y) \right] \quad \text{pet'} \)

\( \lambda x \exists y \left[ \text{have}'(y)(x) \land \text{pet'}(y) \right] \)

Even at this point in the process, the internal argument is saturated. The existential quantifier that makes it semantically complete has been present from the start, in the verb meaning, and the property that supplies its restriction has now been composed. We therefore expect the internal argument to be unavailable for further composition. But if that is so, then there is no way to integrate the meaning of the extra object i ga’lagu ‘the dog’ appropriately into the translation. See (79).
We mentioned earlier that incorporated nouns in Greenlandic can be associated with stranded modifiers, although they cannot be doubled by an independent DP. Interestingly, stranded modifiers pose a compositional problem for van Geenhoven’s system similar to what we have just shown. As she says in discussing the incorporation clause whose meaning is ‘Ester bought fresh fish’, “there is no way to combine the complex verb ‘fish-buy’ with the property supplied by ‘fresh’” (1998: 148). The repair strategy that she suggests is to undo the previous step of the composition, type-shift the incorporated object so that it will (ultimately) accept a modifier, and then recompose the verb meaning with the type-shifted incorporated object.

Whatever the merits of such a strategy for stranded modifiers in Greenlandic, it would be tricky to extend it to the extra object in Chamorro. The reason is that the extra object is not a restrictive modifier, as we have already seen.

Stepping back a bit, we can see why semantic incorporation does not generalize well to incorporation in Chamorro. The idea that the existential force of the incorporated object is contributed by the verb leaves no room for predicate restriction (i.e. absorption) to occur without saturation. But exactly that flexibility, we claim, is what Chamorro incorporation demands.

In contrast to van Geenhoven’s discussion, Bittner’s (2001) treatment of Greenlandic incorporation is quite brief. It is presented as one illustration of her theory of surface composition as bridging, a theory whose leading idea is that semantic composition within the clause is, like discourse, fundamentally dynamic. In Bittner’s

\[(\lambda x \exists y \ [\text{have}'(y)(x) \land \text{pet}'(y)] \ \text{d}\]
theory, the central mechanisms of clause-internal composition are dynamic anaphora and
type-driven bridging. These work together to resolve type mismatches by “fill[ing] in
predictable anaphoric links between basic meanings that come from the lexicon as rough
approximations of what is actually needed” (2001: 2). One argument that Bittner gives
for her approach is that it enables semantic composition to be “both universal and faithful
to overt surface structures” (2001: 8).

The formal implementation of Bittner’s theory is quite intricate, and we cannot do
justice to it here. Very informally, and in greatly simplified form, here are the outlines of
her analysis of Greenlandic (see Bittner 2001: 27-31).10

Bittner assumes that in general, the local context for an affix is established by the
stem to which it is attached. Therefore, in Greenlandic incorporation, the local context
for the verb—an affix—is established by the incorporated noun. The incorporated noun
supplies a property and the verb meaning has an unsaturated internal argument. When
the two are combined, the type mismatch is resolved by existential closure, a bridging
mechanism that makes the internal argument semantically complete and ensures that it
has narrow scope.

If there is a stranded modifier associated with the incorporated noun, its meaning
is composed next. Its local context is established by the complex verb whose meaning
we have just calculated, and the type mismatch between the two is resolved by base-
elaboration bridging. This mechanism treats the property supplied by the modifier as an
elaboration of the discourse referent introduced by the internal argument. The result is
that the meaning constructed for the Greenlandic incorporation clause ‘I bought fresh
fish’ resembles ‘I fish-bought and it was fresh’.

Can this style of approach be extended to incorporation in Chamorro? Up to a
point, the answer seems to be ‘yes’. The dynamic existential closure invoked to bridge the meanings of the incorporated object and the affixal verb in Greenlandic can be applied right away to Chamorro. Moreover, even though closure saturates the verb’s internal argument, base-elaboration bridging provides a route by which the meaning of the extra object might be folded into the composition.

To see this, consider first incorporation clauses in which the extra object supplies a property, such as (45a) or (73a). In such clauses, the property can be accommodated via base-elaboration bridging just as stranded modifiers are accommodated in Greenlandic. Of course, when the incorporating verb is tāi- ‘not have’, care must be taken to ensure that the sentential negation has scope over the anaphoric link. The meaning constructed for (73a) should be ‘It is not the case that [John has a pet and it is a dog]’, not the deviant ‘*John doesn’t have a pet] and it is a dog’. We will return to this in a moment.

In incorporation clauses in which the extra object supplies an individual, such as (70), matters are more complicated. Here it is tempting to invoke a generalized version of base-elaboration bridging that would link either a property or an individual to a discourse referent in the context. If that could be done, an interpretation could be constructed for (70)—one close to ‘Carmen has a pet and it is the dog.’

The difficulty that we see with such a dynamic account is that it would be too successful. If base-elaboration bridging could be generalized as we have just suggested, there would be nothing to prevent it from linking the individual supplied by the extra object in (73b) to the discourse referent of the internal argument. The type mismatch seems the same as in (70). But (73b), repeated below, is ill-formed.
(73)b. *Si Antonio tāi-[ga’] esti na ga’lagu.
Unm Antonio agr.not.have-pet this L dog
(Antonio doesn’t have this dog as pet.)

Notice that we cannot dismiss the problem by claiming that the interaction of dynamic anaphora with negation is what is at fault. Earlier, in discussing (73a), we assumed that the sentential negation would have scope over the anaphoric link introduced by base-elaboration bridging. That assumption should lead to a sensible interpretation here, namely, ‘It is not the case that [Antonio has a pet and it is this dog]’. So the ill-formedness of (73b) remains a mystery.

More generally, the style of analysis that we have just sketched seems to offer no satisfactory explanation of the pattern documented in 3.5.1: the extra object of tāi-exhibits a definiteness effect, whereas the extra object of gāi- does not. Here is what goes wrong: once base-elaboration bridging is generalized to handle the full range of well-formed extra objects, it can accommodate even the type mismatches that we know are unresolvable.

It may be that some other extension of Bittner’s dynamic theory might succeed in circumventing this dilemma. Meanwhile, we conclude that her theory too does not generalize comfortably to incorporation in Chamorro. The underlying reason is that the incorporated object and the extra object are not anaphorically related. Instead, we claim, the two are composed with the same argument: one merely restricts the argument, while the other can saturate it.

3.7 Restriction Without Saturation

Incorporation in Chamorro confirms what is perhaps the most surprising prediction of our theory: if all other conditions are right, a given argument can be linked to, and
coherently composed with, more than one expression. The fulfillment of this prediction is noteworthy whatever one’s views of predication and saturation happen to be. The fact that no other theory known to us handles the evidence as well offers a powerful argument for distinguishing the notion of semantic composition from the concept of saturation. Even for arguments, the two need not coincide.

Let us, then, take the theory of restriction and saturation for granted and go on to investigate its consequences for the dynamics of discourse. The most obvious question can be posed very simply. What are the discourse ramifications of restriction without saturation? To restate the question in incorporation-specific terms, what would it mean for the incorporated object in Chamorro to introduce a discourse referent?

This is an issue that we have already begun to discuss. Above, in considering Bittner’s surface composition as bridging, we in essence argued that any discourse referent introduced by the incorporated object cannot be referred to anaphorically by the extra object. Our argument was based on the definiteness effect documented earlier in Section 3.5.1. We now show that it is also possible to arrive at the same conclusion via a different route. The route that we have in mind here involves class inclusion relations.

Stenning (1978) observes that discourse anaphora is sensitive to what he calls the hierarchy defined by class inclusion. In this hierarchy, common nouns and pronouns are ordered according to class inclusion relations, so that cat, for instance, is subordinate to creature, because “if something falls under the denotation of cat, then it falls under the denotation of creature” (1978: 167). Stenning’s observation is that an antecedent can be subordinate to its discourse anaphor on the hierarchy, or else the two can be coextensional. What is forbidden is for a discourse anaphor to be subordinate to its antecedent.
Thus, *cat* can serve as the antecedent for *creature* in (80a), because *cat* is subordinate to *creature*. But it is strange or impossible for *creature* to serve as the antecedent for *cat* (80b).

(80)a. The cat, went out. Sandy fetched the creature in.
   b. *The creature went out. Sandy fetched the cat in.*

Significantly, the hierarchy of class inclusion also plays a role in Chamorro incorporation, as can be seen if we inspect the relation between the incorporated object and the extra object when both are common nouns. What is of interest is that this relation is the opposite of what we would expect if the incorporated object were an antecedent and the extra object, its discourse anaphor. The facts are that the incorporated object cannot be subordinate to the extra object.

