



Incorporation in Chukchi

Andrew Spencer

Language, Vol. 71, No. 3 (Sep., 1995), 439-489.

Stable URL:

<http://links.jstor.org/sici?sici=0097-8507%28199509%2971%3A3%3C439%3AIIC%3E2.0.CO%3B2-L>

Language is currently published by Linguistic Society of America.

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/about/terms.html>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/journals/lsa.html>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is an independent not-for-profit organization dedicated to creating and preserving a digital archive of scholarly journals. For more information regarding JSTOR, please contact support@jstor.org.

INCORPORATION IN CHUKCHI

ANDREW SPENCER

University of Essex

Noun Incorporation in Chukchi is shown to exhibit many of the characteristics that would be expected on a syntactic analysis of incorporation (e.g. Baker 1988): it is productive, the incorporated element may be referential, subjects can only be incorporated from unaccusative verbs, and noun incorporation feeds a process of Dative Shift, just as predicted on Baker's syntactic account.

However, several properties are incompatible with this. In particular, Chukchi freely allows incorporation of adjuncts (which would violate the ECP on Baker's account). In addition, nouns incorporate their modifiers/specifiers, in a way not predicted by a syntactic (head movement) theory. Moreover, Chukchi permits incorporation of aspectual/temporal elements, which contradicts even the much weaker version of Baker's thesis proposed by Rivero 1992 to handle adverb incorporation in Greek. The data are, however, broadly compatible with a lexical analysis along the lines of Rosen 1989.*

1. INTRODUCTION. Many languages exhibit a process in which a finite verb forms a compound with a noun which serves as its complement (for instance, a direct object). This is generally known as Noun Incorporation (NI) and has been the subject of debate amongst students of the languages of the Americas since the turn of the century (see, for instance, Sapir's classic paper of 1911). A helpful review of this and closely related phenomena is given in Gerds (forthcoming).

A central issue has always been the question of whether NI is essentially a lexical phenomenon, and hence a species of compounding linked to word formation, or whether it is essentially syntactic. This issue has been the subject of lively interchange in the pages of this journal (e.g. Mithun 1984, 1986, Rosen 1989, Sadock 1980, 1986), and elsewhere (e.g. DiSciullo and Williams 1987, Sadock 1991). Rosen (1989) has argued that there are two sorts of (productive) NI, both of which are essentially lexical processes. However, one of these (CLASSIFIER NI) produces compounded forms that continue to behave like transitive verbs, while the other (COMPOUND NI) is a more truly lexical type of compounding in which the verb is detransitivized.

Rosen's approach is a response to the complex and elegant theory of valency alternations which Baker 1988 has constructed around an extension of the idea that incorporation is a syntactic process. With this theory, he has provided an account for causative constructions, applicatives, passives and antipassives, as well as the phenomenon of POSSESSOR ASCENSION. The question of transitivity is tangential to Baker's approach, and he assumes a different set of criteria

* Parts of this paper have been read before audiences at the universities of Geneva, Durham, Essex, Manchester, and Newcastle, at the Russian State Humanities University, Moscow and at the 2nd Warsaw Summer School in Linguistics. I am grateful to a variety of participants for helpful comments. I am also indebted to M. Baker, M. Polinsky and to two reviewers for *Language* for advice and for providing an important stimulus to tighten some of the argumentation in an earlier draft. I am especially grateful to V. Nedjalkov and V. Rakhtilin for help with some of the Chukchi examples. The usual disclaimers apply.

for distinguishing between syntactic word formation and lexical noun + verb compounding.

In this paper I shall examine Baker's treatment of NI, touching also on his treatment of possessor ascension and applicatives. I base my discussion on Chukchi, the best known of the Chukotko-Kamchatkan group of languages (which includes Koryak, Alyutor and possibly Itel'men or Kamchadal). Although NI in this language group is often cited (Koryak opens the discussion in Mithun, 1984, for instance, and a Koryak example of NI is provided by Ullmann 1957, albeit in garbled form), very little scholarly attention has been devoted to NI in these languages. When the facts are presented, however, it turns out that incorporation in Chukchi (and, as far as I can tell, in its sister languages) behaves in a fashion which one would not predict from Baker's theory. Incorporation in Chukchi is very productive and it interacts with a number of other processes in precisely the way Baker's theory demands, notably, applicative formation, especially with dative nominals. However, if we take incorporation to be a uniform phenomenon in the language (surely the default assumption), then it is clear that in the wider perspective Chukchi incorporation does not respect Baker's syntactic principles. Specifically, Chukchi allows free incorporation of adjuncts, which, in Baker's model, would lead to a violation of the Empty Category Principle (ECP). The ECP is a principle of Government Binding syntax (Chomsky 1986) by which an empty category such as the trace of a moved element must be properly governed, for example by a lexical item such as a verb. Direct objects are properly governed and can thus be incorporated, but adjuncts are not properly governed, so on Baker's assumptions, the trace left by incorporation of an adjunct would not be properly governed either, in violation of the ECP. Additionally, Chukchi nouns regularly incorporate their modifiers, which could only be analyzed as an illicit kind of lowering given normal assumptions about the structure of nominal phrases. Thus, we must either assume that Baker's syntactic model is wrong, or that the syntactic explanation he provides for certain types of constraints on incorporation and certain types of interaction with other processes must be reevaluated. However, the Chukchi facts are, with certain reservations, compatible with Rosen's 1989 account, both empirically and conceptually.

Section two of the paper briefly describes Baker's theory of syntactic incorporation, and contrasts this with the lexicalist account of Rosen 1989. I then present a thumbnail sketch of those aspects of Chukchi morphosyntax that will be of importance to the argument. Section four summarizes evidence suggesting that NI in Chukchi is a syntactic phenomenon. On Baker's assumptions it would therefore have to be handled in terms of head-to-head movement in the syntax. Section five provides evidence that NI applies to adjuncts, in blatant violation of the syntactic principles Baker appeals to. The sixth section discusses valency alternations in more detail, and briefly discusses an alternative type of syntactic explanation for incorporation, within the framework of Sadock 1991. The section also provides a more detailed exposition of a lexical approach to NI in which the incorporated element is treated as a kind of modifier (based on ideas of Sproat 1985). The next section shows that nouns are able to incorporate their

own modifiers, which is compatible with the lexical explanation developed in section six but which poses serious problems for a syntactic account. The final section summarizes the arguments against a syntactic analysis of Chukchi incorporation.

2. TWO TYPES OF NOUN INCORPORATION. To illustrate the basic phenomenon of NI consider example 1 in which a Mohawk verb has incorporated its direct object (I indicate root by separating it from verb by =; other morphemes are separated by -):

(1) Mohawk (Baker 1988:81-2)

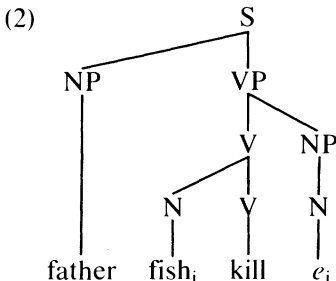
- a. *Yao-wir-a²a ye-nuhwe²-s ne ka-nuhs-a²*
 PRE-baby-SUF 3fS/3N-like-ASP the PREF-house-SUF
 'The baby likes the house.'
- b. *Yao-wir-a²a ye-nuhs = nuhwe²-s*
 PRE-baby-SUF 3fS/3N-house = likes-ASP
- c. **Ye-wir = nuhwe²-s ne ka-nuhs-a²*
 3fS/3n-baby = like-ASP the PRE-house-SUF

It can be seen from these examples that the verb incorporates its direct object ('house') but not its subject ('baby'). This will be taken as the canonical type of NI.

Baker's (1988) theory is based on Chomsky's (1986) theory of syntax. NI is the result of the syntactic rule Move-Alpha applying to the head of the direct object noun phrase. It adjoins the noun to the verb root (an instance of head-to-head movement). Baker argues that this leaves a trace of category N^0 , which must be properly governed by the compounded noun. According to Baker's interpretation of Chomsky's theory, this is possible only if the NP from which incorporation occurs is a complement to the verb.

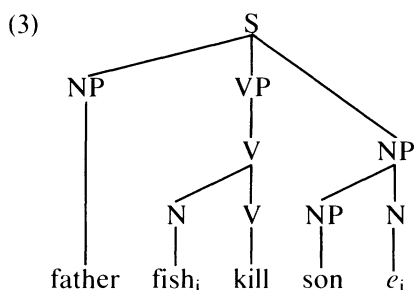
Extraction from an adjunct would result in an improperly governed trace, which would violate the Empty Category Principle (ECP). Likewise, incorporation of the subject noun would violate the ECP (though for different reasons). I refer the reader to Baker 1988 (especially chapter two) for the full technical details. Hence, NI is impossible universally from adjuncts or from subjects. The repeated crosslinguistic confirmation of this prediction has been one of the strong points of Baker's explanation of NI.

The process is illustrated schematically in 2:



This represents a sentence of the form 'Father fish = killed' meaning 'Father killed (the/some) fish'.

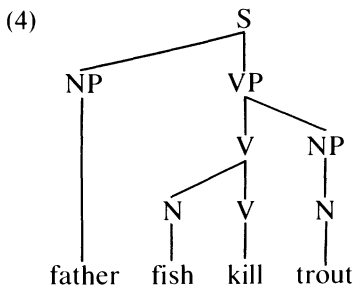
One of the predictions of this analysis is that the direct object NP might contain modifiers such as adjective phrases, relative clauses or determiners. If that is the case, then NI ought to leave them stranded. This is indeed the case. Baker illustrates this with material from a variety of languages. A case of particular interest occurs when the stranded modifier is a possessor. Under these circumstances, the compounded verb may treat the stranded possessor as a derived direct object and hence, say, agree with it or mark it with objective case. This is Baker's analysis of the phenomenon of possessor ascension, illustrated schematically in 3.



The underlying form of this sentence would correspond to 'Father killed the son's fish' while the version after NI would be 'Father fish = killed the son', where 'the son' acquires all the properties of the direct object of the derived verb 'fish = kill'.

In a footnote, Baker (1988: 454 n. 17) notes that some languages with NI fail to permit stranding of modifiers and leaves open the possibility that such languages may have a (productive) type of lexical compounding, not subject to the syntactic restrictions associated with the ECP and other such principles. This idea is taken up in more detail by Rosen 1989. The empty category corresponding to the incorporated noun in 2 is regarded as a trace of movement by Baker. In principle, however, it could be a null pronominal (so-called 'small pro') similar to the null element of null subject languages such as Italian. Rosen develops this idea into a bipartite typology of NI. The first type, classifier NI, is cognate with Baker's syntactic NI. However, the compounding process itself is lexical. The complex verb retains the argument structure of a transitive verb and hence licenses the appearance of a null direct object NP. On the assumption that the pro element is a lexical (X^0) or possible X' category (as opposed to the customary assumption that it is a phrasal empty category), then we would expect it to bear modification, including possession. Thus, Rosen predicts the same sort of constructions that Baker predicts.

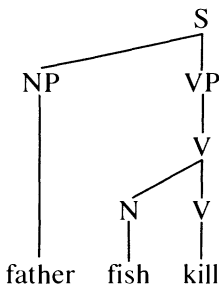
However, Rosen (1989: 313) also predicts that the direct object head might be filled with a lexical noun, 'doubling' the incorporatee. Such doubling is well attested, for instance, in Mohawk. Schematically, it takes the form in 4.



Rosen argues that such a situation can arise provided the direct object is more specific in reference than the incorporated noun. Hence, the incorporated element is akin to an agreement marker, identifying the direct object. This is reminiscent of classifier constructions in, for instance, Athapaskan languages, whence the name Rosen adopts for it. Baker notes such examples and argues that the doubled object is not an argument of the verb but rather some kind of adjunct.

The kind of NI that would correspond to the lexical compounding of Baker's footnote is compound NI in Rosen's typology. Here, the argument structure of the verb is saturated by the compounding process and thus NI creates an intransitive verb stem. As such it cannot license a direct object. This means that it will conjugate and case-mark like an intransitive verb and will not show any effects of transitivity. In particular, it will not permit doubling, nor will it exhibit modifier stranding. The resultant structure is illustrated schematically for completeness in 5 for a sentence 'Father fish = killed' meaning 'Father killed the/a/some fish'.

(5) Compound NI (intransitive construction)



In addition to the differences of behavior already mentioned and indicated by Rosen, Rosen makes a further prediction, though she fails to do so explicitly. Since NI is not the result of movement, and since the empty category is simply a lexical pro, there is no reason why the incorporated noun shouldn't correspond to something other than a complement, for instance, an adjunct. This is categorically excluded in Baker's theory. In practice, there might be rather heavy restriction on whether an adjunct can be represented as a null pronominal, however, so we should not expect to find a wealth of examples of adjunct incorporation in classifier-NI languages. However, in compound-NI languages,

there is no reason at all not to expect incorporation of adjuncts. For Baker, this would be a clear sign that the incorporation was, indeed, lexical and not syntactic. These observations will be crucial for our discussion of the Chukchi facts.

3. **CHUKCHI MORPHOSYNTAX.** The most detailed and reliable survey of Chukchi grammar is Skorik's two volume description (1961, 1977). English language surveys of many of the salient facts are found in Bogoraz 1922, Comrie 1979, Nedjalkov 1979, and Muraveva (forthcoming).

Chukchi has a rich system of nominal cases including absolutive, dative, locative, ablative, instrumental, and ergative. For nonhuman nouns, plurals are distinguished only in the absolutive. Case marking in the syntax follows a strictly ergative pattern: a transitive subject is always marked ergative and the direct object or intransitive subject is always marked Absolutive. Each clause must have exactly one absolutive NP (possibly null).

The verb in Chukchi agrees with both the subject and object in person and number. Agreement is shown by prefixes and suffixes which may cumulate person, number, tense, and mood, as well as subject and object features. (For this reason, morpheme-by-morpheme glosses are often impracticable.) As in many ergative languages, there is no passive but there is a regular and productive antipassive construction signalled by a prefix or by a suffix.

Agreement and ergative case marking are illustrated in examples 6–7:¹

- (6) a. *ətłəg-ən kətgəntat-gʔe* [intr]
 father-ABS ran-3SG.S
 'The father ran.'
- b. *Ekək kətgəntat-gʔe* [intr]
 son.ABS ran-3SG.S
 'The son ran.'
- (7) a. *ətłəg-e lʔu-nin ekək* [tr]
 father-ERG saw-3SG.S/3SG.O son.ABS
 'The father saw the son.'
- b. *Ekke-te lʔu-nin ətləg-ən* [tr]
 son-ERG saw-3SG.S/3SG.O father-ABS

Noun incorporation is illustrated in examples 8–10:

- (8) (Kozinsky, Nedjalkov, and Polinskaja, 1988: 652)
- a. *ənan qaa-t qərir-ninet* [tr]
 he.ERG deer-ABS.PL seek-3SG.S/3PL.O
 'He looked for the reindeer.'
- b. *ətlon qaa-rer-gʔe* [intr]
 he.ABS deer = seek-3SG.S

¹ The Chukchi examples are essentially transliterations from the official Cyrillic-based orthography. However, the transliterations have been normalized so as to eradicate the more irritating idiosyncrasies of Chukchi orthographic conventions (in which irregular features of Russian spelling are incorporated into the Chukchi for no good reason). Consonant clusters in Chukchi are broken by epenthetic schwa, generally placed between morphemes. In order to avoid changing the shape of certain affixes or roots I arbitrarily attach such schwas to the following or preceding morpheme.

(9) (Skorik 1948: 73)

a. *Wala-t mə-mne-rkənet* [tr]
 knife-ABS.PL IPL.S.IMPER-sharpen-3PL.O
 'Let us sharpen the knives'

b. *Mə = wala = mna-rkən* [intr]
 IPL.S.IMPER = knife = sharpen-1PL.S

(10) (Polinskaja and Nedjalkov 1987: 240)

a. *ətləg-e mətqəmət kawkaw-ək kili-nin* [tr]
 father-ERG butter.ABS bread-LOC spread-3SG.S/3SG.O
 'The father spread butter on the bread.'

b. *ətləg-ən kawkaw-ək mətqə = rkele-gʔe* [intr]
 father-ABS bread-LOC butter = spread-3SG.S

Note that Chukchi has a dominant/recessive vowel harmony system. Simplifying considerably, we can say that if the word contains a morpheme with dominant vowels /e a o/ then the vowels /i e u/ of all recessive morphemes anywhere in the word change to their dominant counterparts. The importance of vowel harmony is that its domain includes incorporation structures. Hence, one of the ways true incorporation can be distinguished from tight phrasal collocation is that vowel harmony can in principle apply to the former but not the latter case. This is seen in all three cases in 8–10 where the dominant roots *qaa*, *wala*, *mətqə* are incorporated by recessive verb roots. In practice there is seldom any difficulty detecting NI in Chukchi because the incorporated root appears directly to the left of the verb stem, and the resultant compound is then often subject to inflectional prefixation (tense/mood/agreement), as seen in 9 above.

