

[Published in: *Journal of Linguistics* 34 (1998), 447–488.]

**Syntax versus the Lexicon: Incorporation and Compounding in
Modern Greek¹**

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(Received 28 January 1997; revised March 11, 1998)

1. Introduction

A long-standing set of controversies in linguistics has revolved around the interface between morphology and syntax and between the lexicon and syntax.² At issue are several interrelated questions, such as whether there is a separate morphological component of the grammar and whether ostensibly morphological phenomena involving word-formation, e.g. deverbal nominalizations, should be subsumed under the syntactic component or relegated instead to the lexicon.³ While a good part of the discussion on these interface controversies in recent years has concerned the proper analysis of so-called “clitic” elements,⁴ another fruitful area for the testing and contesting of such morphology/lexicon-versus-syntax controversies is the analysis of compounds and compound-like constructs.

Especially relevant here also is the phenomenon of incorporation, defined by Spencer (1991: 15) as the situation in which “a word (typically a verb) forms a kind of compound with, say, its direct object, or adverbial modifiers, while retaining its original syntactic function.” Baker (1988) has proposed an explicit theory for such cases in which the key operation is the incorporation by syntactic movement (Move-Alpha) of a lexical head by a lexical category, especially a verb. As Spencer (1991: 293) notes, in such an approach, “many of the regular aspects of morphology are regarded as the consequence of principles of syntax, and not as morphological phenomena at all.”

Against such a backdrop, Rivero’s thought-provoking article (1992) about adverbs and apparent incorporation structures in Modern Greek, becomes particularly interesting as a testing ground for some of the interface issues sketched

above. Our goals, therefore, are to provide a critique of Rivero's account and to offer an alternative analysis, all in the context of a consideration of the distinction between syntactic and morphological/lexical phenomena and related theoretical consequences.

2. The Modern Greek adverb-verb phenomenon and Rivero's syntactic analysis

Rivero (1992) draws attention to sentence pairs in Modern Greek in which a verb and modifying adverb are separated in one whereas the adverb and verb are joined into a single word in the other. Her examples of such pairs are given below, with the (b) sentences illustrating the 'verbal composites'⁵ that consist of an adverb plus verb and the (a) sentences showing the corresponding phrasal manifestation of the free adverb in the verb phrase:

- (1) (a) *i maría qa to jirísi anápoða*
 the-Mary/nom fut it turn/3sg upside-down
 'Mary will turn it upside down.'
- (b) *i maría qa to **anapodojirísi***
 the-Mary/nom fut it upside-down-turn/3sg
 'Mary will turn it upside down.'
- (2) (a) *i maría férete kaká s tin aðelfí tis*
 the-Mary/nom behaves/3sg badly to the-sister/acc her
 'Mary behaves badly to her sister.'
- (b) *i maría **kakoférete** s tin aðelfí tis*
 the-Mary/nom badly-behaves/3sg to the-sister/acc her
 'Mary behaves badly to her sister.'

The pattern of alternation illustrated in (1) and (2) is found, she claims, with a relatively large number of combinations of adverbs and verbs; in (3) some additional examples from Rivero (1992) are given, listing just the adverb-plus-verb complex, with the related free adverb and verb indicated as well:⁶

- (3) (a) *ðiskolojenó* ‘give birth with difficulty’ (cf. *ðískola* ‘with difficulty’, *jenó* ‘give birth’)
 (b) *psilozalízome* ‘feel slightly dizzy’ (cf. *psilá* ‘finely’, *zalízome* ‘feel dizzy’)
 (c) *sigotraguðó* ‘sing softly’ (cf. *sigá* ‘slowly; quietly’, *traguðó* ‘sing’)
 (d) *ksanavlépo* ‘see again’ (cf. *ksaná* ‘again’, *vlépo* ‘see’).