The point emerges clearly from the contrast between (81) and (82). Notice, to begin with, that *kätu* ‘cat’ is subordinate to *ga’ga’* ‘animal’; *lahi* ‘son’ is subordinate to *patgun* ‘child’; and *unpesu* ‘dollar’ is subordinate to *salappi* ‘money’. In the examples in (81), the incorporated object is subordinate to the extra object, which would be the standard arrangement if the extra object were a discourse anaphor referring back to the incorporated object. Revealingly, this pattern is ungrammatical.

(81)a. *Gäi-[katu] si Jose ga’ga’.*
   agr.have-cat Unm Jose animal
   (Jose has a cat pet.)

   agr.not.have-son the two child
   (The two don’t have as son a child.)
c. *Si Rita tā-[unpesu] ni háafa ha’ na salappi’.
   Unm Rita agr.not.have-dollar not anything Emp L money
   (Rita has no dollars [in] money.)

In the examples in (82), the two common nouns have been reversed, so that the extra object is now subordinate to the incorporated object. This pattern is well-formed.

(82)a. Gāi-[ga’] si Jose kātu.
   agr.have-pet Unm Jose cat
   Jose has a pèt cát.

b. Tāi-[patgun] i dos patgun lahi.
   agr.not.have-child the two child son
   The two don’t have as child a son.

c. Si Rita tā-[salappi’] ni háafa ha’ na unpesu.
   Unm Rita agr.not.have-money not anything Emp L dollar
   Rita has no money [in] dollars.

Importantly, it is by no means required for the extra object to be subordinate to the incorporated object. The two can have intersecting denotations—in other words, they can be located on independent branches of the hierarchy.\textsuperscript{11,12}

   we WH[nom].agr-have-dog that Pl the WH[obj].agr-raise.Prog
   We are the ones who own those dogs that we are raising.

b. Si Carmen tāi-[primu] pali’.
   Unm Carmen agr.not.have-cousin priest
   Carmen doesn’t have priests as cousins.

c. Si Joaquin tāi-[amigu] ni hayi na ma’estrul.
   Unm Joaquin agr.not.have-friend not anyone L teacher
   Joaquin does not have any teachers as friends.

The incorporated object and the extra object can also, it seems, be coextensional. Speakers are sometimes hesitant about examples such as (84), possibly because they find it hard to imagine a convincing context of use. We do not know why such examples are
worse when the extra object is definite (as in (84c)) than when it is a bare indefinite or a negative concord DP (84a-b).

(84)a. Gāi-[guma’] yu’ guma’.
    agr.have-house I house
    I have a house (as a house).

b. Tāi-[lateria] esti na tenda ni háfafa ha’ na lateria.
    agr.not.have-canned.goods this L store not anything Emp L canned.goods
    This store has no canned goods at all.

c. */Si Juan gāi-[kareta] i kareta.
    Unm Juan agr.have-car the car
    (Juan has the car as car.)

What is expressly prohibited is for the incorporated object to be subordinate to the extra object.

    The restriction illustrated in (81-84) is not unique to Chamorro. It is well documented for CNI in other languages, although there it is usually described in terms of specificity rather than class inclusion (see e.g. Woodbury 1975, Mithun 1984, S. Rosen 1989, and for a characterization close to ours, Anderson 2000). For us, the relevance of this restriction is that it confirms a conclusion that we had reached earlier: any discourse referent introduced by the incorporated object cannot be referred to anaphorically by the extra object.

    Such a conclusion might lead one to assume that incorporated objects—and, more generally, noun phrases composed via Restrict—do not introduce any discourse referent at all. That, in fact, is what Farkas (1997) proposes for the property-denoting noun phrases that she calls *predicate modifiers*. In her typology of noun phrases, predicate modifiers are like so-called full arguments in that they saturate the argument with which they are combined. What differentiates them from full arguments is that they do not
introduce a discourse referent.

Our theory takes exactly the opposite position. One of our fundamental claims is that noun phrases composed via Restrict do not saturate the argument with which they are composed. But we also contend that, even for such noun phrases, a discourse referent is ultimately introduced.

Some persuasive evidence for our claim that discourse referents are introduced even for noun phrases composed via Restrict is supplied by donkey anaphora.

In incorporation clauses in which no extra object is present, the incorporated object can antecedes a donkey pronoun. This generalization, which is supported by extremely robust judgements, is illustrated in (85). These examples involve the sorts of constructions that in which donkey anaphora is typically found: quantificational sentences with complex subjects, such as (85a-b), and conditional sentences, such as (85c). As the translations indicate, in every case the pronoun is anaphoric to the incorporated object.\(^{13}\)

(85)a. Kāda taotao ni gāi-[kareta,] ha-diséseha na siña
 each person Comp WH[nom].agr-have-car agr-wish.Prog Comp can
    Each person who owns a car wishes that he could
    ha-bendi pro\(_i\),
    agr-sell
    sell it\(_i\).

b. Kāda unu ni gāi-[haga,], siempri ha-po’lu na
 each one Comp WH[nom].agr-have-daughter surely agr-assume Comp
    Everyone who has a daughter thinks that she
Further, these pronouns have the characteristic interpretation of donkey pronouns. The meaning of (85a) for instance, is ‘Everyone who owns a car wishes that he could sell the car that he owns.’

As is well known, donkey anaphora obeys an intricate set of conditions that have been described and analyzed in various ways (see e.g. Heim 1982; 1990; Partee 1984; Haïk 1984; Reinhart 1987; Chierchia 1995a; and others). One such condition requires the discourse referent of the antecedent to be accessible to the pronoun, where the precise characterization of ‘accessible’ depends on the overall analysis. In (86), this condition is evidently not met, because the life span of the incorporated object’s discourse referent is cut short by sentential negation. The result is that donkey anaphora is just as ungrammatical in the Chamorro example as in its English translation.

(86) *Kāda taotao ni tāi-[computer_i] ha-diséseha

(*Each person who doesn’t have a computer_i wishes

na siña ha-fahan pro_i.

The ill-formedness of (86) lends further weight to the claim that donkey anaphora is
involved in (85). But if so, then a discourse referent must ultimately be introduced for the incorporated object, because that is what the donkey pronoun refers to.

The point can be taken further. Notice that if we are correct that noun phrases composed via Restrict have discourse referents associated with them, then all such noun phrases—not just incorporated objects—should be able to serve as antecedents for donkey anaphora. The line of thought leads to two predictions. Pivots of existential sentences in Chamorro should be able to anteced donkey pronouns. And so should indefinites headed by he in Maori.

Very significantly, these predictions are borne out. The pivot of a Chamorro existential sentence can antecede a donkey pronoun, as (87a) shows. Compare (87b), which suggests that donkey anaphora is possible only if the pivot’s discourse referent is accessible to the pronoun. (The antecedents in these examples appear in italics.)

(87)a. Kāda taotao ni guāha [kareta-ñal, ha-disēseha na siña each person Comp agr.exist car-agr agr-wish.Prog Comp can

Each person who has a car_i [lit. of whom there is a car] wishes that

ha-bendi pro_i,
agr-sell
he could sell it_i.

b. *Kāda taotao ni taya’ [iyo-ñal computer]_i ha-disēseha each person Comp agr.not.exist possession-agr computer agr-wish.Prog

(*Each person doesn’t have a computer_i [lit. of whom there isn’t a

na u-fahan pro_i,
Comp agr-buy
computer] wishes that he could buy it_i.)

Further, in Maori, indefinites headed by he can antecede donkey anaphora, as (88a) shows. In this respect, they are no different from indefinites headed by tētahi (see
(88a). Ki te mea ka hari-a he kai, ma taua wahine, me hoatu pro, if T bring-Pass a food T.of the.aforem woman T give
If food, was brought to the woman
ki te pononga tuatahi, mā-na e hoatu pro, ki te tuarua. to the attendant first T.of-her T give to the second
it, was given to a first attendant, who gave it, to a second
(Orbell 1992: 67)

b. Ka kite-a he tohora e tētahi kaititiro, ka whakatū-ria pro, T see-Pass a whale by a lookout T raise-Pass
If a whale was spotted by a lookout, he, would raise
te haki o tōna, kāinga. the flag of his house
the flag of his house. (Waititi 1974: 132)

The conclusion seems unavoidable that when a noun phrase is composed via Restrict, a discourse referent is ultimately introduced for it. At the same time, as we saw earlier, this discourse referent must be inaccessible to the extra object.

These twin conclusions offer a window into the discourse contribution of restriction without saturation and the role of existential closure in securing that contribution. Here is how we interpret the evidence.

Discourse referents are introduced only at the point at which arguments are saturated. We claim that when a semantically incomplete noun phrase is composed with an argument via Restrict, there are two paths by which that argument can achieve semantic completeness: (i) through the composition of some further expression, or (ii) through existential closure.