The antipassive construction is characterized by demotion of a direct object to the status of an optional oblique case marked adjunct. The clause is then given intransitive morphosyntax, so that the verb agrees just with the subject and marks it with the Absolutive. A detailed discussion of the antipassive in Chukchi is provided by Kozinsky, Nedjalkov, & Polinskaja 1988. The process is illustrated schematically in 11.

(11) Antipassive: general schema

Subj-ERG Vb Obj-ABS ⇒

Subj-ABS Vb-AP (Obj-OBLIQUE)

Chukchi has two antipassive affixes, both recessive with respect to vowel harmony, the prefix *ine-/ena-*, and the suffix *-tku/-tko*. Some verbs can select either affix, others are found only with the one or the other. The demoted object appears in the dative case, or, less often, in the locative or instrumental case, the choice depending in part on the verb, in part, perhaps, on poorly understood semantic factors. Examples are shown in 12–14.

(12) (Nedjalkov 1976: 201)

a. *ətləg-e qərirərkən-in ekək* [tr]
 father-ERG seek-3SG.S/3SG.O son.ABS

b. *ətləg-ən ine-lqərirərkən akka-gtə* [intr]
 father-ABS AP-SEEK.3SG.S son-DAT
 'The father is looking for the son.'

- (13) a. *ətɫəg-e retə-rkən-in tekicg-ən* [tr]
 father-ERG bring-3SG.S/3SG.O meat-ABS
 b. *ətɫəg-ən retə-tku-rkən tekicg-e* [intr]
 father-ABS bring-AP-3SG.S meat-INSTR²
 'The father is bringing the meat.'
- (14) (Skorik 1960: 138)
 a. *Cawcəwa-ta na-pela-nat qaa-t* [tr]
 herder-ERG 3PL.S-leave-3PL.S deer-ABS.PL
 b. *Cawcəwa-t ena-pela-gʔat qaa-ta* [intr]
 herder-ABS.PL AP-leave-3PL.S deer-INSTR
 'The (nomadic) herders left the reindeer.'

Chukchi also has a set of valency alternations in which an oblique-case-marked nominal is 'raised' to direct object. It is then given absolutive case and it triggers transitive agreement. The language has a set of postpositions for specific relations but tends to make greater use of its oblique ('semantic') cases. Consequently, it is tempting to view this alternation as akin to applicative formation (best known from Bantu), in which a prepositional phrase is raised to direct object position when the verb receives special affixation. However, this alternation is never associated with explicit verbal morphology in Chukchi. In this respect it is similar to the Dative Shift alternation of English, illustrated in 15.

- (15) English Dative Shift
 a. *Tom sent a present to Harriet.*
 b. *Tom sent Harriet a present.*

Baker 1988 analyzes this alternation as a species of applicative formation, so for reasons of comparison I shall do the same.

The general schema of the applicative construction (as found for instance in Bantu languages) is shown in 16:

- (16) Applicative construction
 a. of intransitive verb
 Subj V-intr P + NP ⇒
 Subj V-P-tr NP (= Obj)
 b. of transitive verb
 Subj V-tr NP2 (= Obj) P + NP3 ⇒
 Subj V-tr NP3 (= Obj) NP2 (= 'frozen' Obj)

An example of a transitive verb undergoing applicative formation in the Bantu language Chicheŵa is given in 17.

- (17) Chicheŵa (Baker 1988: 229)
 a. *Mbidzi zi-na-perek-a msampha kwa nkhandwe*
 Zebras SUBJ-PAST-hand-ASP trap to fox
 'The zebras handed the trap to the fox.'

² The ergative case is always homophonous with another case, instrumental for common nonhuman nouns and locative for human nouns.

- b. *Mbidzi zi-na-perek-er-a nkhandwe msampha*
 Zebras SUBJ-PAST-hand-APPL-ASP fox trap
 'The zebras handed the fox the trap.'

As in the English gloss, 'fox' becomes a derived direct object in 17b.

I begin discussion of Chukchi with intransitive verbs, as the transitive verbs involve an extra process. There is no overt applied affix in Chukchi, hence, we obtain the general schema 18 for intransitive verbs.

(18) Chukchi applicative formation

Subj-ABS V-intr NP-OBL \Rightarrow

Subj-ERG V-tr NP-ABS (= Obj)

The valency alternations are described in some detail by Inenlikej and Nedjalkov 1967 (who refer to the verb classes as 'labile verbs') and Nedjalkov 1976. Not all verbs which select oblique complements or adjuncts undergo such alternations (approximate type frequencies for a variety of verb classes are provided by Inenlikej and Nedjalkov 1967). The examples shown in 19–22 are taken from Inenlikej and Nedjalkov's summary:

(19) Dative \Leftrightarrow Absolutive

a. *ətləg-ən welerkəlerkən omqa-gtə* [intr]
 father-ABS follows.3SG.S polar.bear-DAT

b. *ətləg-e welerkəlerkəne-n umqə* [tr]
 father-ERG follows-3SG.S/3SG.O polar.bear.ABS

'The father is following a polar bear.'

(20) Locative \Leftrightarrow Absolutive

a. *ətləg-ən gərulmərəkən jara-k* [intr]
 father-ABS go.round.3SG.S house-LOC

b. *ətləg-e gərulmərəkən-in jara-ŋə* [tr]
 father-ERG go.round-3SG.S/3SG.O house-ABS

'The father is going round the house.'

(21) Instrumental \Leftrightarrow Absolutive

a. *ətləg-ən jənatərəkən tekicg-e* [intr]
 father-ABS asks.for.3SG.S meat-INSTR

b. *ətləg-e jənat-ərəkən-en tekicg-ən* [tr]
 father-ERG asks.for-3SG.S/3SG.O meat-ABS

'The father asks for meat.'

(22) Ablative \Leftrightarrow Absolutive

a. *ətləg-ən olowŋətorkən troocg-epə* [intr]
 father-ABS dig.3SG.S pit-ABL

b. *ətləg-e olowŋətorkən-en troocg-ən* [tr]
 father-ERG dig-3SG.S/3SG.O pit-ABS

'The father is digging (from out of) a pit.'

This type of alternation is found with transitive verbs which take an absolutive and an oblique complement, but, in contrast to Chicheŵa (and English) this is only possible after the verb stem has been rendered overtly intransitive. I discuss this in more detail in the next section.

This completes the survey of the basic facts of Chukchi morphosyntax. We now turn to look in more detail at the process of NI and examine the evidence suggesting that this is a syntactic phenomenon, and hence the result of head movement in Baker's theory.

4. EVIDENCE THAT CHUKCHI NI IS SYNTACTIC. In the theory proposed by Baker (1988), to be syntactic, NI has to show a number of features. First, it must be productive and not subject to lexical conditioning.³ Second, it must correspond to an analytic construction in which the noun is not incorporated. Third, the incorporated noun should be referentially active, at least in certain contexts. For example, it might refer to a definite or specific entity or it should be possible to refer to the noun by means of a pronoun. Fourth, NI must be capable of stranding modifiers. In addition to these criteria, syntactic NI will have certain properties by virtue of being syntactic. In particular, it will obey constraints such as the ECP, which, *inter alia*, will prevent the incorporation of transitive subjects⁴ and adjuncts, but will permit the incorporation of subjects of unaccusative verbs. An unaccusative verb is an intransitive whose subject typically has the properties of a theme or patient rather than an agent or actor, and which in some languages triggers syntactic processes which distinguish it from an unergative verb, that is, an intransitive whose subject displays prototypically agentive characteristics. Baker 1988 follows the customary Government Binding analysis and treats unaccusatives as verbs which lack an underlying subject, though they have an underlying direct argument. The verb is, however, unable to assign case to its complement, which therefore moves into the subject position, where it receives nominative case. Since an unaccusative verb properly governs its underlying complement it is capable of incorporating it before it moves into the subject position. The resulting structure will respect the ECP because the trace of the incorporatee is in a governed position. Finally, NI should interact with other syntactic alternations (such as applicative formation) in a characteristic way. In this section I show that Chukchi NI behaves exactly as Baker would predict if it were a syntactic phenomenon on (almost) all these counts.

Chukchi NI is widely reported to be completely regular and productive (see

³ NI in the Eskimo languages seems to be triggered by a specific (though large) set of 'postbases' rather than just any old verb root. As Rosen (1989) observes this might mean that NI in these languages is not quite the same thing as NI in, say, Mohawk (cf. Mithun 1984, 1986). However, Baker cites examples from West Greenlandic as instances of syntactic noun incorporation (following Sadock 1980, 1986, 1991).

⁴ Many syntacticians now follow Pollock 1989 in splitting of the I(inflectional) category into T(ense), Agr(reement) and so on, and also adopt the assumption that subjects are generated as D-structure specifiers of VP (or adjoined to VP). In that case, a finitely marked verb in a language like Chukchi will pass through and adjoin to a variety of heads from its initial position as head of the VP, while the subject will pass through a variety of specifier positions. In principle, a transitive subject could be governed by the verb at several stages of such a derivation, which ought to permit incorporation of that subject. I have not yet found any discussion in the literature of this question, which poses serious problems for those who wish to adopt all three sets of assumptions conjointly.

Skorik 1948, 1961 for explicit discussion of this). I have seen no reports of lexical idiosyncrasy in NI. The only restrictions appear to be pragmatic or performance based (cf Polinskaja and Nedjalkov 1987: 256–7). In addition, the incorporation structure always corresponds to an analytic construction without incorporation.⁵

The question arises why the language should have a construction that merely creates a synonymous sentence. In addition to altering the expression of grammatical relations (which is of importance in some syntactic constructions) the main function of NI is pragmatic. A nominal in the absolutive case is interpreted as affected (e.g. Polinskaja & Nedjalkov 1987: 254):

(23) *ʔaacek ... etənw-a lewtə = rʔejim-nin*
youth.ABS master-ERG head = drill-3SG.S/3SG.O
'The master drilled the youth's head.'

(24) *ʔaacek-en etənw-a lewət rʔejim-nin*
youth-POSS master-ERG head.ABS drill-3SG.S/3SG.O
'The master drilled the youth's head.'

In 23 the action affects youth rather than head (e.g. it may cause him pain), while in 24 the action is presented as affecting the head, which, for example, may have been cut off the body.

As is typical universally, the incorporated element in NI is usually generic or nonreferential, but not always. Body parts with specific reference are frequently incorporated (e.g. 'head' in 23 above) and Polinskaja & Nedjalkov (1987: 255–6) provide the following example of anaphoric coreference with an incorporated noun.

(25) *gəm-nan pətlak tə-re-neren-ŋ-ən ʔecuulg-ən*
I-ERG on.purpose 1SG.S-FUT-drop-FUT-3SG.O night.pot
ənkʔam gət ʔacoo = rʔetgəpə-jgot tə-re-ntə-gət
and you.ABS night.pot = go-CAUSE 1SG.S-FUT-AUX-2SG.O
'I'll drop the night pot deliberately and I'll make you fetch it.'

Here, the incorporated *ʔacoo-* (note the vowel harmony) refers to the same entity as the word *night pot* in the first conjunct. To be sure, the incorporated element is less likely to be referred to in subsequent discourse. Polinskaja and Nedjalkov suggest that a likely continuation for 25 would be something like '... and you'll be humiliated'. If the incorporated noun were to feature in subsequent discourse (as in, say, '... and you'll bring the pot to show you have followed the order') the authors say that 26, in which there is no incorporation, would be more appropriate.

(26) *ənkʔam gət ʔecuulg-ək ena-rʔetgəpə-jgot tə-re-ntə-gət*
and you.ABS night.pot-LOC AP-go-CAUSE 1SG.S-FUT-AUX-2SG.O
'... and I'll make you fetch the pot.'

Thus, examples 25 and 26 show that referentiality is reduced by incorporation, without, however, being totally lost. Moreover, the authors provide example 27 as an interesting case in which an incorporated noun *kupre-/kopra-* 'net' is

⁵ See below for a possible set of exceptions (Nedjalkov 1976).

subject to contrastive (constituent) negation in the scope of a negative prefix *luŋ/loŋ-* (Polinskaja & Nedjalkov 1987: 267).

- (27) *ətlon loŋ = kopra-ntəwat-a it-gʔi ətrec qelujin*
 he.ABS NEG = net = set-GER be-3SG.S but fish.bag
 'He set a fish-bag, not a fish-net.'

The next criterion is stranding of modifiers. As it happens, there is only one clear cut case of modifier stranding. In general, modifiers cannot be stranded in Chukchi. However, it is not entirely obvious that this is for syntactic reasons. As we will see in §8, when a modifier of a noun (that is, an element corresponding to an adjective or determiner in English) is defocused, it is usually incorporated by the head noun. If the head noun itself is then incorporated by the verb, the modifier will be incorporated with it. Thus, we would not expect an adjective (much less a relative clause) to be stranded by NI, because the pragmatic factors which lead to NI in the first place would strongly favor incorporation of the modifier.

There is, however, one exception to this, it would seem. Possessors can be stranded, provided they subsequently undergo raising to direct object. This, of course, is what is predicted on Baker's theory. The attentive reader will have noticed that an example of such possessor ascension has already been given in 23. Further examples are:

- (28) (Skorik 1948: 74) [tr]
nə-pilgə-cwi-qin peneelʔ-ən
 3PL.S-throat-slit-3SG.O corpse-ABS
 'They slit the corpse's throat.'
- (29) (Polinskaja and Nedjalkov 1987: 259)
 a. *ətləg-in ətlʔa wʔi-gʔi*
 father-POSS mother.ABS die-3SG.S
 b. *ətləg-ən ətlʔa = wʔe-gʔe*
 father-ABS mother = die-3SG.S
 'Father's mother died (on him).'
- (30) (Kozinsky et al. 1988: 683)
 a. *ənan remkəlʔ-in pojg-ən məcətku-nin*⁶
 they.ERG guest-POSS spear-ABS break-3SG.S/3SG.O
 'They broke the guest's spear.'
 b. *ənan pojgə = mcatko-nen remkəlʔ-ən*
 they.ERG spear = break-3SG.S/3SG.O guest-ABS
 'They broke the guest's spear.'
 [Lit. 'They spear-broke the guest.']
- (31) (Nedjalkov 1976: 189)
 a. *ətləg-in ʔətwʔet jərʔet-gʔi*
 father-POSS boat.ABS flood-3SG.S
 b. *ətləg-ən ʔətwʔə = jərʔet-gʔi*
 father-ABS boat = flood-3SG.S
 'Father's boat flooded (on him).'

⁶ This is apparently a misprint for *məcetku-nin*.

Note that while it is usually incorporation of body parts that gives rise to possessor ascension (as in 23) it is not necessarily found only with inalienable possession, as 30 and 31 indicate.⁷

This completes the overview of how Chukchi seems to offer a paradigm case of syntactic NI. I now turn to a number of specific features of NI which are predicted by Baker's syntactic theory. The first of these has already been illustrated in example 29. Notice that in this sentence, the NI target is a subject nominal, apparently in violation of syntactic principles. In fact, a number of such cases are attested in the literature, a sample being given in 32–33.⁸

- (32) a. *ŋejə-k ʔəlʔəl təlɡə-gʔi*
 hill-LOC snow.ABS thaw-3SG.S
 b. *ŋejə-k ʔələ = lɡə-gʔi*
 hill-LOC snow = thaw-3SG.S
 'The snow thawed on the hill.'

- (33) (Nedjalkov 1976: 188)
 a. *tirkətir amecat-gʔe*
 sun.ABS set-3SG.S
 b. *terk = amecat-gʔe*
 sun = set-3SG.S
 'The sun set.'

In each case, it seems that it is only those verbs which semantically would be regarded as unaccusative which permit their subjects to incorporate in this way.⁹ Baker (1988: 88f) argues that this is expected if the unaccusative subject is regarded as a D-structure complement to the verb. Thus, NI occurs before the nominal has an opportunity to be raised to subject position. Where the possessor ascension occurs, the stranded possessor then moves to subject position to be marked with absolutive case and trigger agreement.

Chukchi NI also fulfills the expectations of a Bakerian theorist in the interaction between NI and the applicatives mentioned in section 3. Baker treats applicative formation as a process of Preposition Incorporation (PI). The applicative affix (for instance, the *-er-* suffix of the Chicheŵa example 17) is thus a syntactically incorporated preposition. This means that a Chukchi example such as 21

⁷ In addition to possessors, Polinsky 1993 reports that Chukchi also strands numerals.