In Rivero's view, manner adverbs combine acceptably (as in (1) through (3)). However, the process is not completely unrestricted, since temporal adverbs cannot combine:

- (4) (a) *ðen se íksera akómi*
 not you/acc knew/1sg yet
 ‘I did not know you yet.’
 (b) **ðen se akomi-íksera*
- (5) (a) *ta peðjá amésos qa ksipnísun*
 the-children immediately fut awake/3pl
 ‘The children will wake up immediately.’
 (b) **ta peðjá qa ameso(s)-ksipnísun*

There are some additional, and, Rivero claims, similar, combinations involving nominal arguments to the verb, such as those in (6) and (7):

- (6) (a) *ta peðjá qavmázun to éna to álo*
 the-children/nom admire/3pl.act the-one-the-other

‘The children admire each other.’

- (b) ta peðjá aliloqavmázone (NB: *aliloqavmázun)
 the-children each-other-admire/3pl.non-act 3pl.active

‘The children admire each other.’

- (7) (a) ta peðjá qavmázun tus eaftús tus
 the-children/nom admire/3pl.act the-selves/acc their

‘The children admire themselves.’

- (b) ta peðjá aftoqavmázone (NB: *aftoqavmázun)
 the-children self-admire/3pl.non-act 3pl.active

‘The children admire themselves.’

Rivero derives the ‘Adverb-Verb Complex’ by a syntactic rule of Adverb Incorporation, a process parallel to Noun-Incorporation and Preposition-Incorporation as discussed by Baker (1988). Crucially, Incorporation affects grammatical functions, so that it is possible with adverbs that are VP-internal and are arguments. In characterizing such adverbs as arguments in a syntactic sense, Rivero is extending to syntax McConnell-Ginet (1982)’s proposal that there are ‘Adverbs’ that are semantic arguments of predicates. Rivero suggests, therefore, that differences in the type of adverb that can incorporate, i.e. that manner adverbs are able to incorporate but time adverbs are not (see above, (4) and (5)), fall out from the assumption that the process of incorporation is involved, because manner adverbs are VP-internal, while time adverbs are not.⁷

Moreover, Rivero extends this analysis to cases involving incorporation of other arguments, in particular objects. Thus, she claims that the incorporation process leads to changes in the valence of the verb. In (8), for instance, she claims that the

direct object in a source sentence such as (8a) is incorporated into the verb to give *trofoðotó* in (8b), and the indirect object *s tus ftoxiús* is then in a position to absorb Case from verb, so that a transitive structure results, with *tus ftoxiús* as a direct object, as in (8b):⁸

- (8) (a) *ðíno fajító s tus ftoxiús*
 give/1sg food to the-poor/acc.pl
 ‘I give food to the poor.’
- (b) *trofoðotó tus ftoxiús*
 food-give/1sg the-poor/acc.pl
 ‘I give food to the poor.’

On the other hand, with Reflexive and Reciprocal anaphoric arguments, as in (6) and (7) above, Rivero claims, nonactive morphology is needed to absorb Case, since no object remains after incorporation. In such instances, the operation of Incorporation changes the morphology of the verb, from active to nonactive. For her, the difference between a ditransitive starting point before Incorporation in (8a) and a transitive one in (6a) and (7a) leads to a difference in the verbal morphology of the outcome: active in (8b) but nonactive in (6b) and (7b) (and note in particular that active verbs with *afto-/alilo-* are ungrammatical, as indicated in (6b) and (7b)).

3. The distinction between syntactic and lexical rules

Together, examples such as these, showing an apparent pattern in which phrasal combinations have roughly synonymous word-level counterparts, lead to a basic question that is addressed here: is the patterning observable in the process producing the Adverb-Verb (and more generally, the Argument-Verb) complexes a

matter of syntax, i.e. the result of a syntactic rule, or something else, e.g. a lexical rule (and thus more morphological in nature)?