Path (i) is taken in incorporation structures in which the incorporated object is
doubled by an extra object that is semantically complete. In such structures, once the meaning of the extra object is composed and the argument is saturated, it introduces a discourse referent.

Path (ii) is taken in incorporation structures lacking an extra object, as well as all other structures in which predicate restriction is not followed by further composition that would saturate the argument. In these structures, existential closure steps in to amnesty the unsaturation and make the argument semantically complete. Once that happens, a discourse referent is introduced.

Crucially, path (ii) cannot be taken if the composition of some further expression would saturate the argument—for instance, in incorporation structures in which there is an extra object of type <e>. Otherwise, the judgements in (81) and (82) would be the opposite of what we actually find: (81) would be grammatical, contrary to fact. But path (ii) must be taken if further composition does not lead to saturation. Otherwise, donkey anaphora ought to be impossible in (85), (87), and (88a), but it is well-formed.

We can now see that the full range of evidence reveals both that existential closure is necessary and that it cannot be allowed to amnesty semantic incompleteness ‘right away’—immediately after an initial attempt at saturation has failed. Rather, closure must be delayed until a point in the compositional process when further attempts at saturation are impossible in principle. We take this point to be the event level.

Observe, finally, that the view of existential closure that we have arrived at is not new. It is essentially the view advanced originally by Heim (1982) and adopted by Diesing (1992), Kratzer (1995[1988]), and numerous others. What we have done is to deconstruct existential closure within our theory, making clear why it must work in exactly the way it has always been assumed to. Its raison d’être and its exact location in
the compositional process seem quite reasonable, if we assume that unsaturation must be amended and semantic completeness achieved, but only after it is clear that saturation cannot occur via the normal compositional means.

3.8 Conclusion

Two natural questions arise at this point, and it seems only right to conclude by addressing them. First, how general is the account of incorporation that we have offered in this Chapter? And second, are there constructions besides incorporation in which multiple expressions are linked to, and coherently composed with, the same argument?

As far as we can tell, our approach can extend to a range of incorporation constructions in natural language, once it is recognized that much of the crosslinguistic variation exhibited by these constructions is not fundamentally semantic. Here is what we have in mind.

Previous studies of incorporation (e.g. Mithun 1984, Baker 1988, and many others) suggest that the prototypical incorporated constituent consists of some projection of N that is linked to an internal argument. In our approach, constituents of this sort are semantically incomplete—property-denoting. Because they are not DP’s but merely projections of N, they must be composed via Restrict, just as we claimed for Chamorro.

It is well known that languages differ in whether they permit an incorporated constituent to be doubled by an independent DP—in other words, whether they exhibit some version of CNI (see e.g. Sadock 1980, Mithun 1984, and many others). When doubling is possible, we claim that both the incorporated constituent and the independent DP are linked to the internal argument, and semantic composition proceeds essentially as in Chamorro. First, the meaning of the incorporated constituent is composed with the
argument via Restrict, and then the meaning of the extra DP is composed with the same argument via some appropriate composition operation. Because Restrict leaves the argument unsaturated, this order of composition has a well-formed outcome: it does not lead to oversaturation.

When doubling by an independent DP is prohibited, we contend that the prohibition arises not from semantics but rather from language-particular syntax or perhaps language-particular morphology. For instance, as observed in Section 3.6, a language might permit incorporation but simply not allow DP’s to be adjoined. If Baker (1988) is right that the extra DP in CNI must be adjoined, the result would be that CNI would be ruled out. Possibilities of this sort strike us as reasonable. More to the point, the alternative—that language-particular semantics might dictate whether incorporation does or does not involve CNI—strikes us as implausible.

Cross-cutting the issue of doubling is the question of whether the incorporated constituent has an impact on discourse. Since at least Sadock (1980; 1986) and Mithun (1984; 1986), it has been known that languages differ in whether they permit an incorporated constituent to be associated with a discourse referent and, if they do, whether the discourse referent must satisfy Heim’s (1982) Novelty Condition. Some of the relevant data are controversial (see the references just cited and Baker 1996). Still, if we step back and try to make sense of the material available, four basic patterns can be discerned.

(i) In Chamorro and other languages (e.g. Greenlandic; see Sadock 1980, van Geenhoven 1998, and others), the incorporated constituent can introduce a discourse referent that must be novel. Our analysis of this pattern was presented in Section 3.7. After the meaning of the incorporated constituent is composed via the nonsaturating
mode Restrict, the unsaturation of the argument is amnestied by existential closure. Crucially, we claim, arguments that are existentially closed must obey Heim’s (1982) Novelty Condition.

(ii) In languages with canonical versions of CNI (e.g. Mohawk; see Baker 1996), the incorporated constituent can evidently be associated with a discourse referent that is novel or familiar (see Sadock 1986: 25, Baker 1996: 287-291, and—for a different view—Mithun 1984: 859-871). One way of describing this pattern would be to assume that these languages handle the semantics of incorporation essentially as in (i), but recognize an extra route by which unsaturated arguments can achieve semantic completeness: their variable can be existentially closed or else supplied with a value from the common ground. When the latter route is chosen, the result would be a familiar discourse referent (see e.g. Kratzer 1995[1988]: 160). Notice that such an account would attribute the discourse contrast between incorporation in Chamorro and incorporation in Mohawk to a difference in the mechanisms available in these languages for resolving unsaturation.14

(iii) In languages such as Maori, the incorporated constituent cannot introduce a discourse referent by any means other than accommodation. We claim that these languages too handle the semantics of incorporation essentially as in (i). Further, we maintain that the incorporated constituent’s inability to introduce a discourse referent—except through accommodation—does not follow from semantics but rather has some other source. Several sorts of other sources are conceivable. For instance, in languages in which the complex verb of incorporation is derived via compounding or some other morpholexical process, it would be reasonable for the complex verb to be a word and hence an anaphoric island, in the sense of Postal (1969b). But then the incorporated
constituent, lacking any independent syntactic status, would be unable to introduce a useable discourse referent. We think Maori is a language of this sort; see Appendix A. Similarly, there may well be languages in which discourse referents can be introduced only by DP’s with overt determiners (for related discussion, see Chierchia 1998). Given that incorporated constituents are merely projections of N, in such a language they would be unable to introduce a discourse referent.

(iv) Finally, there seem to be languages in which the incorporated constituent can introduce a discourse referent only when the predicate explicitly asserts the introduction of such a referent. We take Massam (2001) to have established that Niuean is a language of this sort. The focus of Massam’s discussion is the Niuean construction often identified as object incorporation—a construction much like incorporation in Maori, a closely related language. Although Massam argues that the Niuean construction does not involve incorporation after all, her evidence is consistent with an incorporation analysis like our account of Maori in Appendix A. Consequently, we believe that Niuean does have incorporation. What interests us here is Massam’s discussion of whether incorporated objects in Niuean introduce a discourse referent. As she shows, the incorporated objects of transitive verbs do not introduce a discourse referent that persists past their own NP. But the incorporated pivots of existential verbs do introduce a discourse referent. In our view, her discussion reveals that lexical semantics can cause the incorporated constituent to introduce a discourse referent, even when other factors prohibit such a referent from being introduced as a by-product of semantic composition.15

The speculative character of this discussion is obvious. But we think the overall point is clear: our theory generalizes to other prototypical incorporation constructions by
handling their semantic composition essentially as it handles incorporation in Chamorro. Language-specific differences in (prototypical) incorporation pose no obstacle to this approach, because almost all such differences can—and should—be traced to morphology or syntax, not to semantics.

Let us now turn the second question—whether there are constructions besides incorporation in which multiple expressions are composed with the same argument.

One obvious candidate for a construction of this type is the split topic construction in German (see e.g. van Riemsdijk 1989, Fanselow 1988, Diesing 1992, van Geenhoven 1998, Kuhn 2001, and many others). In this construction, an argument of the predicate is realized by two distinct DP’s, one in topic position and the other internal to the clause. The topic DP is a bare plural—or, in some dialects, a singular indefinite—that occupies the specifier of C or forms part of a VP that surfaces in this position. The clause-internal DP cannot have an overt N and in this sense resembles the remnant of NP ellipsis. Some representative examples are cited below.

(89)a. Ameisen haben ja einen Postbeamten viele gebissen.  
ants have Prt a postman many bitten  
As for ants, many have bitten a postman. (Diesing 1992: 33)

b. Einen Frosch glaube ich, dass er einen kleinen sah.  
a frog believe I that he a small saw  
As for frogs, I believe he could see a small one. (Kuhn 2001: 185)

c. Einen Wagen gekauft hat er sich noch keinen.  
a car bought has he himself yet none  
As far cars, he has not yet bought one. (Kuhn 2001: 181)

The syntactic dilemma posed by the split topic construction can be stated very simply. Island effects argue that the topic DP has achieved its position via movement (see van Riemsdijk 1989). That, plus the fact that the topic DP and the clause-internal DP
correspond to the same argument, suggests that the two should be derived via some movement that splits up a DP into two independent constituents. But phrase structural considerations—for instance, the ability of each DP to exhibit its own distinct determiner—make any straightforward analysis in terms of movement problematic.