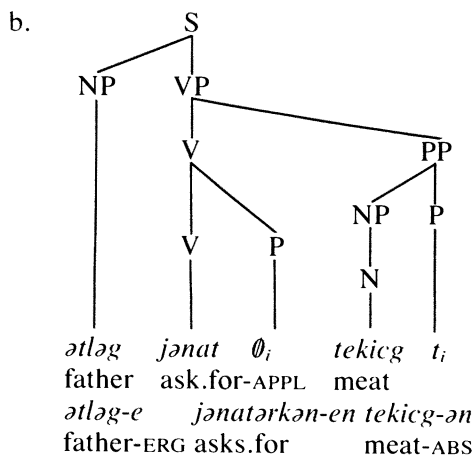
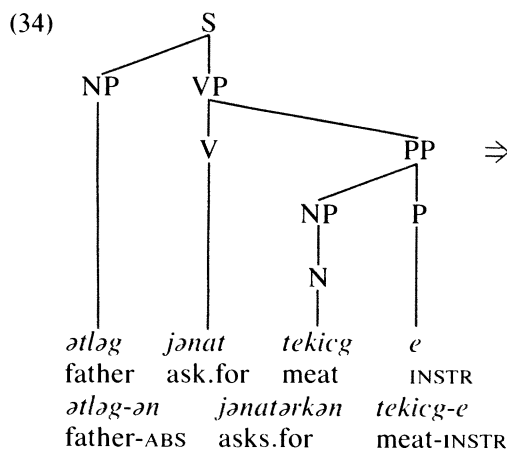
(i) *ətłəgə-n ɲireq qaa = gəntak-wʔe*
 father-ABS two deer = stray-3SG.S
 'Father lost two reindeer.'

She points out, however, that the stranded numeral doesn't inflect for case the way a freestanding nominal in the same position would, so that in this respect Chukchi differs from, say, West Greenlandic. This question needs further elucidation.

⁸ The 3SG.S agreement in 32b, 33b is the default agreement when there is an 'expletive' subject.

⁹ Polinsky 1990 argues that the class of intransitive verbs which incorporate their subjects is not coextensive with the class that passes other tests of unaccusativity. The argumentation is subtle and raises many interesting questions (not least over the status of unaccusativity itself). However, it appears to hinge on just one example. I therefore leave the matter open. Note also that Sasse (1984) has reported an isolated example of transitive subject incorporation in the Cushitic language Boni (see also van Valin 1992).

will be treated as in 34, where I represent the case ending as a kind of postposition for clarity of exposition.



A consistent feature of the applicative construction is that the derived verb is transitive and treats the former complement of the adposition as its new direct object. Baker (1988: 246) justifiably dubs this Marantz's Generalization, following Marantz 1984 who first described the phenomenon. As we will see, the generalization holds even when the basic verb is already transitive: the adpositional complement is again promoted to the position of direct object. Baker doesn't actually explain this, rather, it follows from a stipulation that verbs always assign case canonically in the same way, by assigning objective case (accusative or absolutive). This is the Case Frame Preservation Principle.

The question then arises as to what happens to the old direct object of a transitive verb which has undergone applicative formation (PI). In a language which exhibits NI the answer is straightforward: the old object must first be incorporated by the verb otherwise it will fail to get assigned case.¹⁰ When we

¹⁰ If the language does not have NI, as in the case of English or Chicheŵa, Baker argues that a kind of virtual NI, or reanalysis, occurs, in which the object is treated as though it had been

come to investigate applicative formation in Chukchi we find this is exactly what happens.

(35) (Nedjalkov 1976: 206)

- a. *ətləg-e təni-nin məmkəl er²-etə* [tr]
 father-ERG sew-TR button.ABS jacket-DAT
 'The father sewed the button onto the jacket.'

NI:

- b. *ətləg-ən məmkəl = ənni-g²i (er²-etə)* [intr]
 father-ABS button-SEW-INTR (jacket-DAT)

PI:

- c. *ətləg-e ir²-ən məmkəl = ənni-nin* [tr]
 father-ERG jacket-ABS button-SEW-TR

- (36) a. *ətləg-e akka-jpə maneman itke-nin* [tr]
 father-ERG son-ABL money.ABS take-TR
 'The father took the money from the son.'

NI + PI

- b. *ətləg-e ekək mane = etka-nen* [tr]
 father-ERG son.ABS money = take-TR

(37) Dative Shift (Kozinsky et al. 1988: 652-3)

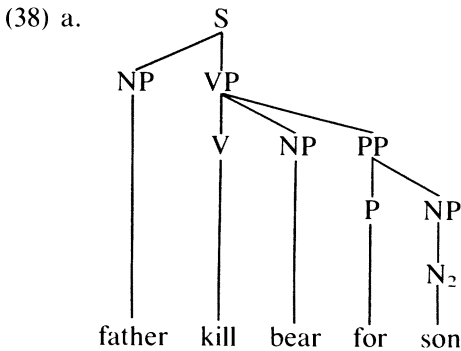
- a. *ətləg-e akka-gtə kejŋ-ən təm-nen* [tr]
 father-ERG son-DAT bear-ABS killed-TR
 'The father killed the bear for the son.'

NI + PI:

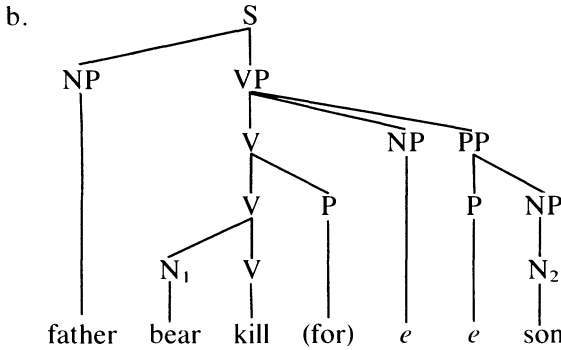
- b. *ətləg-e ekək kajnə = nmə-nen* [tr]
 father-ERG son.ABS bear = killed-TR

This is a regular alternation, especially the Dative Shift case, which is fully productive (Nedjalkov 1976).

The derivation of 37, given Baker's assumptions, is shown in 38.

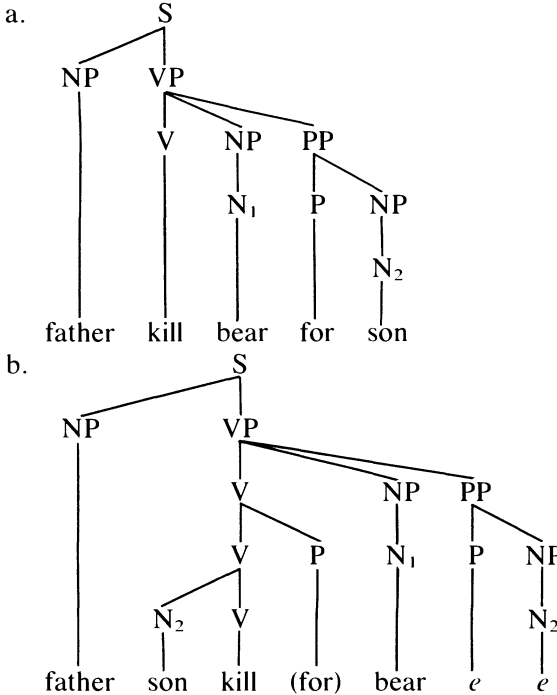


incorporated even though it hasn't. This raises an intriguing problem with proper names, which can readily undergo such reanalysis in English ('This is the show which brings you Bob Hope') although most NI languages, including Chukchi, seem to operate a ban on the incorporation of proper names.



Baker is at pains to point out that, in his model, it would be impossible to incorporate the adposition and then incorporate the complement of that adposition. It is of no little interest that this is widely found to be a valid prediction, given that *prima facie*, if PI turns the complement of the preposition into an object, we might expect that object to be incorporable in a language which permits NI. The technical details of Baker's analysis are not important for our purposes. It suffices that it makes clear predictions about what sorts of interactions are possible between applicative formation and NI.

(39) 'Acyclic' combination (impossible)



When we examine the alternations in Chukchi in greater detail we find that the language behaves precisely as we would expect: 'acyclic' combinations are not

possible. This is stated explicitly by Nedjalkov (1976: 209) and by Kozinsky et al. 1988. They point out that while 40 is possible, it is impossible to derive 41 from 40a via 42.

- (40) (Kozinsky et al. 1988: 663–4)
- a. *ətłəg-e təkecʔ-ən utkucʔ-ək pela-nen* [tr]
 father-ERG bait-ABS trap-LOC left-TR
 ‘The father left the bait at the trap.’
- NI:
- b. *ətłəg-ən utkucʔ-ək təkecʔə=pela-gʔe* [intr]
 father-ABS trap-LOC bait = left-INTR
- PI:
- c. *ətłəg-e utkucʔ-ən təkecʔə=pela-nen* [tr]
 father-ERG trap-ABS bait = left-3SG.S/3SG.O
- (41) *ətłəg-e təkecʔ-ən utkucʔə=pela-nen*¹¹ [tr]
 father-ERG bait-ABS trap = left-3SG.S/3SG.O
- (42) **ətłəg-e təkecʔ-ən utkucʔ-ən pela-nen* [tr]
 father-ERG bait-ABS trap-ABS left-3SG.S/3SG.O

Note that 41 is grammatical but it means ‘Father left the trap by the bait’; in other words it could only be related to 43.

- (43) (constructed example)
- ətłəg-e təkecʔ-ək utkucʔ-ən pela-nen* [tr]
 father-ERG bait-LOC trap-ABS left-3SG.S/3SG.O

On the other hand, 42 would be ungrammatical because Chukchi clauses are not permitted to contain two nominals marked absolutive.

5. ADJUNCT INCORPORATION. All the evidence surveyed so far points very clearly to a syntactic analysis of Chukchi NI, given the framework of assumptions adopted by Baker 1988. However, there is one aspect of the construction which renders this conclusion entirely inadmissible. Chukchi freely permits the incorporation of all types of adjuncts.¹² Skorik (1948: 66–70) in his monograph on Chukchi incorporation provides a number of examples (culled from folklore texts collected by Bogoraz at the turn of the century) together with their analytic equivalents. In examples 44–46 we see adverbial (adjectival) roots incorporated. Note that an adverb is formed from an adjective root by the addition of a circumfix *n-...-ew/aw*.

- (44) a. *nə-tur = tejk-əkinet nelg-ət*
 3PL.S-new = make-3PL.O skin-ABS.PL
- b. *nə-tur-ew nətejkəkinet nelgət*
 ADV-new-ADV they.are.making skins
 ‘They are making skins again.’

¹¹ This seems to be a misprint for *otkocʔə-pela-nen*.

¹² Another language with NI which incorporates adjuncts and one in which the interaction between incorporation and applicative formation is not what is expected on Baker’s account is Ainu. See Shibatani 1990 for a detailed description of this language.

- (45) a. *əɾətku-k ge-teŋə-gujlet-linet*
shoot-INF PERF-good = learn-3PL.S
b. *nə-teŋ-ɛw ge-gujlet-linet*
ADV-good-ADV PERF-learn-3PL.S
'They learnt to shoot well.'
- (46) a. *t-ure = jəlqet-gʔek*
1SG.S-long = sleep-1SG.S
b. *n-ure-w təjəlqetgʔek*
ADV-long-ADV I.slept
'I slept for a long time.'

There are roots in Chukchi with purely adverbial function, but Skorik says that it is rare for such roots to be incorporated. Nonetheless, examples can be cited:

- (47) (Skorik 1948: 78)
a. ... *məggətkałʔən qeɟwe nə-janot = pəker-gʔan*
many.legged.one indeed 3SG.S.COND-first = come-3SG.S
b. ... *janot nə-pkir-gʔen*
... first 3SG.S.COND-come-3SG.S
'Indeed, the many-legged one would come first.'

Note that we can be assured that the adverbial *janot* is indeed incorporated in 47a because it is preceded by an agreement/tense/mood prefix and because it triggers vowel harmony. A number of other examples of this type can be found in Skorik (1977: 234).

In examples 48–50 we see verb roots incorporated which would correspond to gerunds in the synonymous analytic constructions.

- (48) (Skorik 1948: 77)
a. *tə-gagcaw = kətgəntat-gʔak*
1SG-hurry = run-1SG
'I ran, hurrying.'
b. *ətlon gagcaw-a nə-kətgəntat-qen*
he hurry-GER PERF-run-3SG/PERF
'He ran, hurrying.'
- (49) a. *galga-t nə-rige = ekwet-kinet*
bird-ABS.PL PL.S-fly = depart-3PL.S
b. *galgat rige-te nekwetkinet*
birds fly-GER left
'The birds flew away.'
- (50) a. ... *wʔe = wjento-gʔe*
die = expire-3SG.S
b. *wʔe-ma wjento-gʔe*
die-GER he.expired
'He dropped dead.'

It is also possible for nouns to be incorporated with adverbial function. One intriguing example of this is discussed by Skorik (1948: 78) in some detail. In 51 we see the interrogative root *req-raq- ~ rʔe-/rʔa* 'what' incorporated, giving the meaning of 'why'.

- (51) a. ... *nə-raqə = wetgawe-gʔət*
 PRES-what = speak-2SG.S
 b. ... *raq-etə nə-wetgawe-gʔət*
 ... what-DAT PRES-speak-2SG.S
 'Why do you speak?'

In 52 the same root is incorporated with the same meaning of 'why'.

- (52) *rʔa = ɣətə-gʔe*
 what = come-2SG.S
 'Why did you come?'

However, Skorik points out that in the corresponding analytic construction, the interrogative would be likely to be given a referential interpretation, i.e. 'what thing?' In other words, the ambiguity of an English gloss like 'what did you come for' is lost in the Chukchi:

- (53) *raq-etə ɣətə-gʔe*
 what-DAT you-came
 'What (thing) did you come for?'

The theoretical significance of this observation is that according to some (Aoun, Hornstein, Lightfoot, and Weinberg 1987) it is more difficult to extract a WH-word such as 'why' from a syntactic island than to extract a referential WH-expression with the interpretation 'for what thing'. Yet if examples 51a and 52 are derived by syntactic movement, we are witnessing precisely the opposite patterning.

In 54 we see an interesting intermediate case, in which the verb incorporates a root *ajəlg-* whose categorial membership is unclear. Skorik (1948: 68) relates 54a to a gerund construction 54b in which the root receives a verb forming suffix *-ew/aw*. This root also forms an adjective *najəlgəqen* and an analytic verbal construction in which the root appears in a special adverbial form, *ajəlgo*, and combined with the auxiliary *ləŋək* (see Inenlikej and Nədjalkov 1981 and Skorik (1977: 242f) for further details of these constructions).

- (54) a. *ənqen-əm jara-gtə ajəlg-ətəla-gʔət*
 that-EMPH house-DAT fear = move-3PL.S
 b. *ajəlg-aw-a təle-gʔət*
 fear-VB-GER move-3PL.S
 'That one went home fearfully.'¹³

There are quite a few examples in the literature of oblique case-marked nominals being incorporated. A sample is given in 55–57.

- (55) (Skorik 1948: 72)
 a. ... *ənnə = tke-rkən*
 fish = smell-3SG.S
 b. ... *ənn-e təke-rkən*
 ... fish-INSTR smell-3SG.S
 '(it) smells of fish.'

¹³ It is not clear to me why the verb has plural agreement when the subject is apparently singular.

- (56) a. ... *muu = lqət-gʔet*
 caravan = leave-3PL.S
 b. ... *muu-te qət-gʔet*
 ... caravan-INSTR leave-3PL.S
 ‘They left as a caravan.’
- (57) a. *mə-pilg = ejŋe-gʔek*
 IMPER-throat-cry-1SG.S
 b. *pilg-e m-ejŋe-gʔek*
 throat-INSTR IMPER-cry-1SG.S
 ‘Let me cry out from my throat (?)’ (‘at the top of my voice?’)

Particularly common seems to be the case where a verb of motion or position incorporates a locative adverbial (Skorik 1948: 72–3, unless otherwise stated).

- (58) a. *gətg = əlqət-gʔe walwəŋən*
 lake = go-3SG.S raven.ABS.SG
 b. *gətg-etə qət-gʔi walwəŋən*
 lake-DAT go-3SG.S raven
 ‘Raven went to the lake.’
- (59) (Skorik 1961: 101)
 tə-ŋej = ekmew-ərkən
 1SG.S-hill = approach-ASP
 ‘I am approaching the hill.’
- (60) a. *ga-nəm = ətwa-len ...*
 PERF-village = be-PERF
 b. *nəm-ək gatwalen*
 village-LOC he.was
 ‘He was in the village.’
- (61) (Skorik 1961: 101)
 tə-ralko = waŋerkən
 1SG-tent = sew
 ‘I am sewing in the tent.’
- (62) a. *aŋqalʔəramk-etə ga-ra = nto-len*
 Sea.people-DAT PERF = house = leave-PERF
 b. ... *jara-jpə gantolen*
 ... house-ABL he.left
 ‘He left home [and went] to the Sea People.’
- (63) (Skorik 1977: 238)
 a. *tə-jaa = pker-gʔak*
 1SG.S-long.way = come-1SG.S
 b. *əja-jpə tə-pkir-gʔek*
 long.way-ABL 1SG.S-come-1SG.S
 ‘I came from a long way away.’