Crucial to the discussion here, therefore, is a distinction between syntactic and lexical rules. While the rather extensive literature on this subject⁹ has brought out several distinguishing characteristics that separate syntactic rules from lexical rules, there are two that are especially relevant to the Greek case in question.¹⁰

The first commonly cited criterion is productivity. A syntactic rule should be generally quite productive, with at most just a handful of exceptions (or only motivated exceptions, e.g. involving whole classes of elements over which a generalization is possible). By contrast, a lexical rule need not be productive and can show a significant number of arbitrary exceptions. Distributional ‘gaps’ can thus occur in the output of lexical rules, in the sense that they need not allow for acceptable outputs for every potential input string, and there can be output forms that do not have a corresponding acceptable input string. Thus our basic assertion is that while a syntactic rule *must* be productive and virtually exceptionless, a lexical rule need not be, but *can* be very productive, indeed even exceptionless.

For example, the process which gives rise to nouns from adjectives in English through the suffixation of *-ness* is a case in point, since it has virtually no exceptions and its output shows no idiosyncratic meaning shifts. Moreover, it changes the part of speech of the base, from an adjective to a noun, and thus by the category-changing criterion (see fn. 10) would have to be a lexical process. Similarly, formations in English with *-gate* having the meaning ‘a scandal involving X’ (where X is what *-gate* attaches to), e.g. the recent *Monica-gate* (referring to the White House scandal concerning allegations involving President Clinton with Monica

Lewinsky), are quite freely and productively made from any noun that names a salient person or thing associated with the scandal.¹¹

The second criterion is compositionality. The output of a syntactic rule should show compositional semantics, so that the meaning of the whole is composed from the meaning of its parts. By contrast, the output of a lexical rule can be noncompositional in its semantics and thus can show meanings that differ in ways that are unpredictable in relation to the meanings of the individual parts composing it.

A lexical rule, therefore, is a rule (or set of operations) that creates a lexical item with properties that are idiosyncratic *via-à-vis* its source, and are not in themselves predictable as to their external syntax.¹² Such rules also provide links between and among lexical items. ‘Rule’ here is to be understood as ‘parsing’ a word for the sake of a first-pass at possible interpretation (e.g. when a speaker encounters the item for the first time); thus it is not a ‘generative’ rule in the strict sense but rather only in the sense that it provides a pattern for producing new words that may or may not be ‘enshrined’ more permanently in the lexicon (what can be called ‘one-time-only rules.’)

A further important notion is that of a ‘lexically governed (syntactic) rule’, a rule which applies only in the context of some lexical item, and applies to phrases containing some lexical item. However, such a rule has consequences at the phrasal level that are larger than the syntactic word, and thus is a rule giving construction types as output. Dative Movement or Raising constructions are relevant examples. Such a rule is ‘lexical’ in the sense that it is tied to some particular features of lexical items that cause them to occur in a syntactic (i.e., phrasal) construction-type.

The occurrence of these lexical features in a word is essentially unpredictable, but once the feature is there, the phrasal consequences are predictable.¹³

To show how these criteria can be used to decide the status of a given composite form, we apply them to combinations that occur in Greek of verbs with ‘preverbal’ elements — preposition-like elements that modify the meaning of the verbal root; these are universally regarded by linguists who have addressed the issue, e.g. Warburton (1970), as lexically derived composite verbs, i.e. the product of a lexical rule. Moreover, they show the characteristics of lexical rules discussed above.

For example, a verb like *episképtome* ‘I visit’ is generally treated as a lexical unit, even though clearly it is to be segmented morphologically into *epi* + *sképtome*, as shown by the existence of an independent preposition *epí* ‘on’,¹⁴ an independent verb *sképtome* ‘think’, and verbs such as *epiméno* ‘insist’ (compare: *peri-méno* ‘expect’), *epitrépo* ‘permit’ (compare *meta-trépo* ‘divert, transform’), and others with an initial element *epi-*. Still, there is no synchronic semantically compositional relationship between *episképtome* ‘visit’ and a preverbal element *epi-* ‘on’ or the verb *sképtome* ‘think’; that is, the meaning ‘visit’ is not obviously the result of adding together an independent lexical item *epí* and an independent lexical item *sképtome*. Moreover, although there are other combinations with *epi-*, e.g. *epitrépo* ‘permit’, *epivaríno* ‘aggravate’, *epiveveóno* ‘confirm’, etc., the formation process with *epi-* is not particularly productive from a synchronic standpoint. Thus, for any new verb that might enter the language, it is not possible to form a composite of that verb with *epi-*; for example, the verb *sutáro* ‘shoot (a basketball)’, a recent borrowing from English *shoot* (with the productive verb-forming suffix *-ar-* added

by way of nativizing the verb), does not permit a composite with preverbal *epi-* (**epi-sutáro* ‘shoot (a basketball) at/onto (something)’).