On the semantic side, van Geenhoven (1998) asserts that both halves of the split topic construction must be interpreted as narrow-scope indefinites (see also Diesing 1992). In her analysis, the topic DP and the clause-internal DP are generated as independent subconstituents of VP and interpreted via semantic incorporation: the properties they denote are absorbed by the verb as restrictions on the targeted argument.

While our approach to split topics is in many ways a reinterpretation of van Geenhoven’s approach, we differ from her and follow Kuhn (2001: 210) in our semantic characterization of the two DP’s. In our view, the topic DP must be interpreted as a narrow-scope indefinite, but the clause-internal DP need not be: it can be a wide-scope indefinite or—in Swiss German—even a universal quantifier, if conditions are right (see Spaelti 1995). Consider

(90) Orthographische Fehler waren ihm sogar drei nicht aufgefallen.
    spelling mistakes were to.him even three not noticed

    As for spelling mistakes, there were even three that he didn’t recognize.
    (van Geenhoven 1998: 33, note 15)

Once this view is adopted, our approach to split topics becomes clear in outline. This is another construction in which multiple expressions are linked to, and composed with, the same argument. Further, the evidence argues that the topic DP must be composed via Restrict, whereas the clause-internal DP can in principle be composed by a wider range of composition operations. The topic DP has a profile fully consistent with the semantics of predicate restriction. It can be interpreted only as a narrow-scope
indefinite and it can evidently be iterated (Kuhn 2001: 191-192). On the other hand, the clause-internal DP has none of these characteristics.

For these suggestions to be crystallized into an analysis, we would have to respond to some challenging questions. What forces the meaning of the topic DP to be composed via Restrict? Further, assuming that semantic composition tracks syntactic structure, what syntactic structure will ensure that the targeted argument is restricted by the meaning of the topic DP before it is (potentially) saturated by the meaning of the clause-internal DP? The contemplation of these questions must remain a project for the future. Meanwhile, split topics give some reason to believe that multiple linking is not limited to incorporation but can occur in other constructions as well.
Notes

1. But see Kratzer (1994) for an approach in which composition operations can target a predicate’s argument without automatically saturating it. Kratzer’s operation of Object Identification resembles our operation of Restrict in certain respects. A full comparison of her approach with ours is beyond the scope of this study.

2. Here is how Mithun (1984: 863) characterizes CNI: “A relatively general N stem is incorporated to narrow the scope of the V...but the compound stem can be accompanied by a more specific external NP which identifies the argument implied by the N.” We think that Chamorro incorporation is clearly an instance of the phenomenon that Mithun termed CNI. But we are not committed to the details of her characterization, including her idea that the “external NP” is more specific than the incorporated “N stem”. See Section 3.7 for discussion.

3. Irrelevantly, these examples are grammatical under a different interpretation in which the extra object is associated with the verb on the right but not with the verb on the left. In this interpretation, (41b) is grammatical and means ‘We have pets and are raising those dogs.’

4. Two points. (i) Though sentences of the type (46-47) are ungrammatical, their intended meaning can be expressed by grammatical clauses whose predicate is a possessed DP. Corresponding to (46a), for instance, is:

   (a) Ti patgun Julia yu’.
       not child Julia I
       I’m not Julia’s child.

   (ii) Some of the DP’s identified as extra objects in (48) can also be analyzed as DP predicates of relative clauses modifying the incorporated object. (The relative
clauses have the morphological form of so-called ‘existential relatives’; see Chung 1987.) It is important that not all extra objects of tāi- are amenable to such an analysis. See the discussion immediately below in the text.

5. McNally’s (1992) claim that the pivot of the existential construction must denote a property leads her to two predictions. First, both definite and indefinite common noun phrases should in principle be eligible to be serve as pivots, because both are property-denoting. In her system, definite pivots are excluded by a different, discourse-based principle. Second, quantified noun phrases should be able to serve as pivots when the quantification is over properties.

The first prediction is evidently borne out for the existential verbs guāha ‘exist’ and taya’ ‘not exist’; see Chung (1987) for a few examples. As far as we can tell, though, neither prediction is borne out for tāi- ‘not have’. Further investigation is clearly warranted.

6. Notice that we are assuming that the affirmative polarity item un has a lexical entry distinct from the lexical entry of the complex determiner ni un ‘no, not any’, which is a negative polarity item.

7. It may be that English have exhibits a restriction similar to the Chamorro restriction described in the text. Consider pairs of examples like:

(i)a. Do you have a key?
   b. Do you have your key?
(ii)a. I don’t have a car.
    b. I don’t have my car.

Notice that in the (a) examples, have can express temporary location (e.g. do you have a key with you at this time/place) or a more permanent relation of possession. But in the
(b) examples, only the meaning of temporary location seems possible. Conceivably, the pragmatic considerations discussed in the text are responsible for the fact that the (b) examples seem not to be able to express any more permanent relation of possession.

8. Recall that the incorporated object never contains a possessor, given that it is NP but not DP, and possessors in Chamorro reside in the specifier of D.

9. Notice that we do not assume a meaning for *gaëi*- like that proposed by Partee (1999) for relational *have*. There are two reasons for this. First, the subject and the incorporated object of *gaëi*- can evidently be related in a wider range of ways than can the subject and the object of relational *have*. Second, the extra object of *gaëi*- does not exhibit a definiteness effect (see Section 3.5.1), whereas the object of relational *have* does. Notice that only the first reason would prevent us from assuming a relational meaning for *täï*- ‘not have’. In order to simplify the exposition, we do not pursue this option in the text.

10. Among the aspects of Bittner’s analysis that we do not deal with are its formalization, the notion of centering, and centering-related ambiguities.

11. Two points. (i) Stenning takes a different approach to the corresponding examples of discourse anaphora. He suggests that noun phrases such as *the cat* and *Patrick’s pet* can be anaphorically related if the context, or the text itself, reveals that they are coextensival.

   (ii) The observations made in the text do not extend to extra objects that are pronouns. Pronouns are, according to Stenning, essentially at the top of the hierarchy of class inclusion, so any incorporated object ought to be subordinate to them. Nonetheless, pronouns *can* serve as extra objects in Chamorro. See Section 3.4 for extra objects that are definite pronouns and (a) below for an indefinite pronoun that is a negative concord
item.

(a)  Tāi-[lateria] esti na tenda ni háfafa ha'.
     agr.not.have-canned.goods this L store not anything Emp
     This store has no canned goods at all.

One could view the contrast between this example and (81) in the text as a further indication that the relation between the incorporated object and the extra object is fundamentally not an anaphoric relation.

12. Examples like (83) make the point that the incorporated object is not appropriately viewed as a ‘classifier’ of the extra object.

13. In (85a) and (85c), the donkey pronouns are null because all inanimate nonreflexive pronouns in Chamorro are null. Importantly, the agreement on the verbs bendi ‘sell’ and na’bunitu ‘make nice’ is chosen from the transitive paradigm, a fact that reveals that a direct object is syntactically present, even though inaudible.

14. More radical approaches to languages of type (ii) can be imagined. Baker (1996: 291) observes that in Mohawk, incorporated constituents “can have the full range of interpretations of any other nominal”, an observation that he connects to the fact that Mohawk lacks semantically significant determiners and, in this sense, does not distinguish semantically between NP and DP. He further suggests that the same is true of other languages with canonical versions of CNI.

One could exploit these connections by speculating that in languages with canonical CNI, all noun phrases—whether incorporated or not—would be property-denoting, and therefore equally eligible for composition via Restrict or via Specify. The result of composing the meaning of a noun phrase via Restrict would be a narrow scope indefinite, assuming that no further composition targeted the same argument and existential closure occurred. The result of composing the meaning of a noun phrase via
Specify would be either a wide scope indefinite or a definite, depending on whether the choice function variable was existentially closed or had its value determined by the common ground. Whatever compositional route was chosen, a discourse referent would ultimately be introduced.

Such an analysis would attribute the discourse difference between incorporation in Chamorro and incorporation in Mohawk to a more wide-ranging difference in the way(s) that independent noun phrases were interpreted in these languages. We are very reluctant to pursue this possibility. For a different exploration of crosslinguistic differences in the interpretation of noun phrases, see Chierchia (1998).