A staunch supporter of the view that Chukchi NI is syntactic may wish to argue that these nominals are in some sense theta-marked by the verb, so that the case desinence would be some sort of spell-out of the verb’s theta grid and not itself a theta marker. Under that assumption, head-to-head movement

would be permitted. However, this maneuver would then raise interesting questions about the status of the constructions discussed in the previous section which I referred to as ‘applicatives’. In those constructions, an oblique case marked nominal can be treated as a direct object (after NI of the ‘real’ object) because the ‘adposition’ (that is, morphological case ending) has been incorporated by PI. This was found with certain place adverbials. Thus, it will be impossible to analyze both sets of data as the result of syntactic processes.

To conclude this section it is worth pointing out that the incorporation process is not limited to a single element. Multiple incorporations are not uncommon, and, indeed, the construction of elaborate tongue-twisters based on incorporation formed a kind of competitive game (a number of these tongue-twisters are reported in Bogoras 1910). Examples of multiple incorporation are:

(64) (Skorik 1977: 241)

- a. *mən-nəki = ure = qepl = uwicwen-mək*
 I PL.S. IMPER-night = long.time = ball = play-I PL.S
- b. *nəki-te n-ur-ʔew mən-uwicwen-mək qepl-e*
 night-INSTR ADV-long.time-ADV I PL. IMPER-play-I PL.S ball-INSTR
 ‘Let’s spend a lot of time playing ball at night.’

V. Rakhtilin tells me that 64a is the more natural idiom, and that the incorporated elements appear in this order and no other.

(65) (Skorik 1961: 102)

- tə-jaa = racwəŋ = melgar = marawə-rkən*
 I SG.S-distant = compete = gun-fight-PRES
 ‘I am fighting competitively using a gun from a distance’ [= ‘I am fighting a duel (?)’]

(66) (Skorik 1948: 83)

- ənko mət-mec = qora = gərke = plətko-mək*
 then I PL.S-almost = deer = hunt = finish-I PL.S
 ‘Then we almost finished hunting reindeer.’

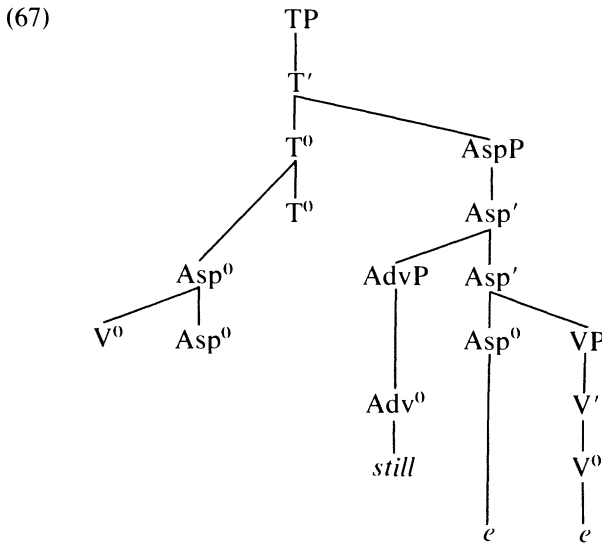
This evidence points definitively to the conclusion that Chukchi NI cannot be treated as a syntactic phenomenon in Baker’s framework and must therefore be given a lexically based analysis. Before we leave adjunct incorporation, however, it is necessary to comment on the analysis of incorporation in Greek presented by Rivero (1992). She notes that Greek, too, permits adverb incorporation, but argues that this is nonetheless consistent with Baker’s assumptions. She argues that all that is needed to permit incorporation is that the incorporee be a complement to its host. This will be true (she claims) of VP-modifying adjuncts such as manner or direction adverbials, as well as what she calls Aktionsart adverbials such as ‘again’ or ‘habitually’. It will not be true, however, of temporal and aspectual adverbials. This is because she assumes that tense and aspect (as well as voice) are themselves separate functional heads in syntactic representation (following Pollock’s influential analysis of 1989). These heads project syntactic phrases. The Aspect Phrase (AspP) is a complement of the Tense head. Any adverb modifying these heads will be an adjunct or specifier

to these heads, but will not therefore be a complement to the verb head. Hence, such adverbials will not be able to undergo incorporation.

This weakening of Baker's assumptions raises intriguing questions as to why the noun-incorporating languages in his sample fail to incorporate adjuncts. Leaving this aside, however, Rivero's claims are important for the present argument, since, if adjuncts are, after all, permitted to incorporate in the syntax, then Chukchi incorporation is little different from the Greek case.

The ancillary assumption concerning the 'explosion' or splitting of inflectional properties into separate syntactic heads, which is crucial to Rivero's thesis, is extremely controversial (especially in morphological circles). A clear, and to my mind convincing criticism of this type of approach has been provided, as it happens on the basis of Greek, by Joseph and Smirniotopoulos (1993), who point out that the Pollock/Rivero style analysis fails to take into account well-known problems of cumulation and multiple exponence and is therefore incompatible with what is known about the morphological structure.¹⁴

In addition, there are conceptual difficulties with Rivero's account even if we accept her framework of assumptions. When a verb receives tense and aspect morphology, the verb head moves successively into the positions of the Aspect and Tense heads. This is shown in 67, where I have included an aspect modifying adverb, *still*, of the type which fails to incorporate in Greek.



Rivero argues (1992: 313) that the adverb must be a modifier (as shown in 67) or at least a Specifier of the AspP because otherwise the adverb would come to be in the government domain of the raised V-Asp-T complex head. Given normal assumptions in GB syntax, the Specifier of the AspP would indeed

¹⁴ Rivero is, of course, aware of the fact that Greek morphology is not completely agglutinating, but offers nothing in the way of an explanation of how the morphosyntactic mismatches might be handled in her model.

come to be governed by the raised V^0 . Indeed, it is crucial that a Specifier in such a configuration be in the government domain because this is the explanation Baker (1988) gives for possessor ascension: the $N + V$ complex after NI comes to govern the stranded possessor (which under Baker's assumptions at that time was a Specifier of NP). Hence, the adverb presumably cannot be a Specifier. However, Rivero no longer takes theta marking of a phrase, XP, to be crucial in permitting incorporation of a head X^0 , but rather simply takes the c-command domain to be relevant. In configuration 67 the raised V^0 c-commands the adverb and there is no closer governor; therefore, it is difficult to see precisely why the adverb cannot be incorporated. Even worse, the Specifier position in these functional phrases is always assumed to be the landing site for subjects. Subjects do not incorporate in Greek (as far as I am aware), and in Chukchi only unaccusative subjects incorporate. However, on the 'split-Infl' hypothesis, it will always be possible to arrange for there to be a stage in the derivation when a verb head comes to govern a subject in the next Specifier position down. Thus, Rivero has no explanation for the universal failure of subject incorporation.

Finally, it is worth observing that incorporation in Greek seems to involve only single words, namely, adverbs. There is no stranding, nor is there incorporation of referential elements or any productive noun incorporation proper (i.e. of arguments). In this respect the phenomenon is much more reminiscent of lexical compounding. Given that Rivero is obliged to weaken the syntactic framework considerably (arguably to a fatal degree) and given that very little is gained by treating Greek incorporation as syntactic and nothing is lost for the syntactic theory by treating it as lexical, it is rather difficult to see why she should wish to provide a syntactic analysis for it.

My theoretical objections to Rivero's account are valid to the extent that proponents of the 'split-Infl' approach to inflectional morphology fail to propose some kind of technical reinterpretation of the phenomena under which the undesirable incorporations might be admitted. Of more interest, therefore, is the observation that, for Chukchi, Rivero's claims are empirically false. It is, admittedly, rare to find incorporation of temporal or aspectual adverbials, and V. Rakhtilin confirms for me that such words as *jep* 'still' and temporal adverbs such as *igər* 'today' and *ajwe* 'yesterday' fail to incorporate. However, this is hardly surprising. The results of incorporation tend to be semantic units (prototypically predicates consisting of verb + object). Any combination which is difficult to interpret as such a unit, such as verb + sentence adverb, is therefore unlikely to occur and may even be ungrammatical in a given language. Nonetheless, examples such as 47 and 66 remain acceptable, so it must be conceded that there are limited examples of the incorporation of adverbs which Rivero would wish to analyze as modifiers of supra-VP categories. For example, in 64 we have incorporation of two temporal adverbs *at night* and *for a long time*, while in 66 we have incorporation of the sentence adverbial *almost*. Notice that *almost* in 66 modifies the head verb *finish*. This means that it has to be regarded as either an aspectual modifier, modifying a head higher in the tree than the VP headed by *finish* or it must be a modifier to that VP. It cannot be

a complement to *finish* because that role is filled by the embedded VP *hunt reindeer*. Therefore, either the incorporation of *almost* is the result of illegal lowering of a modifier into the complex verb head *reindeer-hunt-finish* or it results from raising of *almost* into the complex head after that head has raised into the Asp⁰ position. Either way, Rivero has no principled way to account for such cases. In addition, Rivero has no way of handling the incorporation of the word *why* in example 51.

6. FURTHER PROPERTIES OF CHUKCHI VALENCY ALTERNATIONS. Although it is beyond the scope of this paper to provide a definitive account of Chukchi morphosyntax, it is necessary to indicate in outline how these valency alternations might be handled in the absence of a viable head-to-head movement analysis. To begin with it is necessary to examine these alternations in greater detail, and to discuss a number of respects in which they assume the character of lexical alternations.

The first of these concerns the Dative Shift type cases discussed in §4, and provides a minor argument in favor of treating NI as lexical. There are two respects in which this phenomenon is more complex than presented there, the first of which is that the Dative Shift alternation is also licensed by a certain class of (presumably) lexically derived verbs. These are denominal verbs formed from the circumfix *ta-...ŋ* with the interpretation 'acting on N/creating N'.¹⁵

(68) (Nedjalkov 1976: 196)

- a. *ətłəg-ən ta-ra-ŋ-ərəkən (akka-gtə)* [intr]
 father-ABS TE-house-ŋ-INTR (SON-DAT)
 'The father makes a house for the son.'
- b. *ətłəg-e ta-ra-ŋ-ərəkənen ekək* [tr]
 father-ERG TE-house-ŋ-TR SON.ABS

This is an unusual construction, in that Dative Shift has not been reported in the literature on Chukchi for intransitive verbs. Nedjalkov's (1976) failure to mention any other such alternation is an argument *ex silentio* for this conclusion. This is one of the respects in which the Chukchi alternation differs from genuine applicative formation in other languages.

Example 68b is semantically (and in some ways morphologically) akin to a noun incorporation structure, but yet is formally a denominal verb, not a compound verb root. We might take this as evidence that the applicative alternation is triggered by a particular type of verbal meaning, and possibly even a particular kind of lexical conceptual structure, in which there is an (implied) logical object. This would mean that we would not need to say that applicatives have to be fed by noun incorporation, rather that NI is the usual way in which such an LCS is constructed. Note that we can't assume that the circumfix *te-/ta-...-ŋ* is a suppletive form of a lexical verb, such as *tejkək*, 'make', since *tejkək* and other verbs incorporate their direct objects in the usual way. However, this argument is not necessarily very strong, since it may be open to us to argue

¹⁵ This circumfix has other functions; see Inenlikej and Nedjalkov (1967: 254).

that syntactically the circumfix is a transitive verb but morphologically a bound affix which obligatorily selects an incorporated noun stem.

Related to this we find that denominal verbs formed from the suffixes *-et/-at* and *-tkul/-tko* also license Dative Shift. Inenlikej and Nedjalkov (1967: 253) cite the following cases: *cot-at-ək* ‘to lay down a pillow’, from *cotcot* ‘pillow’, *ajkol-at-ək* ‘to make a bed’ from *ajkol* ‘bed’, *epiquwt-et-ək* ‘to lay down the covering on a sledge’ from *epiquwt* ‘covering on a sledge’, and *gərə-tku-k* ‘to catch a reindeer with a lasso’ from *gərək* ‘lasso’. Notice that these verbs, too, are intransitive, and moreover, that the suffixes *-et/-at* and *-tkul/-tko* do not in general give rise to transitive verbs (see Skorik 1977:219).

The next phenomenon brings us to a reconsideration of the antipassive process. Baker assumes that this is a species of NI. The antipassive morpheme is generated as a direct object but being a bound affix it must incorporate in order to allow the derivation to meet the morphological restriction on the morpheme. For reasons which are not entirely clear, this always results in ‘absorption’ of the objective case-assigning potential of the verb.

There are minor conceptual reasons for finding this account dubious, for this is far from being a canonical type of NI. First, it never strands a modifier. Second, the incorporee is never referential. Thus, the only sense in which antipassive is really like NI is that it is productive. The Chukchi facts, however, fail to adjudicate on the matter of whether antipassive formation is syntactic or lexical. Since the question is tangential to my concerns I shall leave it unresolved.

In §4 we saw that NI can feed the applicative formation process. However, what seems to be crucial here is that the verb be detransitized. Thus, a verb which has undergone antipassive formation will also trigger the applicative alternation, as seen in examples 69–70.

(69) (Kozinsky et al. 1988: 663)

a. *ətləg-e təkecʔ-ən utkucʔ-ək pela-nen* [tr]
father-ERG bait-ABS trap-LOC leave-3SG.S/3SG.O

Antipassive + Applicative (of Locative)¹⁶

b. *ətləg-e təkecʔ-a utkucʔ-ən ena-pela-nen* [tr]
father-ERG bait-INSTR trap-ABS AP-leave-3SG.S/3SG.O

‘The father left the bait by the trap.’

(70) (Kozinsky et al. 1988: 664)

a. *ətləg-e akka-gtə qora-ηə təm-nen* [tr]
father-ERG son-DAT deer-ABS kill-3SG.S/3SG.O

‘The father killed the reindeer for the son.’

Antipassive + applicative

b. *ətləg-e ekək ena-nmə-nen qora-ta* [tr]
father-ERG son-ABS AP-kill-3SG.S/3SG.O deer-INSTR

Thus, antipassive takes on a ‘syntactic’ appearance here, because the under-

¹⁶ The antipassive of this sentence is not provided by Kozinsky et al. but it would take the form of (i):

(i) b. *ətləg-ən təkecʔ-a utkucʔ-ək ena-pela-gʔe* [intr]
father-ABS bait-INSTR trap-LOC AP-leave-3SG.S

lying transitivity of the verb stem is, it would seem, retained, and can be revived in the right context. This would appear to be an unusual property amongst ergative languages with antipassive. Baker (1988: 143) for instance, explicitly rules out this possibility, claiming that in Tzotzil and Chamorro the antipassive affix must 'absorb' the objective case. In Chukchi, this is not true of the productive means of detransitivization.

Interestingly, there is an affix, *-et/-at*, which behaves the way Baker would expect. This suffix is somewhat idiosyncratic and not, apparently, productive. However, when affixed to a verb root which has incorporated its object it blocks any subsequent 'retransitivization' or applicative formation. Thus, while 71a is attested (with the meaning of 70), the discussion in Nedjalkov 1976 and in Kozinsky et al. (1988: 687f; cf also 1988: 659–60) makes it clear that a form such as 71b would be impossible.

(71) (Kozinsky et al. 1988: 687)

- a. *ətłəg-ən akka-gtə qaa = nm-at-gʔe* [intr]
 father-ABS son-DAT deer = kill-ET-3SG.S
 'Father killed the reindeer for the son.'
- b. **ətłəg-e ekək qaa = nm-an-nen* [tr]
 father-INSTR son.ABS deer = kill-ET-3SG.S/3SG.O

A further example of the use of *-et/at* is reported with the lexical causative formed on *-jgut/-jgot*. This suffix creates a nonfinite verb form which is followed by a transitive conjugation auxiliary, *rətək*. In 72a we see that the resulting verb form can incorporate the object and trigger Dative Shift.

(72) (Nedjalkov 1976: 203)

- a. *ətłəg-e ekək qaa = nmə-jgot rən-nin* [tr]
 father-ERG son.ABS deer = kill-CAUSE AUX-3SG.S/3SG.O
 'Father made someone kill a reindeer for the son.'

However, in 72b the detransitivizer has absorbed the capacity for the causative verb to take a further implicit object, and the object of the verb is therefore 'son'.

- (72) b. *ətłəg-e ekək qaa = nm-atə-jgot rən-nin* [tr]
 father-ERG son.ABS deer = kill-ET-CAUSE AUX-3SG.S/3SG.O
 'Father made the son kill a reindeer.'