Therefore, there is no reason not to treat *epi-sképtome*, and other verbs like it,¹⁵ as anything other than the result of a lexical formation process. In fact, the lack of productivity and of a transparent semantic relationship to a word’s parts is exactly what would be expected for the product of lexical rules. The lexical rule involved in *epi-VERB* forms, since it ‘parses’ these forms, allows for the recognition of an element common to them; it thus gives a way of relating all the verbs without requiring that they be derived synchronically from /*epi*/ and /*VERB*/.

Based on the distinctions and criteria discussed in this section, Rivero’s purely syntactic account of the ‘incorporation’ phenomena makes the following predictions:

- (9) (a) for every phrasal combination of Verb + Adverb or Verb + (appropriate) Object,¹⁶ there should exist a corresponding verbal composite
- (b) if there is no phrasal combination, there should be no corresponding verbal composite; that is, every verbal composite has a phrasal counterpart
- (c) every verbal composite should be compositional in meaning, and show no idiosyncratic meaning differences from its phrasal source.

In the sections that follow, we demonstrate that these predictions are not borne out by a fuller consideration of the data. In this conclusion, we have been anticipated by Spencer (1995: 461), who, in his discussion of incorporation in Chukchi, notes, largely on theoretical grounds, that ‘very little is gained by treating Greek incorporation as syntactic and nothing is lost for the syntactic theory by treating it as lexical;’ our presentation provides a fuller accounting of the details of the Greek

case and thus provides empirical corroboration for the analysis suggested in Spencer's observation.¹⁷

4. Our procedure

The basis for our account comes from the behavior of the putative 'incorporation' structures with regard to productivity and compositionality, tested against several arbitrarily chosen sets of data. We looked at the Adverb-Verb combinations, starting both from the adverbial element and from the verbal element in order to test the possibility that the observed patterns might be lexically governed by either the choice of verb or the choice of adverb.

All the sets came from the glossary of Bien et al. (1982, 1983), a widely-used introductory textbook series for Modern Greek. First, we took every 20th active verb listed in alphabetic order, producing a set of 26 verbs, and then every 20th nonactive verb, producing a set of 10 verbs. These collections of verbs were presumably random, and would not be expected to show any particular syntactic or semantic affinities, since such factors are not relevant to their occurrence in an alphabetical listing. Similarly, frequency can be assumed to have played no role, for this textbook's glossary seems not to have aimed at listing only the X-most frequent verbs in the language.

Our procedure was then to present these sets of verbs to native speakers of Greek,¹⁸ checking the verbs in combination with adverbial elements first. In addition, we presented each of the 36 verbs in combination with *alilo-* 'each other' and *afto-* 'self', to address Rivero's claims about noun incorporation. Our particular interest was in possible manifestations of exceptional and idiosyncratic

behavior that the forms might show, for such behavior would, by our assumptions, be indicators of lexical status for the process involved.¹⁹

We also examined the nature of the adverb-verb combination looking at the adverb as the potential triggering element. Here, we investigated the behavior of 25 arbitrarily chosen manner adverbs taken from the same textbook glossary. We used the first nine adverbs listed alphabetically in the glossary and every fifth form given thereafter, subject to a few restrictions,²⁰ and used those as the basis for determining the productivity and compositionality of adverb-verb combinations. In all cases, we were aiming for a numerically-based examination of productivity and compositionality, the two key issues in deciding a syntactic versus a lexical analysis of Greek verbal composites.