15. Because the Chamorro verbs of possession are morphologically related to existential verbs, they could be viewed as asserting the introduction of a discourse referent corresponding to their internal argument. Chamorro could then be classified as a language of type (i) or type (iv).
APPENDIX A. THE SYNTAX OF CHAMORRO INCORPORATION

Since Kroeber (1909, 1911) and Sapir (1911), most discussions of the phenomenon of incorporation have approached it from the standpoint of the morphology-syntax interface. The fundamental issue concerns the status of the incorporated noun. Does this noun have a syntactic life independent of the complex verb containing it, or is it merely a subpart of a complex word formed by compounding or some other morphological process?

The issue has continued to be controversial, as can be seen from e.g. Sadock (1980; 1986), Mithun (1984; 1986), Di Sciullo and Williams (1987), Baker (1988; 1996), Rosen (1989), Anderson (2000), and others. But it is firmly in the background for the purposes of the current work. To emphasize this, we have relegated our discussion of the phrase structure of Chamorro incorporation to this Appendix.

Section A.1 surveys the lexical and syntactic approaches to incorporation, with particular attention to the phenomenon that Mithun called classificatory noun incorporation (CNI). Section A.2 discusses some Chamorro evidence that narrows the range of possibilities but does not settle the status of the incorporated object. Section A.3 presents some evidence that bears directly on this question. Much of the evidence favors a syntactic analysis à la Baker (1988; 1996), in which the incorporated N combines with V via head movement. Section A.4 returns to the extra object, which was shown earlier to be a syntactic adjunct (in Section 3.4.1), and discusses its attachment site.
A.1 Previous Approaches

The issues raised by incorporation have a special slant in CNI, when the incorporated noun is doubled by an independent noun phrase. In essence, the independent noun phrase seems to offer an additional window into the status of the incorporated noun.

Proceeding for simplicity’s sake as if the only (relevant) incorporation is object incorporation, we can frame two questions about the phrase structure of CNI. First, does the incorporated object function as an independent noun phrase in the syntax? And second, is the extra object a complement of the verb?

The lexical approach to incorporation answers ‘no’ to the first question and ‘yes’ to the second. In this approach, the predicate of CNI is a transitive verb whose DP complement is the extra object. The incorporated object is a ‘qualifier’ (Mithun 1984: 859, 863; Di Sciullo and Williams 1987: 64) or ‘classifier’ (Rosen 1989: 297) which imposes additional selectional restrictions on the extra object but has no independent syntactic status (see the references just cited, Anderson 1992: 33, and—for commentary—Sadock 1991: 92-93 and Baker 1996: 306-314). Semantically, such an approach has much in common with our view that the incorporated object is semantically incomplete and composed via Restrict. As far as the syntax goes, it assumes the phrase structure for CNI sketched below.

(1)

\[
\begin{array}{c}
V' \\
\text{V} \\
\text{DP} \\
\text{V} \\
\text{N}
\end{array}
\]

In this structure, the V in the box is a morphologically complex verb consisting of the verb plus the incorporated object. The complex verb is transitive: its DP complement, in bold-face, is the extra object.
The syntactic approach to incorporation answers ‘yes’ to the first question and ‘no’ to the second. The standard generative version of this approach was developed by Baker (1988) and investigated in detail by Baker (1996) for CNI in Mohawk and other polysynthetic languages. In Baker’s system, the incorporated object originates as the head of a NP complement to V. This N raises to adjoin to V via head movement, thereby enabling its NP to satisfy universal principles (e.g. the Case Filter (Baker 1988) or the Theta Criterion (Baker 1996)). The extra object is an adjunct, attached outside VP and coindexed with the NP complement (see Baker 1996: 306-326). In such an analysis, the structure before head movement is essentially (2).

(2) \[
\begin{array}{c}
\text{VP} \\
\text{VP} \\
\text{DP}_i \\
V' \\
V \\
\text{NP}_i \\
N
\end{array}
\]

Previous discussions of CNI that are explicit about phrase structure are generally committed one of these two structures. It should be obvious, though, that (1-2) do not exhaust the possibilities. One can easily imagine a lexical approach to incorporation in which the extra object is not a DP complement of the verb, but rather an adjunct. Such an approach might assume a phrase structure for CNI like (3).

(3) \[
\begin{array}{c}
\text{VP} \\
\text{VP} \\
\text{DP} \\
V \\
V \\
N
\end{array}
\]
One can also imagine a syntactic approach to incorporation in which head movement operates on a phrase structure different from (2). For instance, the verb might take a small clause complement projected from some functional head $F$, where $F$’s complement is the maximal projection of the incorporated object and $F$’s specifier, the extra object. Before $N$ raises, ultimately to adjoin to $V$, such a structure would look like (4).

(4)

$$
\begin{array}{c}
V' \\
V \\
F' \\
F \\
N
\end{array}
$$

$FP$

$DP$

$NP$

Though (3) and (4) have not, as far as we know, been seriously proposed by anyone, they nonetheless serve to make the point that the extra object might not reveal as much about the status of the incorporated object as one might have hoped. Even so, the two are connected in one respect. Suppose we accept the idea that a head can have at most one complement, and suppose further that there is exactly one verb in the canonical incorporation clause. Then if the extra object is a complement of the verb, the incorporated object cannot be; and vice versa.

A.2 Some Inconclusive Results

With this much background, let us now revisit the syntactic results of Chapter 3. We begin with some results that help to clarify the phrase structure of incorporation, but ultimately have little to say about the status of the incorporated object.
A.2.1 The Extra Object is a Syntactic Adjunct

In Section 3.4.1 we established that the extra object in Chamorro incorporation is not a complement of V, but rather syntactically adjoined. The evidence came from the extra object’s inaccessibility to Wh-movement, its islandhood, and its inability to be shared by conjoined verbs.

The conclusion that the extra object is an adjunct argues that incorporation clauses in Chamorro cannot have (1) as their phrase structure. Nor can they have (4) as their phrase structure, because in (4) the extra object is the specifier of a complement to V and therefore equivalent to a complement of V for movement purposes (see Chomsky 1986). The range of possible phrase structures is thus narrowed significantly, although the status of the incorporated object remains unresolved.

A.2.2 The Incorporated Object Originates Within NP

In Section 3.3 we established that the incorporated object originates within a maximal projection that we identified as NP but not DP.

One might be tempted to see this as evidence for the superiority of the syntactic approach to incorporation. The line of thought would go as follows. It is assumed by virtually everyone that the complex verb of incorporation consists of V plus an incorporated noun. In the syntactic approach, this N originates as the head of a NP complement to V and then raises to V via head movement. In the lexical approach, the N forms a morphological compound with V, where the process of compound formation is assumed to be restricted to heads. Consequently, only versions of the syntactic approach have assumed that the incorporated N originates within its own NP.

There is, however, nothing necessary about this state of affairs. It is easy to
conceive of a lexical approach to incorporation in which the compound verb would consist of V plus the phrasal constituent NP. In such a scenario, the so-called incorporated noun would be a NP, but for morphological purposes alone. It would still have no syntactic life independent of the complex verb containing it.

We introduce this scenario because it strikes us as quite plausible, both in general and for Austronesian languages in particular.

Consider the general issue first. Numerous generative linguists have observed that morphological compounds sometimes consist a head plus a phrase. One classic example involves so-called N-N compounds in English. It has been known since Chomsky and Halle (1968: 21-22 and note 9) that N-N compounds can exhibit a nonhead constituent that is a N with modifiers or, more rarely, a N with complements but without a determiner—NP but not DP in current terms (see Hoeksema 1988; Lieber 1988; Cinque 1993; Spencer 1991: 321; Jackendoff 1997; and others). Some of these NP-N compounds are widely accepted and very familiar.

(5)a. [rare book] dealer
    b. [second language] acquisition
    c. [civil rights] bill
    d. [excess profits] tax

Others are new creations that suggest that the formation of NP-N compounds is productive.

(6)a. [high net worth] individuals (from the Santa Cruz Sentinel)
    b. [UCSC students of color] activists (from the Santa Cruz Sentinel)
    c. [small enrollment] courses (from a UCSC administrative memo)
    d. [eligibility for review] policy (from a UCSC administrative memo)
    e. [control of dogs] act (from a sign about the leash law in Dublin, Ireland)

Opinions differ on what theoretical conclusions should be drawn from complex words of this type (see the references cited above for a range of views). But whatever the
broader implications, it seems clear that morphological theory must recognize that compounds can consist of a head plus a phrase. A lexical approach to incorporation that treats the complex verb as a compound of V plus NP would thus be permitted on general grounds.

We think it significant that some Austronesian languages distantly related to Chamorro seem to have incorporation of just this sort (see Mithun 1984 and Massam 2001). One of these languages is Maori. Below we present the Maori facts in detail, both to fill out the picture of semantically incomplete noun phrases in this language and to facilitate comparison with Chamorro.