The interesting feature of this suffix is that it is lexicalized in a way that antipassive is not, and thus contrasts rather starkly with the antipassive process in its behavior.

The retransitivization process observed with NI or productive antipassive is only possible with 'genuine' adjuncts: the *chômeur* resulting from antipassive formation can't be raised to direct object (Nedjalkov, pers. comm.).

- (73) a. *gəmnən tumg-ət tə-pela-nat* [tr]
 I.ERG friend-ABS.PL 1SG.S-leave-3PL.O
 'I left [my] friends.'
- b. *gəm t-ena-pela-k tumg-e* [intr]
 I.ABS 1SG.S-AP-leave-1SG.S friend-INSTR

- c. **gəmnan t-ena-pela-nat tumg-ət* [tr]
 I.ERG 1SG.S-AP-leave-3PL.O friend-ABS.PL

A further complication for the syntactically based account of valency alternations centers around the verbs with oblique complements. We have seen that there is a reasonably large set of ‘labile’ verbs (Inenlikej & Nedjalkov 1967) which alternate between intransitive conjugation + oblique complement and transitive + absolutive complement (see examples 19–22, §3). In addition, we have seen that it is quite frequent for an oblique complement to be incorporated by the intransitive verb (see examples 55–63).¹⁷ Given the discussion of Rivero’s (1992) analysis of Greek adverb incorporation, such forms might be regarded as the straightforward consequence of Bakerian incorporation if we were to accept Rivero’s weakening of Baker’s theoretical assumptions. In fact, this is an oversimplification. In the cases Rivero discusses, the adverb which gets incorporated is monomorphemic. However, in order for the analysis of applicative formation as a syntactic process to go through we would have to assume that in general such nominals are phrases, headed by the case marker (corresponding to a preposition in Baker’s discussion). But then we have a problem with the incorporation of oblique complements, because these would constitute cases of ‘acyclic’ combination, and are hence excluded by the theory.

Finally, we turn to an intriguing feature of Chukchi NI which, again, appears to cause difficulties for an analysis in terms of syntactic head-to-head movement. Nedjalkov (1976: 207f) discusses a number of cases of ditransitive verbs with noncanonical case marking, in which the complement which appears semantically to bear the theme role (which I shall call the locatum) appears in the instrumental, while a complement bearing some other semantic role (typically locational) appears in the absolutive. These verbs, however, generally alternate with homophonous forms in which the locatum is assigned absolutive case while the location receives a case marking more consonant with its semantic function (such as dative, ablative, or locative). In other words, Chukchi exhibits essentially the alternation found in English ‘spray/load’ cases such as *He loaded hay onto the wagon* and *He loaded the wagon with hay*. An example of this is 74.

- (74) a. *ətləg-e enatəjo-nenat tew?el-ti* [tr]
 father-ERG stuff-3SG.S/3PL.O dried.fish-ABS.PL
tajocg-ə-cəko-gtə.
 sack-DAT
 ‘Father stuffed dried fish into the sack.’
- b. *ətləg-e enatəjo-nen tejučgən tew?el-e* [tr]
 father-ERG stuff-3SG.S/3SG.O sack.ABS dried.fish-INST
 ‘Father stuffed the sack with dried fish.’

¹⁷ Although certain of the ‘labile’ verbs are attested incorporating their complements, it is not clear what the relationship is between incorporation of oblique complements and lability. Verbs such as *smell* and *go (to)* do not appear on the lists of labile verbs in Inenlikej and Nedjalkov 1967, for instance, though those lists are not presented as exhaustive. This would be a very interesting question to pursue in future research.

Given this background, let us consider incorporation with ditransitive verbs in more detail. Nedjalkov points out that there are logically four ways in which the verb in these constructions may incorporate one of its complements. These are shown in 75, where I follow Nedjalkov in notating the theme complement (locatum) as O and the semantically oblique complement (location) as A.

(75) Basic construction:

- (i) S_{ERG} V O_{ABS} A_{OBL} e.g. *load hay (O) onto the wagon (A)*
- (ii) S_{ERG} V O_{OBL} A_{ABS} e.g. *load the wagon (A) with hay (O)*
 - a. S_{ABS} O + V (A_{OBL})
 - b. S_{ERG} O + V A_{ABS}
 - c. S_{ABS} A + V O_{OBL}
 - d. *S_{ERG} A + V O_{ABS}

Case 75a simply represents object incorporation with an optional adjunct still in an oblique case. There is no promotion so the verb is intransitive and the subject appears in the absolutive. Case 75b shows object incorporation with subsequent promotion of the stranded adjunct to direct object. These are the cases which I treated as examples of applicatives for the purposes of my argument in §4. Neither situation poses problems to a syntactic analysis.

Case 75c represents that in which an oblique case-marked theme complement remains unincorporated, while the absolutive complement (bearing the location etc. semantic role) is incorporated. An example of this construction is 76.

- (76) a. *ətłəg-e jəŋe-nin orwoor ewir²-e* [tr]
 father-ERG load-3SG.S/3SG.O sledge.ABS clothes-INSTR
- b. *ətłəg-ən orw = əjŋa-g²e ewir²-e* [intr]
 father-ABS sledge = load-3SG.S clothes-INSTR
 'Father loaded the sledge with clothes.'

In connection with this construction, Nedjalkov points out that the instrumental complement is obligatory, otherwise the incorporated noun will be interpreted as a theme (i.e. the locatum) and not as the location.

Finally, construction 75d is impossible, because, according to Nedjalkov, the incorporated noun would always be interpreted as the locatum and the Absolutive NP as the location. In other words, wherever 75d would be semantically possible it would give a construction indistinguishable from construction 75b and interpreted in the same way. Thus, 77 could not mean 'Father loaded the sledge with the boat'.

- (77) *ətłəgən orw = əjŋa-g²e ʔət²w²et-e* [intr]
 father-ABS sledge = load-3SG.S boat-INSTR
 'Father loaded the sledge onto the boat.'

It is not obvious precisely why the 75d cases are impermissible. We cannot appeal to ambiguity since the language (like languages everywhere) tolerates ambiguity in the rest of the grammar. Nor can we follow Nedjalkov's own suggestion (1976: 209) that incorporation is limited to themes, because, as he points out, a location nominal can be incorporated. The location, however, can only be incorporated when there is a construction in which that nominal appears in the absolutive. These questions will be addressed in the next section.

7. A LEXICAL APPROACH TO INCORPORATION

7.1 NI AS AN ARGUMENT STRUCTURE OPERATION. I have argued that the Chukchi facts pose problems for Baker's (1988) original incorporation theory of valency alternations. This is because Chukchi object incorporation displays a number of clearly syntactic traits of the kind which would be expected on Baker's account, and yet Chukchi permits incorporation of adverbials, which is excluded. The syntactic traits are the following: (a) productivity and compositionality, (b) a regular correspondence with an 'analytic' syntactic construction in which the object is a standardly projected nominal, (c) referentiality of the incorporated noun stem, (d) failure of ergative subjects to incorporate, (e) possessor stranding, (f) obligatory feeding of Dative Shift and similar alternations. I will argue below that this pattern of facts can be better explained by adopting a lexicalist approach, in which noun incorporation is seen as an operation appealing to argument structure representations. However, before turning to that I shall briefly consider the possibility of analyzing Chukchi NI within the autolexical framework of Sadock 1991.

Sadock has argued for a modular approach to morphosyntactic and morphosemantic mismatches, in which the final structure has to obey as nearly as possible a set of constraints on morphological and syntactic form. There are four constraints, a strong and a weak Linearity Constraint, and a strong and a weak Constructional Integrity Constraint. The Linearity Constraints effectively compel morphological and syntactic linear precedence relations to be identical (strong) or as near to identical as possible (weak), taking into consideration overriding morphological constraints (e.g. on clitic placement). The Constructional Integrity Constraints demand that only the head of the phrase governed by a lexeme may be incorporated (strong) or that the incorporee at least be a constituent of the governed syntactic phrase. A constraints-oriented theory such as this would appear to lend itself to an interpretation in terms of Optimality Theory (e.g. Prince and Smolensky 1992) but I leave this for future research.

The constraints govern classical cliticization and incorporation structures, and hence represent an unusual attempt to link the two phenomena. Thus, 'incorporee' here can be taken to mean either an incorporated head or a clitic. The basic idea is that classical incorporation must respect the strong Construction Integrity Constraint, but typically violates the strong Linearity Constraint, while classical cliticization will respect at least the weak Constructional Integrity Constraint. No construction may violate both weak constraints.

Sadock argues that noun incorporation phenomena can be regarded either as morphosyntactic mismatches or as morphosemantic mismatches. In the former case we have structures in which the verb incorporates the head of a phrase with which that verb combines in the syntax. Sadock discusses only noun (object) incorporation in any detail, but I do not see any reason why a verb could not incorporate an adverbial of any description. If the adverbial phrase were governed by the verb we would have a 'raising' type of incorporation, while if the adverbial governed the verb (as in the case of sentence adverbials, for instance), then we would assume the sort of analysis Sadock offers for Icelandic

definite articles, in which the incorporee lowers onto the host (Sadock 1991: 108, 113). In such a morphosyntactic type of incorporation, the phrase from which the head has been incorporated (e.g. the direct object NP) will sometimes be a fragmented NP which would not otherwise occur in syntactic structure.

The main problems with viewing Chukchi NI in this way are twofold. First, Chukchi NI detransitivizes the verb, while we might expect the verb to remain syntactically transitive (since it still takes a direct object NP in the syntax). Second, we never get stranding of a kind that would result in NP fragments not otherwise attested. This distinguishes Chukchi from, say, West Greenlandic on Sadock's account. However, this does not mean that Sadock would be unable to handle Chukchi NI, because it is possible for mismatches to occur between levels other than the morphology and syntax.

Morphosemantic mismatches are those cases in which a morphological compound corresponds to two distinct elements in semantic representation, rather than in syntactic representation. Semantic representation for Sadock is essentially a set of function argument structures, in which a higher order function may take lower order functions as values. Semantic representations are couched in terms of immediate dominance relations but no linear precedence relations are defined. Therefore, semantic mismatches may only involve constituency, not linear order (in contrast to morphosyntactic mismatches). Examples of morphosemantic mismatches include incorporation of tense, aspect, modal or similar predicates such as 'seem' into the verb and morphological causatives.

Where we find morphosemantic noun incorporation (Sadock 1991: 176f) we have a morphologically compounded N=V verb which corresponds semantically to a transitive construction. Either the incorporated noun corresponds to a quantified noun in semantic structure (WHOLE ARGUMENT INCORPORATION) or it corresponds to just the noun constituent, without quantification. In that case quantifying elements, such as determiners, may appear in the syntax, mimicking the morphosyntactic type of mismatch. In the former case, the verb is syntactically intransitive, in the latter, it is transitive.

We can interpret this type of incorporation as morphological compounding which results in reduction of syntactic valency and in which the incorporee corresponds to the semantic argument of the semantic function which translates the original verb stem. In other words, we have a morphological saturation of some part of the verb's argument structure.

This way of looking at matters is rather difficult to distinguish from a lexicalist proposal along the lines of Rosen 1989 or Grimshaw 1990, in which certain types of noun incorporation at least (not to mention morphological causatives) would be viewed as operations over a level of argument structure. Sadock doesn't explain exactly how NI would work as an instance of a morphosemantic mismatch, in that he doesn't provide a detailed analysis of any particular instance. In particular, it is not clear whether he would argue for a separate level of predicate-argument structure, PAS, in a verb's lexical representation, distinct from the lexico-conceptual structure, LCS (see Grimshaw 1990 for a defense of this position and Rappaport, Laughren, and Levin 1993 for a summary review of the distinction). If there is such a level of representation, it is

not clear whether he would see it as essentially syntactic or essentially semantic (or as something else).

When we investigate these questions in more detail it is clear that autolexical theory would be obliged to take a stand on argument structure representations; otherwise it would be very difficult to see how to state the various restrictions, universal or language particular, that are placed on operations implicating argument structure. The theory as so far presented gives no clue as to what restrictions might be placed on incorporative structures. In particular, the theory fails to predict that unergative subjects are universally prevented from incorporating (though unaccusative subjects may incorporate in some languages under certain circumstances). Likewise, there is no explanation for the more subtle data from Chukchi locatum and incorporation alternations presented above. The natural place to look for an explanation of these phenomena is the argument structure of predicates.

Although there is some controversy surrounding the idea of a distinct level of PAS (Jackendoff 1990, for instance, dispenses with it and replaces it with a set of notational indexing devices), I shall assume such a distinction. To what extent can we say that Chukchi provides evidence in favor of the existence of operations on argument structure? The alternations involving locatum alternations, transitivity alternations and incorporation presented in §6 all implicate operations on PAS or on LCS. Let us assume then that a verb's lexical entry is furnished with a bare indexation of its arguments, linked to the values of appropriate predicates at LCS. I follow the standard assumption that this is achieved by means of default mappings defined in terms of a semantic hierarchy (cf. Jackendoff 1990, Grimshaw 1990). I shall also adopt the standard assumption that the PAS is structured. We need to distinguish at least the following: an external argument (corresponding generally to the subject, though not all verbs surfacing with a subject will have an external argument), a direct internal argument (corresponding canonically to the direct object) and an indirect internal argument (corresponding to a second object or sometimes to a locative, instrumental or other type of oblique complement).

Saturation of an argument position in the PAS is achieved through the interpretation of syntactic structures. Thus, a verb followed by an object NP will have its direct argument position saturated by that NP, *ceteris paribus*. However, operations may be performed on the PAS so as to neutralize that position, in which case it cannot be saturated syntactically. This is the situation with canonical passives and antipassives, in which the external, respectively direct internal, argument position is suppressed and cannot be saturated in the normal way in the syntax. Usually, such an argument can be expressed indirectly as an implicit argument (though this is subject to language particular variation).

Not all operations that apparently affect argument structure or valency are to be defined at the level of PAS. Booij (1992), for example, argues that middle formation in English and certain types of verb prefixation in Germanic represent morphological operations at the level of LCS. Among the diagnostics of LCS operations are semantic shifts (for example, the affectedness of the object in one alternant but not the other, as in Dutch *be-* prefixation) and complete modi-

fication of valency without the possibility of an implicit argument (English middles). We might therefore ask whether Chukchi incorporation isn't an operation defined over LCS representations. There are at least two reasons for rejecting this suggestion. First, there is no accompanying semantic change other than that which can be ascribed to the interpretation of the surface syntactic structure (and especially to the pragmatic significance of absolutive marked NPs—cf. Polinskaja and Nedjalkov 1987). Indeed, it is a hallmark of incorporation that the incorporated alternant has exactly the same semantics as the unincorporated. This makes it difficult to see just what kind of LCS operation incorporation might actually be, since we would presumably need to assume that the LCS for the two alternants was identical. Second, incorporation picks out specific types of complement, namely, those that are a direct argument in the PAS of the verb. This includes unaccusative subjects, but not unergative subjects. However, at the level of LCS, the two types of complement are identical (i.e. the sole, 'logical subject' argument of the respective predicate) so if incorporation applied at that level, this distinction would be lost (cf. the analysis of *-sel* nominalizations in Dutch given by Booij 1992: 51). I conclude therefore that incorporation at least of objects has to be viewed as a morphological operation over argument structures.

I shall therefore assume that Rosen's Compound NI operates at the level of PAS and comprises the saturation of the direct internal argument position by a nominal stem. This argument position then fails to project into syntactic structure as a direct object. Equally, it fails to license an implicit argument. It may well be that there is a functional reason for this (after all, the incorporated stem can even be interpreted referentially in Chukchi, so there is nothing 'implicit' about the incorporated argument).

At the same time it would be helpful to have a perspective on these constructions which allows us to see the various instantiations of incorporation as unitary phenomena. We can agree with Sadock in recognizing that there may be several different types of incorporation operating at different grammatical levels, possibly even in one and the same language. However, the default case must surely be to assume that morphologically similar phenomena which do not exhibit severe differences in syntax are the product of essentially the same rules or principles. Otherwise, there is some danger of the theory losing all predictive power.