5. The data

We tested 36 verbs, both active and nonactive, first in combinations with *ksana-* ‘again’ and then with *kalo-* ‘well.’ These adverbial elements were selected so as to be maximally generous to Rivero’s position, erring on the side of allowing ‘incorporation.’ Our preliminary observations indicated that these were the two most productive participants in the ‘incorporation’ process. Rivero herself includes examples with these combining elements, and *kalo-* occurs in more adverb-verb dictionary entries than any of the other combinable adverbial elements she mentions. In this investigation, we asked our consultant (a) if the verb could go together with the free adverb in a phrasal combination, (b) what this phrasal combination meant, (c) if the adverb-verb composite could occur, and (d) what it meant. We also

allowed our Greek consultant to volunteer more information, e.g. other combinations, though we did not add any items collected in that way to our count.

5.1 Verb-based investigation: *ksaná* composites.

We found that *ksaná* occurred freely with virtually all the verbs on our list, both as a free adverb, as indicated on the left-hand side of (10), and as a preverbal combining element, shown on the right-hand side:

- (10) (a) θ ilitiriástike *ksaná* <—> *ksana* θ ilitiriástike ‘(S)he has been poisoned again.’
- (b) *eksijísu ksaná* <—> *ksanaeskijísu* ‘Explain yourself again!’
- (c) *glistráí ksaná* <—> *ksanaglistráí* ‘It slides again.’
- (d) θ iakríno *ksaná* <—> *ksana θ iakríno ‘distinguish again’*
- (e) *qerízo ksaná* <—> *ksanaqerízo* ‘reap again’
- (f) *molíno ksaná* <—> *ksanamolíno* ‘pollute again.’

Of the 36 verbs tested, only two deviated from this pattern. Our primary consultant rejected one verb, *paraméno* ‘stay, stay near’, in both forms (thus, **paraméno ksaná* / **ksana-paraméno*), and he judged the composite form *ksanaperijeló* ‘trick again, ridicule again’ to be questionable while the phrasal form was perfectly acceptable, as indicated in (11):

- (11) *ton perijélasan ksaná* / **?ton ksanaperijélasan*
 him/acc tricked/3PL again
 ‘They tricked him again.’

Moreover, in all cases, there was no difference between the meaning of the composite form and the meaning of the phrasal form.²¹

On the basis of this evidence, a syntactic treatment of the *ksana-VERB* combinations is certainly possible.²² The formation shows strong productivity and there are no idiosyncrasies of meaning or distribution. The situation with *paraméno* is consistent with such a treatment, even though the composite form is unacceptable, since the unacceptability of that composite mirrors the unacceptability of the putative phrasal starting point (see (9b) above). There is thus only one real exception, *perijeló*, since Rivero's syntactic analysis predicts that for every acceptable phrasal form there should be an acceptable composite form (see (9a) above). However, one exception out of 36 does not seem to be enough to stand in the way of a syntactic analysis.

Still, lexical processes can be quite productive and not generate any idiosyncratic meanings, as the examples with *-ness* and *-gate* discussed in section 3 make clear. Moreover, within Greek itself, there is an element that gives clear evidence of being part of a lexical word-formation process but which, like *ksaná / ksana-*, shows (virtually) full productivity. This highly productive element is *para-*, with the meaning 'excessively, over-', e.g. *para-trógo* 'overeat', *para-kimáme* 'oversleep', *para-varéno* 'overburden', *para-psíno* 'over-roast', etc. However, we take *para-* to be a lexically adjoined prefix, rather than a syntactically incorporated adverb.²³