A.2.2.1 Incorporation in Maori

In Maori, object incorporation offers an alternative to *he* for dealing with internal arguments that are semantically incomplete. In this construction, which is fully productive, a semantically incomplete noun phrase that is linked to the verb’s internal argument does not surface as an independent DP but instead is incorporated: it appears to the immediate right of V, unaccompanied by any determiner. Compare the transitive clauses in (10) with the incorporation clauses in (11).

(7)a. Kei te whāngai a Rewi i ngā poaka.
   T feed Pers Rewi DO the.pl pig
   Rewi is feeding the pigs. (Waititi 1962: 23)

b. He karanga i aua manuhiri.
   Pred.a call DO the.pl aforem visitor
   [The local women’s task] is to welcome those visitors. (Karetu 1974: 3)
c. I muri mai ka whānau a Koata i a Kāwharu. Koata then gave birth to Kāwharu. (Jones & Biggs 1995: 253 [40.2])

(8)a. He tino pai a Rewi ki te whāngai [poaka].
Rewi is very good at feeding pigs. (Waititi 1962: 23)

b. E karanga [manuhiri] ana ia.
She is welcoming visitors. (Bauer 1997: 199)

c. Tērā anō ia e whānau [tamariki].
She would have more children. (Jones & Biggs 1995: 109 [13.2])

Incorporation in Maori is an instance of what Mithun (1984) called incorporation of the compounding type: the incorporated object cannot be doubled by an independent noun phrase and the construction is, for all practical purposes, intransitive. Semantically, the incorporated object is interpreted as a narrow-scope indefinite that happens not to set up a discourse referent. In our terms, it is composed with the verb’s internal argument via Restrict.

Evidence from word order suggests that the verb and the incorporated object form a complex verb in Maori. Particles usually identified in Maori grammars as occurring in a fixed order to the right of V occur instead to the right of the incorporated object in incorporation clauses. Among these forms are the adverbial particles (shown in (9a)), the imperfective particle *ana* (9b), and the locative pro-form *ai* (9c).

(9)a. I whai [uri] anō tēnei tangata.
[The writer does not know whether] this man has any descendants.
(Jones & Biggs 1995: 39 [3.54])
b. E kiriweti [wāhine] ana ia.
T hate women he

He hates women. (Bauer 1997: 161)

T go away they.du to there make farm sweet.potato Pro

They would soon be coming to make kūmara plantations there.
(Jones & Biggs 1995: 281 [45.1])

Pronominal subjects, which occur to the right of V but to the left of nonpronominal argument and adjunct phrases, also occur to the right of the incorporated object in incorporation clauses.

T dive crayfish they

They are diving for crayfish. (Bauer 1997: 44)

T speak proverb we.du Ident Father

Father and I are discussing proverbs. (Karetu 1974: 59)

These word orders represent the only relevant possibilities. More generally, nothing, not even pro-forms, can separate the verb from the incorporated object in surface structure.

If we take at face value the claim that postverbal particles and pronominal subjects are positioned to the immediate right of V, then (9-10) suggest that the verb and the incorporated object form a complex verb—perhaps one created by morphological compound formation (see Bauer 1997: 315). Let us provisionally assume this, though other analyses are possible (see especially Massam 2001), and go on to scrutinize the internal structure of the incorporated object.

In the examples cited above, the incorporated object is simply a noun. But a much wider range of possibilities is attested in the literature. The incorporated object can be a compound noun (see Bauer 1993: 479).
(11)a. He aha hoki koutou i mau [rau rākau] ai?
Pred a what also you pl T wear leaf tree Pro

Why do you (pl) wear leaves of trees? (Karevu 1974: 4)

b. I muri mai i nga whakaongaonga, kai te hiahia [kapu tī] ahau.
at after to here DO the pl excitement T want cup tea I

After all the excitement, I need a cup of tea. (H.M. Ngata 1994: 137)

The incorporated object can also consist of conjoined nouns. In the examples below, the conjoined N’s are juxtaposed, sometimes with an adverb such as hoki ‘also’ following the rightmost conjunct.

T sleep man woman away at there

They married husbands and wives there.
(Jones & Biggs 1995: 339 [55.15])

b. Haere ki tāwāhi ki te kitekite [whenua, iwi hoki].
go to other side Infin see land people also

Go abroad to see lands and people. (Karevu 1974: 137)

c. Me haere koe ki te uta [kūmara, rīwai, kāpete, kāreti, T go you Infin load sweet potato potato cabbage carrot

You should go load sweet potatoes, potatoes, cabbage, carrots,
mātene hoki], ki runga i te taraka.
mutton also to top DO the truck

and mutton onto the truck. (Waititi 1974: 40)

The incorporated object can consist of a noun modified by an adjective, as Bauer (1993: 479) has observed. Notice that in (13c), the imperfective particle ana and the pronominal subject occur to the right of the adjective. This word order argues that the complex verb includes both N and its adjective modifier.
(13)a. Ka hanga [pā wehe] mo rātou ki runga i tētehi puke.  
They built themselves a separate fort on a hill.  

(Jones & Biggs 1995: 305 [50.3])

b. Ka kōrero [kupu tohutohu] a Hata ki a ia.  
Hata said words of advice (lit. guiding words) to him.  

(Waititi 1974: 165)

c. E rukuruku [kōura nunui] ana ia.  
She is diving for big crayfish.  

(Bauer 1997: 316)

The incorporated object can consist of a noun followed by other types of modifiers, including relative clauses. In (14a), the noun is modified by a finite relative clause; in (14b), by a nonfinite relative clause; and in (14c), by both an adjective and a relative clause.

(14)a. Nā reira i tahuri ai te wahine rā ki te kimi [huarahi e ea ai oā na wawata].  
Therefore the woman set about finding a way 

by which she could realize her goal.  

(Karetu 1974: 97)

b. Ko tēnei, ko te whai [wāhi hei tangi-hanga tūpāpaku].  
[One of the main reasons] is this, to have a place for mourning the dead.  

(Karetu 1974: 153)

c. He rerekē te whai [matua kēkē e rua tekau tau  
It’s funny to have an uncle twenty years
te tamarikitanga atu i a koe].
the being.young more than Pers you
younger than you. (H.M. Ngata 1994: 171)

The incorporated object can consist of a noun followed by a PP modifier. Notice that in (15) the pronominal subject occurs to the right of the PP. This word order confirms, as before, that the complex verb includes the entire phrase consisting of N plus modifier.

(15) Hai nga hōtoke ka purei [pirori ki rō whare] ahau.
in the.pl winter T play bowl at inside house I
In winter, I play indoor bowls. (H.M. Ngata 1994: 226)

Finally, the incorporated object can consist of a phrase that expresses coordination. In the examples in (16), the incorporated object ends with an indefinite DP that is headed by tētahi and preceded by the preposition or conjunction me ‘and, with’. Whether the relevant constituent is a comitative PP or a DP conjunct preceded by a conjunction, its status as a maximal projection strongly suggests that the entire incorporated object is not a head but a phrase.

(16)a. Ko Peiā ā i tono-a ki te moana ki te ruku [kuku, 
Ident Peter et.al T send-Pass to the ocean Infin dive mussel
Peter and his friends were sent to the ocean to dive for mussels,

kōura, kina, me ētahi atu kai moana].
crayfish sea.egg and a.pl other food sea

crayfish, sea-eggs, and other seafood. (Waititi 1974: 29)

b. Ka Å ore he mahi hoko [paraikete, hīti, pera, naihi, pāoka,
T.not a work buy blanket sheet pillow knife fork
There’s no need to buy blankets, sheets, pillows, knives, forks,
pune, tauwera, me ētahi atu taonga mō te whare].
spoon towel  and a.pl  other possession T.of the house
spoons, towels, and other things for the house. (Waititi 1974: 74)

In short, there is ample evidence that the incorporated object in Maori can be more than just N. It is a phrase which can be coordinated and which consists of N plus modifiers but without a determiner—NP but not DP, in other words. There is also evidence that the complex verb includes this entire NP (e.g. (13c) and (15)). Semantically, the results are fully consistent with the idea that the incorporated object is property-denoting and therefore semantically incomplete. Morphosyntactically, we can say this: if the complex verb of incorporation is, as we have proposed, a morphological compound in Maori, then the process of compound formation must be able to combine V with NP.

A.2.2.2 Summary

There are thus theoretical and empirical reasons to believe that morphological compounds can consist of a head plus a phrase. But if that is so, then the Chamorro evidence that the incorporated object originates within NP does not distinguish a syntactic approach to incorporation from a lexical approach.