There are basically two types of incorporation in Chukchi. The first is incorporation of an argument by a verb, the second is incorporation of what can loosely be called a 'modifier' by a verb or a noun (or marginally by an adjective). As we will see in the next section, this includes quantifiers and possessors in the case of nouns. At a certain level we could regard both these phenomena as instantiations of the same thing if we regarded the relationship between the incorporated object and its verb as some type of modification (as, indeed, is proposed in Skorik 1961). Precisely this approach is developed by Sproat (1985) in his analysis of English synthetic compounding. He argues against a unitary view of 'theta marking' (that is, discharge of semantic roles onto complement NPs). Instead, he adopts Higginbotham's (1985) influential distinction between

THETA DISCHARGE and THETA IDENTIFICATION. Theta discharge is the canonical way for a verb's PAS to be satisfied by a syntactic subject or object (let us use the general term COMPLEMENT for these). We assume that a noun has its own argument structure, effectively indexing its reference. This is coindexed by theta discharge with an appropriate element in the PAS of the verb. Theta identification is the canonical way for a modifier to be applied semantically to a modificand (e.g. an adjective modifying a noun). We assume that modifiers, too, have an argument structure allowing them to be predicated semantically of their modificands. This argument structure representation is then coindexed with that of the modificand. In each case, the resulting syntactic representations are mapped onto LCS representations in which the coindexed elements play the appropriate semantic role with respect to the predicates they are coindexed with.

It appears possible for a position in a PAS to be modified by theta identification rather than by theta discharge under certain circumstances. Thus, theta identification is the canonical relationship between an adjective and the noun it modifies. If the noun is a deverbal nominal then the adjective may fulfill the semantic role of a complement, as in *The American invasion of Vietnam*. Here, *American* can be thought of as expressing the 'subject' argument of the verb stem *invade*, while *of Vietnam* expresses the 'object' argument. This can be captured by saying that the identification mechanism may have access to a PAS (in this case the PAS of the verb stem) and that the coindexing principles are so constructed as to guarantee that *American* is coindexed with the external argument position, making 'America' the equivalent of a subject at the level of LCS (but see Grimshaw 1990 for a different account of this phenomenon).

Sproat 1985 argues that English synthetic compounding has just this character. Thus in *truck driver*, *truck* identifies the direct internal argument position of *drive*. Hence, the nonhead of the construction is effectively a modifier, but one which can operate on the PAS of the verb and give the impression of saturating one of the positions. Given this perspective, it is easy to see how we could view all forms of incorporation in Chukchi as essentially lexical, involving saturation of argument structure by identification in the case of NI, and involving simple identification in the case of incorporation of adverbials by verbs or of adjectives by nouns. Such saturation of an argument position by identification leads to detransitivization in the case of direct object incorporation.

Where a predicate has more than one internal argument it cannot be determined which argument should be identified. In this case, I adopt the proposal that has been made in a number of places (e.g. Jackendoff 1990, Grimshaw 1990) for a Thematic Hierarchy defined over elements of the LCS. I shall couch this in a form which is indebted to Dowty's (1991) notion of protothematic roles. The more agentlike a nominal is in LCS the higher on the hierarchy it is and conversely the more patientlike a nominal is the lower on the hierarchy it is. The incorporated noun stem is then constrained to identify with the lowest positioned argument. This will mean that a patient object interpretation will always be preferred over, say, a goal or benefactive interpretation. In addition,

an internal argument will always be identified rather than an external argument. This accounts for why transitive subjects are never incorporated. We can also introduce a direct ban on identification with any argument which has more than that proportion of prototypical agent properties which defines an unergative subject as opposed to an unaccusative subject.

This analysis puts Chukchi NI squarely in Rosen's compound NI class. Indeed, since Chukchi has null proforms, the language would fill the gap in Rosen's (1989: 315) typology, example 39a: a language with compound NI and null proforms. This is supported by the fact that Chukchi object incorporation renders the verb intransitive. Likewise, the general failure of modifier stranding is supported. The only case of stranding which seems to occur is that of possessors. However, it is not obvious that this should be analyzed as a form of modifier stranding. Van Valin 1992, for example, claims that purported cases of possessor stranding in Iroquoian are actually instances of an NP with a source interpretation, which tend to get translated as possessors (or which correspond to possessors in nonincorporative constructions). The possessor in Chukchi can, in fact, surface as a locative-marked nominal (see below, §9). It is therefore perfectly feasible to analyze apparent possessor ascension as ascension of such a locative rather than of a possessor phrase as such. If this is the case then there is less reason to object to a lexical analysis of NI.

7.2. CASE MARKING AND VALENCY IN CHUKCHI. In the previous section I sketched a way to analyze Chukchi NI on a par with English synthetic compounding. Unlike the latter, Chukchi NI interacts with other phenomena which implicate argument structure. We should therefore examine these processes to investigate their implications for the lexicalist proposals put forward here.

The facts in need of explanation are the following:

- (i) oblique complements to certain intransitive ('labile') verbs alternate with absolutive complements;
- (ii) oblique complements or certain types of adjunct (e.g. benefactives) alternate with absolutive complements provided the verb has been detransitivized, either by incorporation of the underlying direct object or by the regular antipassive process;
- (iii) oblique complements to (certain) intransitive verbs can undergo incorporation.

In addition, the suite of facts concerning 'spray/load' type verbs needs an explanation. Finally, it is worth observing that every clause in Chukchi must have exactly one nominal marked in the absolutive.

Let us assume that assignment of the two 'structural' cases, ergative and absolutive, is subject to the following syntactic principles. In a canonical clause (i.e., a simple transitive or an intransitive clause) the external argument of a transitive predicate will be assigned ergative case and all other arguments (i.e. the direct internal argument of the verb or the sole, subject, argument of an intransitive verb) will be marked with absolutive. The antipassive alternation involves suppression of the ergative case. SUPPRESSION is used to mean that the case will not normally be assigned, though it is still potentially 'active'

and can be reassigned under conditions of ‘retransitivization’. Suppression of ergative case entails suppression of the direct internal argument. This is the mirror image of the passive alternation in accusative languages in which the accusative case and the external argument are concomitantly suppressed. Since absolutive has to be assigned (all clauses must have an absolutive marked nominal), it marks the subject.

Because ergative case is suppressed (rather than ‘absorbed’) it is available for reassignment to the subject nominal, provided that some other nominal is able to receive the absolutive case. This occurs in possessor ascension and ‘applicative’ constructions, (including Dative Shift). A transitive verb can only undergo such an ‘applicative’ construction if the absolutive is free to be assigned to a nominal other than the direct object. This in turn is only possible if the verb stem has a (suppressed) ergative case to assign to the subject. Hence, the ‘applicative’ alternation proper is limited to transitive verbs. Here, we are effectively borrowing Baker’s (1988) case-theoretical explanation for similar facts. It is worth noting, however, that nothing quite like the Chukchi ‘retransitivization’ process is noted in Baker’s corpus of data. In Baker’s terms this would be a case of NI (in the form of the antipassive) followed by Preposition Incorporation (applicative construction). Baker (1988: 388), adverting to Tzotzil, explicitly rules out this combination on the grounds that the antipassive morpheme generally absorbs the objective case of the verb (in our terms it absorbs the ergative case). However, beyond this tendency there is nothing in Baker’s theory as such that would prevent such a combination. Provided we draw a distinction between the suppression of case (which can surface later) as opposed to outright absorption the facts of Chukchi can readily be accommodated.

‘Acyclic’ combinations in transitive constructions will be automatically excluded. Recall that I assume that it is arguments with the most patientlike thematic entailments which are incorporated. This will ensure that a direct internal argument is identified in NI in preference to an indirect argument or a nonargumental satellite of any kind. Recall also that Chukchi allows the incorporation of only one argument per verb. To see how all this will rule out undesirable combinations let us consider the crucial facts, presented in 78–91 in schematic form. A hyphenated preposition indicates oblique case marking in Chukchi and lack of preposition with a complement indicates a direct object marked in the absolutive.

- | | | |
|---------|--------------------------------|---|
| (78) a. | Father killed deer for-son | ⇒ |
| b. | Father deer = killed for-son | |
| (79) a. | Father deer = killed for-son | ⇒ |
| b. | Father deer = killed son | |
| (80) a. | Father killed deer for-son | ⇒ |
| b. | *Father son-killed deer | |
| (81) a. | Father killed deer for-son | ⇒ |
| b. | Father ANTIPASS-killed for-son | |
| (82) a. | Father ANTIPASS-killed for-son | ⇒ |
| b. | Father ANTIPASS-killed son | |

- (83) a. Father loaded boat with-clothes ⇒
 b. (*)Father clothes = loaded boat
- (84) a. Father loaded boat with-clothes ⇒
 b. Father boat = loaded with-clothes
- (85) a. Father loaded clothes on-boat ⇒
 b. Father clothes = loaded on-boat
- (86) a. Father clothes = loaded on-boat ⇒
 b. Father clothes = loaded boat
- (87) a. Father loaded clothes on-boat ⇒
 b. Father ANTIPASS-loaded on-boat
- (88) a. Father ANTIPASS-loaded on-boat ⇒
 b. Father ANTIPASS-loaded boat
- (89) a. Father loaded clothes on-boat ⇒
 b. *Father boat = loaded clothes
- (90) a. Father boat = loaded with-clothes ⇒
 b. Father boat = loaded clothes
- (91) a. Father smelled of-fish ⇒
 b. Father fish = smelled

Consider first cases 78 and 80. The former is permitted over the latter because in 80 we have tried to assign a benefactive reading to the incorporated noun, and this is higher on the hierarchy than the patient 'deer'. The sentence could therefore only be interpreted as meaning 'The father killed the son for the deer'. I assume that the antipassive alternation (seen in 81) is a lexical operation over the PAS in which ergative case assignment is suppressed (while remaining so-to-speak implicit). Hence, the absolutive case must be assigned to the subject nominal and cannot therefore license a direct internal argument. This position is thus effectively suppressed (though it remains an implicit argument and may be realized as an oblique *chômeur*). In 82 we see that the verb's implicit ergative case can now be assigned to the subject leaving the absolutive free for assignment to the benefactive nominal 'son'. I do not analyze this as any form of applicative or preposition incorporation because there is no morphological change in the verb. Finally, in 79 we see that NI has the same effect as antipassivization: the verb is detransitivized but the suppressed ergative case is available for reassignment to the subject, and hence the benefactive can receive absolutive case and emerge as a surface direct object of the compound verb.

More complex are cases 83–90. Note that 83b is possible and indeed is attested as 86b, but only as an alternant of 86a, it is ungrammatical as an alternant of 83a. To handle these cases, I shall assume that the 'load' type verbs in Chukchi are like their English counterparts and have two separate (though related) lexical entries, along the lines of 92 (cf. Dowty 1991: 588, Levin and Rappaport Hovav 1992):

- (92) a. X loads Y onto Z
 [X CAUSE[Y BE-ON Z][BY [load]]]
 b. X loads Z with Y
 [X CAUSE [Z BE-STATE][BY [load]](WITH Y)]

Reading 92a corresponds to 85–91 while 92b corresponds to 83–84 and 90. The PAS corresponding to 92a will have two internal arguments, a direct (object) argument and a locative argument (much as in the case of *put*). However, in 92b we see that the verb has a simple direct internal argument, but the *with*-phrase is an optional adjunct. I have indicated this by including the WITH predicate in parentheses. These two representations provide us with an explanation for the differential behavior.

In 84 and 85 apparently different arguments are incorporated, *boat* and *clothes*. Yet in 83 *clothes* cannot be incorporated and in 89 *boat* cannot be incorporated. This behavior is an immediate consequence of the representations in 92. In 83 and 84 the instrumental phrase *with clothes* is no more than an adjunct of means. The direct internal argument is *boat*. Contrariwise, in 85 and 89 the direct internal argument is *clothes*, while *on the boat* is the locative adjunct. In each case it is the direct argument and the most patientlike entity which is incorporated. The subtle change in semantic perspective, reflected in both distinct LCS and distinct PAS representations, is sufficient to give opposite results with incorporation.

We are left with explaining why ‘with-clothes’ cannot be raised to direct object in 90, even though this is possible with benefactives and with locatives. One possibility would be to ascribe this to the fact that the instrumental nominal is not a ‘proper’ argument, but merely an adjunct. Note that, for example, Levin and Rappaport Hovav (1992) explicitly assume that such an instrumental is an adjunct which does not necessarily enter into the semantic representation of the verb. We might then say that the retransitivization process is only permitted where a phrase representing a genuine argument will be assigned absolutive case and become the surface direct object. This, however, fails to explain why a benefactive can be so raised, since such nominals are no more genuine arguments than are instruments. Indeed, if anything, an instrument is a better candidate for an argument (pace Levin and Rappaport Hovav 1992), since many activities semantically presuppose the use of an instrument (e.g. loading in the 92b sense), while most activities (e.g. killing reindeer) do not presuppose a benefactive.

I propose that the key here is the nature of the final product of retransitivization, 83b. As Polinskaja and Nedjalkov (1987) record in some detail, there is a clear pragmatic function to marking with the Absolutive. Such a nominal receives an ‘affected’ interpretation which might be missing in other alternants. Thus, in 79 the son is affected in that he receives the dead reindeer, while we can assume from discussion of similar examples in Polinskaja and Nedjalkov 1987 and in Kozinsky et al. 1988 that the absolutive nominals in 86 and 88 receive a similar interpretation. Given the semantic representations in 92 we are assuming that ‘clothes’ in 90 is interpreted as a kind of instrument. But instruments are not usually affected by an action. Hence, we could not interpret 90 as stating that boat-loading activity had affected the clothes. (This would presumably be a possible interpretation for 89 except that incorporation of the locative in preference to the direct object is excluded.) As a result it is impossible to retransitivize 90a. However, as counselled by Baker (1992:28), it might

be advisable to bear in mind further semantic determinants of the expression of arguments nonetheless. I noted in connection with ex. 68 that denominal verbs which lexically incorporate a noun stem behave just like genuine incorporating verbs in licensing the Dative Shift construction. Thus, it might be the case that it is specifically benefactives and locatives which permit this alternation. In Jackendoff's system of conceptual semantics, benefactives and locatives are both essentially arguments of a locational predicate. Instruments, however, are arguments of a means predicate with entirely different combinatorial properties (cf Baker 1992: 33). Thus, we may wish to interpret the retransitivization in terms of 'raising' of a semantic path predicate to surface object. The advantage of stating this at the semantic level is that we can then explain why a lexeme derived by affixation, as in 68, should behave the same way as constructions derived from compounding (NI): the underlying semantic relations are identical.

These assumptions permit us to explain the basic contrasts illustrated and hence to answer question (ii) above. We now turn to question (iii), illustrated by 91. Here we have a noncanonically marked complement. The verb treats this as an adjunct, in the sense that there is no agreement. This is to be expected, though, since transitive verbs in Chukchi only ever agree with an absolutive marked nominal (with the unique exception of the verb 'give', which agrees with the dative). Although not an object, however, the complement can be incorporated.

Other examples of this construction include the examples cited earlier as 55–63. There I mentioned that it is particularly common for verbs of motion to incorporate their directional adjuncts. Interestingly, there are constraints on this. Thus, the verb 'leave' in 62 has a full dative-marked nominal expressing goal, but incorporates the source nominal 'house'. In 58 and 59 on the other hand, we have a goal nominal incorporated by the verbs 'go' and 'approach'. In principle, we might expect it to be possible to incorporate any member of a path expression and obtain alternations such as 93 (examples from V. Rakhilin, pers. comm.).

- (93) a. *ətləg-ən nə-jet-qin nəmnəm-etə gətg-epə*
 father-ABS PAST-COME-3SG.S village-DAT lake-ABL
 'The father came to the village from the lake.'
- b. **ətləg-ən nə=gətgə=jet-qin nəmnəm-etə*
 father-ABS PAST=lake=come-3SG.S village-DAT

In general, only the directional which is semantically implied by the verb (or in the case of inherently nondirectional verbs of motion, a goal) may be incorporated. Ex. 63 is not exceptional here, since the form *əjajpə* is lexicalized as a source adverbial. I am not sure how best to formalize this idea within a framework such as Jackendoff's, since Jackendoff does not deal with such deictic factors, but clearly we need to be able to code a semantic property and allow this to dictate incorporation possibilities.

Finally, we have yet to account for the not inconsiderable numbers of intransitive 'labile' verbs in which an obliquely marked complement to an intransitive verb alternates with an absolutive nominal (and transitive agreements). These

cases are rather different from genuine applicatives. Indeed, it would be impossible to analyze these cases as applicatives (i.e. Preposition Incorporation) in Baker's framework because the base verbs are intransitive and hence have no objective case they could assign to a derived object (or better, since all verbs can assign absolutive case, we may say that they have no ergative case they could assign to a derived transitive subject). They would thus fall foul of Baker's Case Frame Preservation Principle. Such examples are something of an embarrassment to the incorporation theory of applicatives, since it is difficult to see what would prevent an analysis in terms of incorporation other than the stipulative Case Frame Preservation Principle. I shall assume that, like the 'spray/load' cases, these verbs have two lexical representations, one as intransitives the other as transitives. They therefore resemble English verbs such as *enter* in the sense *Tom entered the debate enthusiastically* vs. *Tom entered into the debate enthusiastically*. Whether there is any deeper connection between this phenomenon and the productive transitivity alternations I must leave to future research.