Evidence that *para-* is prefixal and not the result of incorporation comes first from the fact that it does not occur by itself as a free adverbial element, e.g. **trógo pará / pára*.²⁴ Greek does have two free forms which at first glance might provide the counterpart to prefixal *para-*, but both present problems in making this connection. First, there is a form *pará* which functions as a preposition 'in spite of; except' and a conjunction 'than; instead of',²⁵ but its meanings rule it out as a

counterpart to prefixal *para-* ‘excessively, over-.’ In addition, as a preposition and/or conjunction, it would not be subject to the rule of Adverb Incorporation. Second, there is a form listed in dictionaries as *pára*, but it occurs only in the fixed phrase *pára polí*, meaning ‘too; very, immensely’, the second part of which is the adverb *polí* ‘much, a lot.’ Still, *pára* even in this fixed phrase has some independence, since it has its own accent, and it can be iterated for emphasis, e.g. *pára pára polí* ‘very (very) greatly.’ This phrase thus corresponds in meaning to prefixal *para-*, but given the difference in form (*pára polí* vs. *para-*), it would take a somewhat abstract analysis, involving truncation of the phrase, to derive *para-*VERB combinations syntactically.²⁶ Independently, also, *polí* can ‘incorporate’, e.g. *poliqélo* ‘I want/like (something) a lot’,²⁷ and also two elements can ‘incorporate’, e.g. *éxo ksanapolifái* ‘I have eaten a lot again’, so the failure of *pára* AND *polí* together to ‘incorporate’ (to give forms like **parapolitrógo*) and the need to derive *para-* from the free adverbial *pára polí* via a truncation are completely *ad hoc* since such a truncation analysis is not required for any other word-formation process that we know of in Greek. It thus becomes quite suspicious for *para-*VERB composites to be derived by a syntactic rule of incorporation *cum* truncation. Moreover, there are some semantically specialized (i.e., noncompositional) combinations with *para-*, which, by the criteria noted above in section 3, suggest a lexical source, e.g. *para-jínome* ‘be overripe (of fruit)’ (= a special type of ‘excessively becoming’, cf. *jínome* ‘become’), or *para-férome* ‘lose one’s temper’ (= a special type of ‘excessively behaving’, cf. *férome* ‘behave’), etc.

Therefore, from this demonstration of the status of *para-* as a lexically attached prefix, it may be concluded that positing a lexical source for a composite does not preclude virtually free productivity.²⁸

5.2 Verb-based investigation: *kalo-* composites

A somewhat similar outcome was obtained with regard to *kalo-* as a combining element, though the specifics of its behavior differed from that of *ksana-*. We started with the assumption that this element was associated with at least a moderate degree of productivity, to judge from the total of 35 forms listed in Stavropoulos (1989), a reasonably-sized dictionary, including:

(12)	kaloakúo ‘hear well, listen’	kalomaqéno ‘teach/learn well’
	kalovlépo ‘see well’	kalometaxirízome ‘treat well’
	kalojenó ‘give birth easily’	kalomiló ‘speak well’
	kaloeksetázo ‘examine carefully’	kalopandrévo ‘marry well’
	kalozijiázo ‘weigh up carefully’	kaloplríono ‘pay well’
	kalozó ‘live well’	kalopuló ‘sell well’
	kaloqimáme ‘remember well’	kalotrógo ‘eat well’
	kaloklíno ‘close tight’	kaloxonévo ‘digest well’
	kalokitázo ‘examine closely’	kalopsíno ‘roast well’
	kalomajirévo ‘cook well.’	

Testing the behavior of *kalo-* /*kalá* with the 36 verbs in our sets, we found that 14 verbs could not co-occur with *kalo-* /*kalá* in any form (phrasal or composite), so that only 22 (16 active and 6 nonactive) verbs allowed the occurrence of *kalo-* /*kalá* either phrasally or as a composite or both.²⁹ Of those 22 verbs, there was 1 positive

exception, where the composite form was acceptable but the phrasal form, with the verb occurring with the free adverb, was not:

(13) *molíno kalá ‘I pollute well.’ / √kalo-molíno

and 9 other cases in which both the phrasal and the composite forms were possible.