A.3 Some More Conclusive Results

Fortunately, there is evidence that bears more directly on the status of the incorporated object in Chamorro. We can set the stage for the evidence by observing that head movement—the cornerstone of the syntactic approach—is widely viewed as an operation that targets heads and only heads. Such a view makes some clear predictions about the surface constituency of the incorporated noun. If the syntactic approach is correct for Chamorro incorporation and the complex verb is derived by head movement, then the
incorporated N should form a surface constituent with V that is separate from the rest of its original NP. On the other hand, if the lexical approach is correct, then there is no reason to expect N to be separated from the rest of NP, because—as we have just shown—morphological compounds can consist of a head plus an entire phrase.

We know of three empirical patterns that bear on the surface constituency of the incorporated noun and therefore on the issue of whether incorporation is morpholexical or syntactic. The first pattern favors a lexical approach to incorporation; the other two favor a syntactic approach.

A.3.1 Coordinate NP’s

As was observed in Section 3.3, there are speakers of Chamorro who permit the NP of the incorporated object to be a coordinate NP. Some examples were given in (25) of Chapter 3; another example appears below.

(17) Esti i pätgun gäi-[bula asút yan agäga’ na biskleta].
    this the child agr.have-ball blue and red L bicycle
    This child has a blue ball and a red bicycle.

Incorporated objects that are coordinate NP’s are also permitted in Maori, as we have just seen, and in Greenlandic (Bittner 1998). This is remarkable, given that the incorporation constructions found in these languages are, in other respects, quite dissimilar.

The ability of the incorporated object to be a coordinate NP argues for a lexical approach to incorporation in Chamorro. The reason is this. If the complex verb is a morphological compound consisting of V plus NP, then structures like (17) can be produced straightforwardly, as long as the process of compound formation has access to coordinate NP’s. Such access would be difficult to rule out in principle. However, if the complex verb were derived by head movement, then structures like (17) could be
produced only by violating the Coordinate Structure Constraint—to moving a N that is a proper subpart of a coordinate structure. The problem is diagramed in (18).

(18)

\[
\begin{array}{llll}
V' & & \\
V & NP & \\
gäi- & NP & Conj & NP \\
& NP & AP & yan & AP & NP \\
& N & asut & agäga’ na & N \\
& bula & biskleta & \\
\end{array}
\]

Similar problems would arise if the complex verb were derived in the syntax by some operation that combined V and N but did not involve movement—Merge, for instance (Chomsky 1995).

Considerations of this sort led Bittner (1998: 21-22) to reject a syntactic approach to Greenlandic incorporation for a lexical approach (more precisely, a base-generation approach). There are two reasons why we are reluctant to make a similar move. First, not all Chamorro speakers find sentences like (17) to be grammatical, although some clearly do. Second, it is not obvious to us how a lexical approach would handle the two patterns that we discuss next.

A.3.2. The Word Order of the Incorporated Object

As has been amply illustrated by this point, the incorporated noun in Chamorro always precedes the rest of the NP in which it originates. This amounts to saying that the NP of the incorporated object appears to be N-initial in surface structure.

The observation is important because Chamorro NP’s are not generally required to be N-initial. Modifiers can routinely adjoin to either side of NP, (see Section 3.2), and
when adjunction is to the left, the resulting NP begins with a modifier, not with the head
N. Nonetheless, the modifiers of an incorporated object must occur to the right of N.

Compare

        agr-have-car three the women
        The women have three cars.

   b. Si Juan gāi-[kareta agāga’].
        Unm Juan agr.have-car red
        Juan owns a red car.

   c. Tāi-[amiga ni yā-hu] si Carmen.
        agr.not.have-friend Comp WH[obj].like-agr Unm Carmen
        Carmen has no women friends who I like.

        agr-have-three car the women
        (The women have three cars.)

        agr.have-red L car I
        (I own a red car.)

   c. *Gāi-[yā-hu na kareta] si Juan.
        agr.have-WH[obj].like-agr L car Unm Juan
        (Juan owns a car that I like.)

The fact that the incorporated noun must precede the rest of its NP in surface
structure argues for a syntactic approach to incorporation. This is because head
movement automatically produces the word order of (19). In a head-initial language like
Chamorro, general constraints on movement will always cause a moved head to raise to
the left. Consequently, a N that raises to V in an incorporation clause must surface
outside, and to the left of, its original NP—just the surface arrangement shown in (19).

Assuming that head movement is obligatory in incorporation clauses, what is wrong with
(20) is simply that no movement has occurred.

Notice that the same facts would be mysterious in a lexical approach—more precisely, in an approach in which the complex verb was a morphological compound consisting of V plus NP. Given that NP’s are not generally required to be N-initial in Chamorro, it would be stipulutive to impose such a requirement on NP’s that are members of compound verbs. One could try to rationalize the requirement by assuming that the verbs of possession are prefixes that must attach to N. But such an assumption would not account for the verb’s inability to attach to a N modifier of the incorporated object. Consider (21), in which the incorporated object guma’ ‘house’ has an NP modifier consisting of the noun hayu ‘wood’. The order of the incorporated object and the modifier cannot be reversed, as (22) shows, even though this is allowed elsewhere.

(21) Man-gāi-[guma’ hayu].
    agr-have-house wood
    They have a wood house.

(22) *Man-gāi-[hayu na guma’].
    agr-have-wood L house
    (They have a wood house.)

Overall, these facts seem to suggest that a syntactic approach to incorporation is preferable to a lexical approach.

A.3.3 The Word Order of the Subject

A similar kind of evidence favoring the syntactic approach is provided by the position of the subject in incorporation clauses.

We have already observed that in Chamorro clauses whose predicate is a verb, various word orders are possible, but the unmarked word order is Verb-Subject-Object-Other Arguments. What is relevant here is that VSO order, however produced, combines
with the syntactic approach to make a prediction. If the complex verb is derived by head movement, then the subject should be able to surface between this derived verb and the original NP of the incorporated object. The subject should, in other words, be able to separate the incorporated N from the rest of its NP.

For reasons which we do not fully understand but which probably involve information packaging, the subject of an incorporation clause typically occurs at an edge of the clause rather than in the middle. Even so, the subject can occur clause-externally, and then it can separate the incorporated N from the rest of its NP.\(^2\) Consider the examples below. In (23a), the subject intervenes between the incorporated N and the NP modifier \(g\a’lag\u00f9\) ‘dog’; in (23b), between the incorporated N and the AP modifier \(as\u00f4\)\(\text{_t}\) ‘blue’; and in (23c), between the incorporated N and a modifier or modifiers including a relative clause.

(23)a.  \(\text{Ginī gāi-[ga’] i chi’lu-hu palao’an [ga’lagu].}\)  
Imperf agr.have-pet the sibling-agr female dog  
My sister had a dog.

b.  \(\text{Tāi-[atumobit] si Joaquin [as\u00f4\text{_t}].}\)  
agr.not.have-car Unm Joaquin blue  
Joaquin doesn’t own a(ny) blue car.

c.  \(\text{Gāi-[patgun] si Miguel [palao’an akuentuse-nña si Anna].}\)  
agr.have-child Unm Miguel female WH[obl].talk.to-agr Unm Anna  
Miguel has a daughter who Anna was talking to.

Perhaps the most telling of these examples is (23b), which means ‘Joaquin doesn’t own a(ny) blue car’. The sentential negation included in the meaning of \(tā\text{ï}_i\) ‘not have’ makes it highly unlikely that \(as\u00f4\)\(\text{_t}\) ‘blue’ could be the predicate of a clause independent from the incorporation clause. (In other words, (23b) does not mean ‘Joaquin doesn’t own any car and it is blue’.) The only plausible analysis is one that treats \(as\u00f4\)\(\text{_t}\) as an AP modifier of
the incorporated noun. Consistent with this, (23b) can be used to describe a situation in which Joaquín owns cars but none of them happens to be blue.

The syntactic approach can account straightforwardly for the word order shown in (23). But the facts would be more troublesome in a lexical approach in which the complex verb was a compound consisting of V plus NP. In order for such an approach to maintain that the incorporated N and its modifier(s) in (23) constituted a single NP, the subject would have to occur in the middle of the compound verb formed from that NP—a clear violation of lexical integrity. Thus, these facts, like those discussed in the previous subsection, seem to favor a syntactic approach over a lexical approach.

A.3.4 The Overall Situation

Where does this leave us? The two word order patterns just described seem to favor a syntactic approach to Chamorro incorporation over a lexical approach. For the lexical approach, the challenge would be to develop a coherent analysis of the modifiers and other dependents accompanying the incorporated N. The evidence that we have just seen argues that certain modifiers of the incorporated N do not form part of a compound verb. At the same time, the analytic alternative that would fit most comfortably into a lexical approach is not plausible—namely, to treat the full range of dependent constituents documented in Section 3.3 of the text as extra objects. One reason is that not all such constituents are attested independently as DP’s. Another reason is that such constituents can co-occur with an extra object. But in general, the extra object cannot be iterated; see Section 3.6 of the text.