Thus, we account for the alternations in terms of lexicalized or productive alternations in case assigning properties. This is very similar to part of the explanation provided by Baker for a number of these alternations. However, there is no necessity to link such an explanation to syntactic movement. The Chukchi facts show that it is not only possible but essential to couch these in terms of lexical alternations in argument structure, together with natural assumptions about argument saturation by incorporation.

8. INCORPORATION OF NOMINAL MODIFIERS BY NOUN HEADS. An interesting and typologically unusual feature of Chukchi incorporation is that it is not restricted to the nominal complements of verbs, or even to verb adjuncts. On the contrary, even more productive than noun incorporation is the incorporation of modifiers of nouns (adjectives, possessors and determiners, as well as nouns themselves) by noun heads. In 94–96 we see that noun compounding, in which the rightmost noun is the head, is possible in Chukchi. The examples correspond to analytic constructions in which the modifier is in the form of a relational adjective derived from the noun by a regular derivational process.

(94) (Skorik 1961: 280)

- a. *kupre = upicgən*
net = pole
- b. *kupre-kin upicgən*
net-ADJ pole
'net pole'

(95) a. *ŋinqej = kʔeli*
boy = cap

- b. *ŋinqej-in kʔeli*
boy-POSS cap
'a boy's cap'

(96) a. *req = upicgən*
what = pole

- b. *rʔe-kin upicgən*
 what-ADJ pole
 'what (type of) pole?'

In 97 we see a noun incorporating an adjectival root. The incorporated forms are in the comitative I case, formed by a circumfix *ga-...-ma*. The prefixal part of this always precedes the incorporated adjective. Interestingly, the adjective must be incorporated with the two comitative cases, an analytic equivalent construction is not found.¹⁸ In addition, note that the *-ma* suffix element is a dominant morpheme so it always triggers vowel harmony. Thus, there is no doubt that we are dealing here with compounding rather than phrase formation.

(97) (Skorik 1961: 99)

- a. *ga-taŋ = pojgə-ma*
 COM-good = spear-COM
 'with a good spear'
- b. *nə-teŋ-qin pojg-ən*
 ADJ-good-ADJ spear

Skorik provides large numbers of such cases. In 98 we see incorporation of what appears to be an adverbial root, *janra*. This forms an adjective, *janraken*, with the denominal relative adjective suffix *-kin/ken*, and thus behaves a little like a noun root:

- (98) *ga-janra = qama-ma*
 COM-separate = dish-COM
 'with a separate dish'

Ex. 99 is an illustration of the productivity of the adjective incorporation process. It is taken from the third grade Chukchi language textbook of Leontiev and Ajnewtegin (1957), where it recurs with some frequency. It is of particular interest because both morphemes are Russian loans which were quite possibly borrowed into the language for the first time for the purposes of that textbook.

- (99) a. *licnə = mestoimenija-t*
 personal = pronoun-PL
- b. *licnə-t mestoimenija-t*
 personal-PL pronoun-PL

An indication of the productivity of adjective incorporation is the fact that this is the only type of incorporation which survives translation from Russian political texts. These translations are highly stylized in the sense that they tend to be as literal as possible without becoming frankly ungrammatical. As a result, incorporation is rarely found in such texts, except in the case of modifier incorporation. In addition, adjective incorporation is the one form of incorporation which is explicitly discussed in Leontiev and Ajnewtegin's school textbook (1957: 38f).

The structure of the Chukchi nominal phrase is not entirely clear. There is

¹⁸ It is unclear why the comitative case should force modifier incorporation in this way. However, it is not obvious what kind of principled explanation of this fact could be provided on a syntactic theory (pace the views of a reviewer).

no syntactically identifiable class of specifiers or determiners as opposed to other types of modifier. However, it is of interest that those elements which would be determiners in languages such as English, such as demonstrative adjectives, numerals and WH-word modifiers, can be incorporated just as easily as other modifiers. Examples 100–104 are taken again from Skorik (1961: 99).

- (100) a. *ga-ŋoten = təlacʔ-əma*
COM-this = motor-COM
'with this motor'
b. *ŋotqen təlacʔən*
this motor
- (101) a. *ga-tʔar = wag-ma*
COM-how.many = claws-COM
'with how many claws?'
b. *tʔer wegət*
how.many claws
- (102) a. *ga-ŋeran = wag-ma*
COM-two = claw-COM
'with two claws'
b. *ŋireq wegət*
two claws
- (103) (Skorik 1961: 400)
ənnan-mətlən-qaw = ŋalg-a
one-five-ORD = skin-INSTR
'by means of the sixth skin'
- (104) *tʔar -qaw = orw-ək*
how.many-ORD-sled-LOC
'on which sled?'

The interrogative root *req-/raq ~ rʔe/rʔa* 'what' incorporates readily. Ex. 105, in which Russian loan words incorporate the WH-word, recurs throughout Leontiev and Ajnewtegin 1957.

- (105) a. *rʔa = litsolʔ-ət* *ənkʔam rʔa = cislolʔ-ət*
what = person-PL and what = number-PL
'what persons and numbers [of the verb]?'
b. *ənnan = cislolʔ-o* *ewətləm mæg = cislolʔ-o*
one-number-DESIG or many-number-DESIG
'in the singular or plural'

Possessive forms readily incorporate:

- (106) (Leontiev and Ajnewtegin 1957 passim)
morəg = klass-ək
our-class-LOC
'in our class'

This includes possessive or relational adjective forms derived by suffixation of *-in/nin*. Thus, from the root *mirg* 'grandfather' we get *mirg-in* 'of the grandfather, grandfather's'. This gives us 107.

(107) (Skorik 1961: 241)

- a. *mirg-in* *kupre-n*
 grandfather-POSS net-ABS.SG
 'grandfather's net'
- b. *mirg-in* *kopra-gtə*
 grandfather-POSS net-DAT
- c. *merg-ena-gtə* *kopra-gtə*
 grandfather-POSS-DAT net-DAT
- d. *merg-ena = kopra-gtə*
 grandfather-POSS = net-DAT
 'to grandfather's net'

Ex. 107c illustrates a rare case of a modifier agreeing in case (the form in 107b without agreement is more usual). Example 107d shows incorporation of the possessive adjective stem.¹⁹

Finally, any number of modifiers may be incorporated, and in the case of purely modifying elements there do not seem to be any strong restrictions on their order. Thus, Skorik (1961: 103) gives the following as equivalent:

- (108) a. *ga-tor = taŋ = kətepa = nalgə-ma*
 COM-new = good = ram = skin-COM
- b. *ga-taŋ = tor = kətepa = nalgə-ma*
 COM-good = new = ram = skin-COM
- c. *ga-kətepa = tor = taŋ = nalgə-ma*
 COM-ram = good = new = skin-COM
 'with a good, new, ram's skin'

A noun which has incorporated its modifier(s) may itself undergo noun incorporation (what Polinsky 1993 refers to as 'serial incorporation'). In 109 the noun root *pojg* 'spear' has incorporated its modifiers before being incorporated itself:

- (109) (Skorik 1961: 103)
- a. *tə-tor = taŋ = pəlwəntə = pojgə = pela-rkən*
 1SG.S-new = good = metal = spear = leave-PRES
 'I am leaving a good, new, metal spear.'

In 110 we see a verb root used as a noun modifier incorporated into a noun which is then incorporated by another noun.

- (110) (Skorik 1948: 58)
- a. *kənwer wʔe = ramkə = wetgaw walomnen*
 then die = people = speech he.understood

¹⁹ Skorik (1961: 241) mentions that a possessive adjective cannot be incorporated by a noun in the absolutive case. This may appear to be a syntactic restriction, though if it is, it is not obvious how to state it syntactically. Since Chukchi is ergative, the absolutive marks both surface intransitive subjects (including derived subjects, for instance of antipassives) and surface direct objects (again, including derived objects). Hence, any theory is likely to have to state the restriction in terms of nothing deeper than surface absolutive case marking.

- b. *wʔilʔ-in remk-in wetgaw*
 die-PTCPL-POSS people-POSS speech
 ‘Then he understood the speech of the dead.’

Multiple incorporations of this kind do not seem to be especially marked. Less common, according to Skorik (1961: 103) are incorporations of obliquely marked modified nominals.

- (111) (Skorik 1961: 103)
 a. *t-ikwə = ɲej = ejmewə-rkən*
 1SG.S-high = hill = approach-PRES
 ‘I am approaching a high hill.’
- (112) a. *tə-wel = ənnə = tke-rkən*
 1SG.S-rotten = fish = smell-PRES
 ‘I smell of rotten fish.’

Examples such as these do not discriminate between a syntactic and a lexical analysis, since, in essence, these forms are no different from English compounds of the kind *New York cab driver* or *American history teacher*. However, if argumental noun incorporation is lexical then the examples show that modifier incorporation must be lexical too, because object incorporation is fed by modifier incorporation.

Of greater interest in many respects are incorporations involving denominal adjectives formed with the suffix *-lʔ-* (homophonous with a participle suffix found on verbs), which has the meaning ‘having *Noun*’. Simple examples are given in 113–115 (Skorik 1961: 372–3).

- (113) *umkə = gənritə-lʔə-n ənpənacgə-n*
 forest = guard-PTCPL-ABS old.man-ABS
 ‘the old man who is guarding the forest’
- (114) *katgo = ʔəttʔə-lʔ-ətə neɟələn məkəcʔən iney*
 strong = dog-PTCPL-DAT they.gave larger.part load
 ‘They gave the larger part of the load to the one who had the strong dogs.’
- (115) *ga-məqə = kəmeɲə-lʔə = ɲawəsqat-ma*
 COM-small = child-PTCPL = woman-COM
 ‘with a woman who has small children’

The noun may have already received the negative circumfix *e/a...-kə*, to give the meaning ‘not having *Noun*’. Thus we find examples such as 116:

- (116) (Skorik 1961: 357)
ga-a-qa-kə-lʔə = ənpənacg-əʔə-ma
 COM-NEG-deer-NEG-PTCPL = old.man-PL-COM
 ‘with the old men who don’t have reindeer’

Multiple incorporations of modifiers in such constructions are also attested.

- (117) (Skorik 1961: 373)
a-taɲ = caat-kə-lʔə = ʔaacek-ətə
 NEG-good = lasso-NEG-PTCPL = youth-DAT
 ‘to the youth who does not have a good lasso’

The significance of modifier incorporation for syntactic theories of incorporation is quite simple. Whether we assume the classical view of nominal phrases, in which they are headed by a noun and modified by adjectives, with determiners, possessives and so on occupying the [Specifier, NP] position, or whether we adopt the 'DP analysis' (Abney 1987), on which nominals are projections of the determiner head, the only way to achieve such incorporation would be by a lowering process. This is because the noun always remains the morphological head of the construction, and cannot therefore be raised and incorporated itself by a c-commanding head. While such an analysis is open to Autolexical Syntax, it is now generally regarded as illicit in the framework inspired by Baker (cf. Chomsky 1989, Ouhalla 1990). Thus, the extremely rich and varied types of modifier incorporation in Chukchi constitute an intractable counterexample to any principled syntactic analysis relying on the Empty Category Principle or similar constraints.

Within the lexical framework advocated here, it remains a nontrivial problem to account for these constructions. The basic mechanism is straightforward, however. Let us take one of the more complex examples, 117. This consists of a noun modified by a complex expression, formally a 'participle'. This in turn is constructed from a derivational formative which in this usage is effectively a predicate of possession, selecting nominals. The nominal is built from a noun root modified by an adjective. This poses no problems, since I have argued that semantically all incorporation is essentially a process of modification (theta identification). The negative circumfix functions here essentially as a quantifier, corresponding to the ordinary English word *no*. Hence, the structure of the whole compound is as shown schematically in 118.

(118) [[HAVING [NO [GOOD [LASSO]]]][YOUTH]]

9. SYNTACTIC OR LEXICAL INCORPORATION—CONCLUSIONS. The conclusions of §§5–7 must be that NI, or more generally, incorporation in Chukchi, cannot be the result of syntactic head-to-head movement. This leaves a number of alternatives.

First, we could assume that Chukchi NI, which involves argument structure, is syntactic but that the modificational species (adjective incorporation by nouns or adverb incorporation by verbs) is a form of lexical compounding. Second, we might assume that all Chukchi incorporations are purely syntactic but adopt a different syntactic model from that of Baker 1988. Third, we might adopt a lexicalist model, such as that proposed by Rosen 1989.

The virtue of the first suggestion is that it permits us to describe all the facts. It has the disadvantage, however, of effectively evacuating Baker's elegant approach of all empirical consequences. There is very little difference between modifier incorporation and argument incorporation, except that incorporation of modifiers by nominal heads is particularly productive. If anything, therefore, we might expect modifier incorporation to be syntactic. This solution has to be a measure of last resort and I shall therefore reject it.

The obvious alternative to Baker's 1988 model of incorporation is that of Sadock 1991, briefly discussed in §7. As noted, there are problems with that

solution. First, Sadock's model is too powerful as it stands, in that it permits a host of lowering processes not attested, such as incorporation of unergative and transitive subjects. Second, judging from Sadock's own account, noun incorporation where the noun is an argument would appear to fall under the heading of a morphosemantic mismatch. When we came to flesh out what this might mean, we saw that the result is pretty well indistinguishable from a lexical rule operating over argument structure representations. Again, it would be open to us to claim that modifier incorporation is a morphosyntactic mismatch while argument incorporation is a morphosemantic mismatch. But in the absence of any stranding phenomena with modifier incorporation, this would mean that there was no way of determining that 'syntactic' incorporation had taken place. We might just as well regard all incorporation in the language as the result of a morphosemantic mismatch.

The third possibility is to adopt a uniform treatment of incorporation in Chukchi, and analyze it as an essentially lexical phenomenon, in the sense that the compounding process itself is realized as a morphological operation which has consequences for the syntactico-semantic representation. Given this, we must decide whether Chukchi represents the COMPOUND or the CLASSIFIER type of NI. Recall that Rosen's theory makes no strong prediction as to whether adjuncts will be incorporated. The compound NI type would certainly permit such compounding fairly freely (interestingly, Rivero 1992 concludes that when sentence adverbs are incorporated by verbs in Greek this is the result of lexical compounding). However, classifier NI languages, too, should be able to incorporate (perhaps certain types of) adjunct. All that would be needed is for the language to permit an empty adverbial lexical category corresponding to *pro*.

Which, then, of Rosen's types does Chukchi belong to? This is not entirely straightforward. The fact that possessors seem to be stranded argues in favor of the classifier type. However, other types of modifier seem to resist such stranding. On the other hand, as pointed out at the end of §7.1, possessor ascension is not necessarily a strong indication of syntactic stranding. In Chukchi it is not entirely obvious that the derived object nominal corresponding to a possessor is in any sense a part of a syntactic phrase containing the direct object head in underlying structure. One reason for saying this is that the possessive relation can be signalled by a nominal in the locative case (cf. Polinsky 1993. This use is not mentioned in Skorik's (1961) discussion of case functions). Nedjalkov (1976: 189) provides example 119 in which the word 'father' in the Locative is explicitly given the same function as the possessive form of the same word in a construction cognate with a possessor ascension construction:

- (119) a. *ətłəg-ək/ətłəg-in* *ʔətwʔet jərʔet-gʔi* [intr]
 father-LOC/father-POSS boat.ABS flood-3SG.S
- b. *ətłəg-ən ʔətwʔ = əjərʔet-gʔi* [intr]
 father-ABS boat = flood-3SG
 'Father's boat flooded.'

It is worth noting that other proposals have been made in the literature. Massam 1985, for example, regards possessor ascension as a type of exceptional case

marking, in which the verb is permitted to case mark the NP specifier rather than the NP head (in the same way that a verb such as *expect* is said to case mark an embedded subject in an expression such as *expect him to leave*).

One of Rosen's criteria is transitivity: if the verb remains transitive after incorporation it is the classifier type, otherwise (*ceteris paribus*) it is the compound type. Here the facts point clearly to the compound interpretation, for NI always results in detransitivization. Indeed, Kozinsky et al. 1988 (stretching the terminology perhaps too much) describe NI as a species of antipassivization. However, it is important to distinguish between surface transitivity, interpreted in Baker's theory as Case Marking, and argument structure. I have argued that detransitivization is merely suppression of case-assigning potential, since the inherent transitivity of a dyadic verb root can resurface, as we saw in §§4 and 6.