Of those 9, however, the composite was questionable in 3 cases:

(14) (a) viðóno kalá ‘I screw well.’ / ??kalo-viðóno

(b) ksekuféno kalá ‘I deafen well.’ / ??kalo-ksekuféno

(c) fortóno kalá ‘I load well.’ / ??kalo-fortóno

while fully acceptable in 3 other cases:

(15) (a) pláqo kalá ‘I shape well.’ / kalo-pláqo

(b) tripó kalá ‘I pierce well.’ / kalo-tripó

(c) ðilitiriázo kalá ‘I poison well.’ / kalo-ðilitiriázo.

And, in 3 other cases, the composite form had an unpredictable meaning vis-à-vis the (putative) phrasal input:

(16) (a) stázi kalá ‘It drips perfectly.’ ≠ kalo-stázi ‘it drips OK’

(b) kilái kalá (i bála) ‘(The ball) rolls perfectly.’ (i.e. it is perfectly round)

≠ kalo-kilái (i bála) ‘(The ball) rolls OK.’ (i.e. sufficiently well but not perfectly)³⁰

(c) káqome kalá ‘I am behaving well.’ ≠ kalo-káqome ‘I am sitting comfortably.’³¹

The syntactic account predicts parallelism between the phrasal form and the composite form, so that the 14 verbs that could not occur with either form *kalo-/kalá* are in keeping with the predictions of the incorporation analysis, though presumably, basing a syntactic account on a preponderance of such evidence is not

well-justified methodologically. As for the cases in which either *kalo-* or *kalá* or both were possible, even if we count all of these less-than-fully parallel cases in (14) and (16) as showing parallelism, that is, being generous to the predictions of the syntactic account, the result is that only 9 of 22 of these cases, or 41%, were nonexceptional.

In addition, we also found 12 cases in which the composite form was unacceptable, while the phrasal form was fine, as exemplified in (17):

- (17) (a) *eksijísu kalá!* ‘Explain yourself well!’ / **kaloeksijísu!*
 (b) *sinergázome kalá* ‘I work well (with someone).’ / **kalosinergázome*
 (c) *anakinóno kalá* ‘I announce (something) well.’ / **kaloanakinóno*.

These 12 negative exceptions plus the positive exception noted in (13) give a total of 13 exceptions out of 22 verbs tested, or 59%. It is important to note that the verbs that do not combine, listed in (18), do not fall into any natural class(es) on syntactic, semantic, or morphological grounds:

- (18) *anakinóno* ‘announce’ *katastréfome* ‘be destroyed’
apandó ‘answer’ *provlépo* ‘foresee’
glistró ‘slide’ *ksenerónome* ‘suffer a letdown’
ðiakrínó ‘distinguish’ *sinergázome* ‘collaborate’,
eksigúme ‘explain’ *xirokrotó* ‘applaud’
qerízo ‘reap’ *psonízo* ‘shop’

and neither do the verbs that allow the combined forms in some degree, given in (13) - (16) above.

Thus, under any conceivable metric one could attach to the relationship between syntactic rules and productivity, it would seem that having almost 60% of the cases

failing to follow the rule is too high. If a rule fails in more than half of the cases where it could be applicable, it is fair to ask what it is a rule for. Since a syntactic rule is assumed to predict possible combinatory outcomes, a predictive accuracy of less than random guessing (50%) is not very predictive at all. The situation does improve somewhat for the syntactic account if the 14 instances of parallelism involving unacceptable forms are included in the count, for then 23 out of 36, or 64%, show the expected parallelism between phrasal form and composite form. However, even this result can hardly be considered overwhelming support for the syntactic account, since, as noted above, parallelism involving unacceptable forms is not a strong basis for positing a rule in the first place, and in any case, this figure involves some generous crediting of parallelism; if the forms in (14) and (16) are judged to show no parallelism, then the parallelism falls to 17 out of 36, just 47%. On the other hand, this overall picture with regard to parallelism, or the lack thereof, is acceptable and even expected for lexical phenomena and thus is consistent with our contention that the ‘incorporation’ phenomenon is lexical in nature. We note also that the lexically based difference in productivity, seen in a comparison of the behavior of *ksaná* with that of *kalá*, runs counter to the predictions of a syntactic analysis positing a rule of Adverb Incorporation.