On the other hand, the coordination pattern described at the beginning of this Section seems to favor a lexical approach to incorporation over a syntactic approach. For
the syntactic approach, the challenge would be to reconcile the obligatory character of head movement in incorporation clauses (see (19-22)) with the fact that such movement in (17) would violate the Coordinate Structure Constraint. This is a substantial challenge, made more so by the recurrence of the coordination pattern in languages such as Maori and Greenlandic.

We leave the matter here, aware that the evidence—so far—could be viewed as evenly balanced between the two approaches.

A.4 The Attachment Site of the Extra Object

Let us, finally, return to the question of where the extra object is adjoined in the structure of incorporation clauses. We will suggest an answer which, surprisingly, seems to weigh in favor of a syntactic approach to incorporation.

Chamorro is a language in which the only adjuncts that are completely inaccessible to movement are those adjoined to NP (see Chung 1998, Chapter 9). For instance, a prepositional phrase adjoined to VP (such as (24a)) or IP (24b) can undergo Wh-movement as long as no island boundaries are crossed. But a prepositional phrase adjoined to NP (24c) cannot undergo Wh-movement at all.

(24)a. Hafa pukka’-ña i ōtgun ni bintana t antis di u-falagu?
what? WH[obl].break-agr the child Obl window before agr-run
What did the child break the window with before he ran away?

b. Disdi ngai’an nai mediku-n nana-mu si Juan t?
since when? Comp doctor-L mother-agr Juan
Since when has Juan been your mother’s doctor?

c. *Pāra hayi na guāha [chinina t]?
for who? Comp agr.exist shirt
(Who was there a shirt for?)
Suppose we take this descriptive generalization at face value. Then our demonstration that the extra object, an adjunct, is inaccessible to movement suggests that it must be adjoined to NP, where the relevant NP is presumably the NP in which the incorporated object originates. In effect, the strategy of this proposal is to embed the extra object so deeply in the structure that movement is impossible. The result is the rather unusual structure sketched in (25). Here X represents a category that would be V’ in a syntactic approach to incorporation, but V—the category of the compound verb—in a lexical approach.

\[(25) \quad X \]
\[V \quad NP \]
\[NP \quad DP \]
\[N \]

Interestingly, there is a sense in which (25) seems more plausible in a syntactic approach to incorporation than in a lexical approach. In the lexical approach that we have been pursuing, the complex verb is a compound consisting of V plus NP. If the extra object is adjoined to NP, it presumably would form part of that same compound. Now it is generally assumed that the nonhead constituents of compounds do not refer specifically, to individuals, but only generically, to properties or kinds (see e.g. Spencer 1991: 312). The incorporated object is well-behaved in this respect, because it is semantically incomplete. But the extra object is not: it can refer to a specific individual, as we have already shown (in Section 3.4). The observation argues that the extra object should not be embedded in the compound verb after all. But then the lexical approach is left with no straightforward account of the fact that the extra object is inaccessible to
movement.

In contrast, no comparable problems arise with (25) in a syntactic approach. One might wonder whether (25) would—in either approach—violate the universal prohibition against adjunction to arguments (see McCloskey 1992). No violation occurs, however, if we assume that what is prohibited by this principle is adjunction to syntactic expressions that are semantically complete—expressions whose meaning would saturate the argument with which they are composed.

We conclude that the attachment site of the extra object provides some reason to favor a syntactic approach to incorporation after all. After head movement, (25) would look like

(26) \[
V' \\
V \quad NP \\
V \quad N_i \quad NP \quad DP \\
_i \\
\
\]

Importantly, assuming that semantic composition tracks syntactic structure, (26) accords almost perfectly with the formal account of the semantics of incorporation that we offered in Chapter 3. In that account, the verb’s internal argument is first restricted by the meaning of the incorporated object and can then be saturated by the meaning of the extra object. The only detail to be worked out is how to reconcile the semantic story with a syntactic structure in which V forms a constituent with the incorporated noun, but not with its entire NP. We leave this final detail as a project for the future.
Notes

1. Massam’s (2001) analysis of the Niuean construction that resembles Maori incorporation is radically different from ours. She proposes that in the Niuean construction, which she calls ‘pseudo noun incorporation’, the entire VP consisting of V plus an NP complement raises to the specifier of IP.

2. The examples cited in the text involve nonpronominal subjects only. This is because the placement of weak pronouns is determined by prosodic considerations, not purely syntactic considerations.
APPENDIX B. MAORI AND CHAMORRO

The two languages that are the empirical focus of this study, Maori and Chamorro, belong to different branches of the Austronesian family and are therefore distantly related to each other.

Maori is a Polynesian language of New Zealand. The number of highly fluent speakers of Maori has clearly declined over the last half-century—to just over 8% of the adult Maori population in 1995. But the language has also been the focus of intense revitalization efforts, beginning with the Kohanga Reo (Language Nest) movement in 1981. Maori was recognized as an official language of New Zealand in 1987. For discussion of language maintenance efforts, the current situation of the Maori language, and prospects for the future, see Reedy (2000).

Maori is a well-documented language. Most of our Maori examples come from twentieth-century published sources—narratives, grammars, dictionaries, teaching materials, and journal articles. Some examples are from nineteenth-century sources (e.g. Orbell 1992, H.W. Williams 1971[1844], and W.L. Williams 1923[1862]). We have not changed the orthography of the original sources except to convert the double vowels sometimes used to represent long vowels (e.g. aa) to vowels with a macron (e.g. ā).

Maori examples not attributed to a published source were generously supplied in 1994 by J.W. Milroy and Te Haumihia Mason, both of the University of Waikato, and T.S. Karetu, Head of the Maori Language Commission. We are greatly indebted to them.

Chamorro is a Western Austronesian language of the Mariana Islands, an archipelago consisting of Guam, an unincorporated U.S. territory, and the U.S. Commonwealth of the Northern Mariana Islands (CNMI). In the CNMI, Chamorro is a
language of daily communication for most Chamorro adults, but the percentage of children and young adults who are fluent speakers has declined rapidly. The situation perhaps resembles that in Guam in the 1970’s or “the late 1960s when English began to replace Chamorro as the main language in a majority of island homes” (Rogers 1995: 245). Chamorro was recognized as an official language of Guam in 1972 and as an official language of the CNMI in 1985.

Chamorro is an underdocumented language with little written literature. Some examples cited in Chapter 3 are from published sources (e.g. newspaper articles or teaching materials); others are from Ann Cooreman’s two unpublished collections of Chamorro narratives (Cooreman 1982; 1983). But most of our Chamorro material has been generously supplied over the years by speakers in California and in Saipan. Among those whose insights and expertise we especially want to recognize are Priscilla Anderson, Antonio Atalig, Manuel F. Borja, Teresina Garrido, Ray P. Lujan, Maria T. Quinata, Maria M. Rosario, Anicia Q. Tomokane, and Francisco Tomokane. We also wish to thank Carmen S. Taimanao, former director of the Chamorro Bilingual Program of the CNMI Public School System, and William I. Macaranas, executive director of the Chamorro/Carolinean Language Policy Commission of the CNMI, for their advice and assistance.

There are various Chamorro spelling systems in use, including two official orthographies and a spelling that is widely used but not standardized (see Appendix A of Chung 1998). All of our Chamorro examples, including those from published sources, are cited in a uniform orthography that gives a faithful representation of surface phonemes but inherits some unusual features from the other spelling systems. We use \( a \) to represent the low back vowel and \( ã \) to represent the low front vowel. Following the
other orthographies, we also use *ch* to represent the voiceless alveolar affricate */ts/*, *y* to represent its voiced counterpart */dz/*, *ng* to represent the velar nasal, and the apostrophe to represent glottal stop. Also following the other orthographies, we use *ao* to represent the combination of the low back vowel plus */w/*, and the vowel symbols *u* and *i* to represent the glides */w/* and */y/* elsewhere.

Below are the abbreviations used in the morpheme-by-morpheme glosses.

**Abbreviations Used in the Maori Glosses**

- **aforem**  
  aforementioned

- **DO**  
  direct object marker

- **du**  
  dual

- **Ident**  
  identificational

- **Infin**  
  infinitive

- **Nmlz**  
  nominalization

- **Pass**  
  passive

- **Pers**  
  personal article

- **pl**  
  plural

- **Pred**  
  predicational

- **Pro**  
  oblique clitic pronoun

- **T**  
  Tense

- **yo**  
  younger

**Abbreviations Used in the Chamorro Glosses**

- **agr**  
  subject-verb agreement or possessor-noun agreement

- **AP**  
  antipassive

- **Comp**  
  complementizer
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