Classifier incorporation entails the existence of null heads corresponding to the lexical category incorporated. Since Chukchi incorporates nominal modifiers, as well as verb roots modifying other verbs, and since there is little reason to postulate the existence of null heads for these categories, this, too, would seem to weigh slightly in favour of the compound interpretation. Note, also, that in the case of numeral stranding reported by Polinsky 1993, (see note 7 above) the numeral does not behave like a freestanding nominal because it is not case marked. One would expect it to appear in some oblique case form. Without any marking it would be interpreted as absolutive, but this is not possible, because the verb does not agree with it (showing that it is not an argument of any kind) and because Chukchi has an outright ban on two absolutive marked nominals in one clause. However, since modifiers do not generally agree with their heads, it might be open to us to suggest that there is indeed a null head, which is covertly case marked and modified by a nonagreeing numeral. In any event, there is at best extremely slender evidence in favor of null lexical nominal heads.

The question of null heads is related to the next criterion which distinguishes between classifier and compound NI, doubling of the incorporated noun. The evidence here is clear: Chukchi categorically disallows such doubling. This is exactly what we would expect from compound NI.

One factor which might seem to favor a syntactic approach to Chukchi is the fact that an incorporated nominal may remain referentially active. Admittedly, this is not the usual interpretation of such nominals, but the mere fact that such an interpretation is available means that we cannot regard referential islandhood as an unambiguous diagnostic for syntactic incorporation. I regard this question as entirely separate, however. Interesting recent discussion of these questions can be found in Ward, Sproat and McKoon 1991, Lieber 1992, Sproat 1992.

Of particular interest are examples such as 27 in which an incorporated noun is in the scope of constituent negation (see also Polinsky 1993). I cited this as syntactic behavior on the part of the incorporated noun, in that it appears to remain referentially (and hence syntactically?) active. A lexical account therefore owes an explanation for such forms. The morphosyntax of negation, and

especially contrastive negation, in Chukchi requires a separate study in itself and it is beyond the scope of this paper to provide a detailed analysis. I will simply note here that there is no obvious sense in which a syntactic account of incorporation provides any solution to the problem. Constituent negation in most languages interacts in complex ways with prosody, with lexical semantics and with pragmatic factors, but as is well known it is usually defined over relatively superficial morphosyntactic representations (beyond the stage when stylistic scrambling rules have applied, for example). For example, a negation element which is morphologically bound to one constituent may take a c-commanding constituent in its scope. Thus, in Czech, sentence negation is usually expressed as a prefix on the main verb. However, in 120 it is possible for the domain of negation to be limited to the quantified subject 'everyone' (thus making the sentence ambiguous).

(120) (Mluvnické češtiny 3, 1987: 265)

Ted' už jim všichni 'ne-věří
 now already them everyone not-will.believe

a. Now, nobody will believe them.

b. Now, not everyone will believe them.

And, of course, it is not unheard of for highly lexicalized affixes, let alone incorporated nouns, to be found in the scope of constituent negation, as witness the celebrated example of Bolinger 1972—'This whiskey wasn't EX-ported, it was DE-ported'. Thus, at present we can draw only limited conclusions from such cases in Chukchi.

If we accept that Chukchi is an example of compound NI then the data reported here fill a descriptive gap in that they provide an example of a Compound NI language with null pronominals, and also of an incorporating language in which adverbials are freely incorporated (Greek is not an incorporating language in this sense, since it has no other productive type of incorporation).

However, it is not obvious that we should make too strenuous an attempt to force Chukchi into either of the procrustean beds of classifier or compound NI. To be sure, there is something appealing in the simplicity of a typology that distinguishes an essentially syntactic type in which the verb retains its argument structure (classifier NI) from an essentially lexical type in which the verb's argument structure is saturated or discharged by the incorporee (compound NI). From this follows the strong tendency for a verb to remain transitive in classifier NI and hence to agree with the incorporated object or show other morphosyntactic signs of transitivity. We have seen, however, that there is no neat correspondence between the saturation of argument structure and case marking in Chukchi. This is because of the general tendency for intransitive predicates, including those detransitivized by antipassive or noun incorporation, to be retransitivized by a process reminiscent of applicative formation. Admittedly, this is not the same as the classifier NI, in which the verb continues to agree with the incorporated element, but it does show that case assignment and argument structure saturation do not go entirely hand in hand. This is a reflection of a more general disparity between argument structure realization

and case marking. For instance, there is the case of the 'transitive passives' of Polish or Ukrainian, in which an impersonal passive is formed, with suppression of the subject position, but in which the underlying object remains marked in the accusative (objective) case. An example from Ukrainian is given in 121.

- (121) *Cerkvu bulo zbudovano v 1640 roc'i*
 church.ACC was.3SG.NEUT built.3SG.NEUT in 1640 year
 'The church was built in 1640.'

Here, the detransitivization of the verb is not reflected in its case marking (though in other respects the verb is in the passive form, e.g. in its morphology and in having no subject).

Thus, while the basic typological distinction Rosen draws is very valuable, it would probably be unwise to expect languages to fall into one or the other of the two categories in a straightforward way. Given the existence of such things as transitive passives it is not obvious what would stop a language with compound NI from, say, permitting the incorporating verb to continue to agree with the incorporated noun, while failing to show other signs of classifier NI, such as doubling or stranding. Thus, rather than fitting languages into one of the two molds, we should perhaps be asking more specific questions about the precise parameters of variation in noun incorporation systems.

Let us now briefly summarize the implications for Baker's syntactic theory of incorporation. Incorporation is said to evince a number of properties that can be explained by assuming that it is the consequence of head-to-head movement. One of these is the failure of transitive/unergative subjects to incorporate. Clearly, this cannot be due to any (purely) syntactic constraint, and hence, it cannot be a diagnostic for syntactic NI. This is a conclusion we can reach from a great many languages in which a lexical compounding process obeys the same constraint against the incorporation of subjects. A telling case here is synthetic compounding in English. This disallows incorporation of any kind of subject, even unaccusative subjects (cf. Selkirk 1982). However, Baker (1988: 78f) explicitly analyzes these as lexical. Hence, even the syntactic theory of incorporation owes an explanation of the failure of subjects to be compounded.

It is not clear to me how best to handle possessor ascension and numeral stranding, but however we regard the matter it would seem from the Chukchi facts that possessor ascension following incorporation of a head noun is not a diagnostic for syntactic head movement. Given that quantifiers subtend notoriously complex relationships between morphosyntax and logical form, perhaps we should also be cautious about interpreting cases of numeral (or generally quantifier) stranding. In general, only where a stranded element or phrase shows clear signs of independent syntactic behavior (e.g. taking case morphology, triggering agreement and so on) should we accept it as a genuinely syntactic entity.

Baker 1988 argues against 'acyclic' combinations of NI and applicative formation on the grounds that the resulting structures violate the ECP. However, we have seen that Chukchi applicatives or retransitivizations respect the same constraints as supposedly syntactic exemplars. In particular, a transitive verb

cannot incorporate the oblique argument, only the direct argument, and the oblique argument can only be raised to a surface direct object after the direct argument has been incorporated. Similarly, we saw limited evidence that the causative formation interacts with NI in the way that Baker's syntactic theory would predict, so if NI is lexical, this criterion, too, cannot be a safe diagnostic for syntactic NI.

These facts can be understood, as we have seen, in terms of the case marking capacities of verb stems and other well-motivated lexicalist assumptions, none of which require a syntactic analysis of applicative formation, antipassivization or NI. But this means that Baker's ingenious syntactic explanation for these constraints does not apply to all cases. We must therefore ask whether it applies to any cases.

REFERENCES

- ABNEY, STEPHEN. 1987. *The English noun phrase in its sentential aspect*. Cambridge, MA: MIT dissertation.
- AOUN, JOSEPH; NORBERT HORNSTEIN; DAVID LIGHTFOOT; and AMY WEINBERG. 1987. Two types of locality. *Linguistic Inquiry* 18.537–78.
- BAKER, MARK C. 1988. *Incorporation*. Chicago: University of Chicago Press.
- . 1992. Thematic conditions on syntactic structures: Evidence from locative applicatives. In *Roca*, 23–46.
- BOGORAS, WALDEMAR. 1910. *Chukchee mythology*. (Publications of the Jesup North Pacific Expedition, vol. 8, part 1). Leiden: E. J. Brill.
- BOGORAZ, WALDEMAR. 1922. *Chukchee*. *Handbook of American Indian languages*, ed. by Franz Boas. Washington: Smithsonian Institution.
- BOLINGER, DWIGHT L. 1972. Accent is predictable (if you're a mind-reader). *Language* 48.633–44.
- BOOIJ, GEERT. 1992. Morphology, semantics and argument structure. In *Roca*, 47–64.
- CHOMSKY, NOAM. 1986. *Barriers*. Cambridge, MA: MIT Press.
- . 1989. Some notes on economy of derivation and representation. *Functional heads and clause structure*, ed. by Itziar Laka and Anoop Mahajan. *MIT Working Papers in Linguistics* 10:43–74.
- COMRIE, BERNARD. 1979. Degrees of ergativity: Some Chukchee evidence. *Ergativity*, ed. by Frans Plank, 219–37. New York: Academic Press.
- DISCIULLO, ANNA-MARIA, and EDWIN WILLIAMS. 1987. *On the definition of word*. Cambridge, MA: MIT Press.
- DOWTY, DAVID R. 1991. Thematic proto-roles and argument selection. *Language* 67.547–619.
- GERDTS, DONNA. 1996. *Incorporation*. *Handbook of Morphology*, ed. by Arnold M. Zwicky and Andrew J. Spencer. Oxford: Blackwell. Forthcoming.
- GRIMSHAW, JANE. 1990. *Argument structure*. Cambridge, MA: MIT Press.
- HIGGINBOTHAM, JAMES. 1985. On semantics. *Linguistic Inquiry* 16. 547–621.
- INENLIKEJ, PJOTR I., and VLADIMIR P. NEDJALCOV. 1967. Iz nabljudenij nad ěrgativnoj konstrukcij v ĉukotskom jazyke. [Observations on the ergative construction in Chukchi. Ergativnaja konstrukcija predloženija v jazykax različnyx tipov [The ergative construction in languages of various types] 246–60. Leningrad: Nauka.
- . 1981. O svjazjax posessivnogo i 'komparativnogo' kauzativnogo i affektivnogo značenij glagola. [On the links between the possessive and 'comparative' causative and affective verb meaning]. *Jazyki i fol'klor narodov severa [The languages and folklore of the peoples of the North]* 133–48. Leningrad: Nauka.
- JACKENDOFF, RAY. 1990. *Semantic structures*. Cambridge, MA: MIT Press.

- JOSEPH, BRIAN D., and JANE SMIRNIOTOPOULOS. 1993. The morphosyntax of the Modern Greek verb as morphology and not syntax. *Linguistic Inquiry* 24.388–98.
- KOZINSKY, IVAN S.; VLADIMIR P. NEDJALOV; and MARIA S. POLINSKAJA. 1988. Antipassive in Chukchee: Oblique object, object incorporation, zero object. Passive and voice, ed. by Masayoshi Shibatani, 651–706. Amsterdam: J. Benjamins.
- LEONTIEV, V. V., and M. V. AJNEWTEGIN. 1957. *Učebnik ləgʔorawetʔajeləmel* [Textbook of Chukchee]. Leningrad: Gossudarstvennoe učebno-pedagogičeskoe izdatel'stvo.
- LEVIN, BETH, and MALKA RAPPAPORT HOVAV. 1992. The lexical semantics of verbs of motion: The perspective from unaccusativity. In Roca, 247–70.
- LIEBER, ROCHELLE. 1992. *Deconstructing morphology*. Chicago: University of Chicago Press.
- MARANTZ, ALEC. 1984. *On the nature of grammatical relations*. Cambridge, MA: MIT Press.
- MASSAM, DIANNE. 1985. *Case Theory and the Projection Principle*. Cambridge, MA: MIT dissertation.
- MITHUN, MARIANNE. 1984. The evolution of noun incorporation. *Language* 60.847–94.
- . 1986. On the nature of noun incorporation. *Language* 62.32–37.
- Mluvnické češtiny 3. 1987. *Skladba*. [Czech grammar, vol. 3. Syntax. In Czech]. Prague: Academia.
- MURAVEVA, IRINA A. 1996. Chukchee. *Handbook of morphology*, ed. by Arnold M. Zwicky and Andrew J. Spencer. Oxford: Blackwell. Forthcoming.
- NEDJALOV, VLADIMIR P. 1976. Diathesen und Satzstruktur im Tschuktschischen. *Satzstruktur und Genus Verbi*, ed. by Rudolph Lötsch and Rudolph Růžicka, 181–211. Berlin: Akademie Verlag.
- . 1979. Degrees of ergativity in Chukchee. *Ergativity*, ed. by Frans Plank, 238–62. New York: Academic Press.
- OUHALLA, JAMAL. 1990. Sentential negation, relativised minimality and the aspectual status of auxiliaries. *The Linguistic Review* 7:183–231.
- POLINSKAJA, MARIA, and VLADIMIR P. NEDJALOV. 1987. Contrasting the absolutive in Chukchee. *Lingua* 71.239–69.
- POLINSKY, MARIA. 1990. Subject incorporation: Evidence from Chukchee. *Grammatical relations: A cross-theoretical perspective*, ed. by Katarzyna Dziwirek, Patrick Farrell, and Errapel Mejías-Bikandi, 349–64. Stanford: Stanford Linguistics Association, CSLI.
- . 1993. Subject inversion and intransitive subject incorporation. *Papers from the twenty-ninth meeting of the Chicago Linguistics Society*.
- POLLOCK, JEAN-IVES. 1989. Verb movement, Universal Grammar, and the structure of IP. *Linguistic Inquiry* 20.365–424.
- PRINCE, ALAN, and PAUL SMOLENSKY. 1992. *Optimality Theory*. New Brunswick, NJ & Boulder, CO: Rutgers and University of Colorado, MS.
- RAPPAPORT, MALKA; MARY LAUGHREN; and BETH LEVIN. 1993. Levels of lexical representation. *Semantics and the lexicon*, ed. by James Pustejovsky, 37–54. Dordrecht: Reidel.
- RIVERO, MARIA-LUISA. 1992. Adverb incorporation and the syntax of adverbs in Modern Greek. *Linguistics & Philosophy* 15.289–331.
- ROCA, IGGY M. (ed.) 1992. *Thematic structure: Its role in grammar*. Dordrecht: Foris.
- ROSEN, SARA. 1989. Two types of noun incorporation: A lexical analysis. *Language* 65.294–317.
- SADOCK, JERROLD. 1980. Noun incorporation in Greenlandic. *Language* 56.300–19.
- . 1986. Some notes on noun incorporation. *Language* 62.19–31.
- . 1991. *Autolexical syntax*. Chicago: University of Chicago Press.
- SAPIR, EDWARD. 1911. The problem of noun incorporation in American languages. *American Anthropologist* 13.250–82.

- SASSE, HANS-JÜRGEN. 1984. The pragmatics of noun incorporation in Eastern Cushitic languages. *Objects: Towards a theory of grammatical relations*, ed. by Frans Plank, 243–68. London: Academic Press.
- SELKIRK, ELIZABETH O. 1982. *The syntax of words*. Cambridge, MA: MIT Press.
- SHIBATANI, MASAYOSHI. 1990. *The languages of Japan*. Cambridge: Cambridge University Press.
- SKORIK, PJOTR. 1948. Očerok po syntaksisu čukotskogo jazyka: inkorporatsija [Outline of Chukchee syntax: incorporation]. Leningrad: Učpedgiz.
- . 1960. O kategorii zaloga v čukotskom jazyke [On voice in Chukchee]. *Voprosy grammatiki* [Issues in grammar] 128–50. Moscow-Leningrad: Academy of Sciences.
- . 1961. *Grammatika čukotskogo jazyka, tom 1* [The grammar of Chukchi, vol. 1. (In Russian)] Moscow: Izdatel'stvo Akademii Nauk.
- . 1977. *Grammatika čukotskogo jazyka, tom 2* [The grammar of Chukchi, vol. 2. (In Russian)] Moscow: Izdatel'stvo Akademii Nauk.
- SPROAT, RICHARD. 1985. *On deriving the lexicon*. Cambridge, MA: MIT dissertation.
- . 1992. Morphological non-separation revisited: A review of R. Lieber's *Deconstructing morphology*. *Yearbook of morphology 1992*, ed. by Geert Booij and Jaap van Marle, 235–58. Dordrecht: Kluwer.
- ULLMANN, STEPHEN. 1957. *Principles of semantics*. Oxford: Oxford University Press.
- VAN VALIN, ROBERT. 1992. Incorporation in Universal Grammar: A case study in theoretical reductionism. *Review of Baker 1988*. *Journal of Linguistics* 28.199–220.
- WARD, GREGORY; RICHARD SPROAT; and GAIL MCKOON. 1991. A pragmatic analysis of so-called anaphoric islands. *Lg* 67.439–74.

Department of Language and Linguistics
University of Essex
Colchester
England CO4 3SQ

[Received May 26, 1994;
revision received September 16, 1994;
accepted December 22, 1994.]