Our conclusion, then, is that ‘Incorporation’ with *kalo-* ‘well’, while somewhat productive, nonetheless has enough distributional ‘gaps’ and noncompositional semantics in its output to warrant treating it as a lexical phenomenon. The composite forms, we would argue, are a matter of lexical compounding, not syntactic incorporation.³²

5.3 Adverb-based investigation: *ksaná* revisited.

We turn now to the investigation focussing on the combinatory properties of adverbs in general. We presented 25 manner adverbs to our consultant and asked him to produce any sentence with that adverb used in its free form, or in a composite form with any verb. We sometimes suggested apparently semantically appropriate Verb + Adverb phrases, and generally encouraged the production of Adverb-Verb composites. For 18 of the 25 adverbs we tested, our consultant could produce no Adverb-Verb composites. Of the 7 adverbs which could occur in Adverb-Verb composites, 4 could occur in composites with some verbs but not with others, even though they could occur as free adverbs with the very same verbs. For example, we found:

- (19) (a) *akrivo-pliróno* ‘pay dearly’, but **akrivo-kostizi* ‘(it) costs dearly’
 (b) ?*asximo-férome* ‘behave in an ugly manner’ (cf. *ásximos* ‘ugly’),
 but: **asximo-miláo* ‘speak in an ugly manner’
 (c) *sigo-trógo* ‘eat quietly’, but **sigo-miláo* ‘talk quietly, slowly.’

Two adverbs occur with meanings that are slightly different from the meanings in the free adverb phrases:³³

- (20) (a) *kondá* ‘close; near’: *stékome kondá* ‘I stand closely’,
 but: *kondo-stékome* ‘I stop for a little time.’
 (b) *polí* ‘much; greatly’: *agapó polí* ‘I love lots; I have great love’,
 but *poli-agapó* ‘I love very intensely.’

One adverb, *páli* ‘again; back’, with semantics that closely parallel *ksaná* discussed above, occurs in combined form only with a verb that it cannot co-occur with as a free adverb and otherwise does not combine:

- (21) (a) *pali-nostó* ‘return home’, but **nostó páli*³⁴

(b) *pali-írqa ‘I have come back, returned’ (OK: *írqa páli* and *ksana-írqa*).

One adverb, *grígora* ‘quickly’, does not occur with any verb in its usual form, but can occur with some verbs in a somewhat different, etymologically distinct but now semantically similar, form, *gorgo-*:

(22) (a) *grígoro-miláo ‘speak quickly’ (OK: *miláo grígora*),

but: *gorgo-miláo* ‘speak quickly’ (**miláo gorgá*)

(b) *grígoro-perpatáo ‘walk quickly’ (OK: *perpatáo grígora*),

but: *gorgo-perpatáo* ‘walk quickly’ (**perpatáo gorgá*).

Thus, no adverb except for *ksaná* appears to occur freely in Adverb-Verb combinations without some complication, either semantic, as in (20), or morphological, as in (21) and (22), or involving productivity, as in (19). These facts are consistent with the contrast in productivity seen in the previous section between *ksana-* composites and *kalo-* composites. Thus the property of free occurrence is a property of *ksaná* itself, not a property of the verbs it combines with to form words or phrases; moreover the contrast between *ksaná* and its (near-) synonym *páli* is striking. The result of this investigation, therefore, makes it clear that there really is no fully productive rule of Adverb Incorporation; at most, there could be a syntactic rule of *ksaná*-Incorporation, but nothing more than that.³⁵

However, we have seen above in section 5.1, in the discussion of the verbal formations with *para-* ‘over-’, e.g. *para-kimáme* ‘over-sleep’, that as far as Greek is concerned, there is already in the language a process that is something like ‘Adverb Incorporation’ that is clearly lexical in nature. Thus, there is no reason to treat the *ksana-* composites as being syntactically derived. Rather, like *para-*

composites, they can be lexical in nature, derived by a form of compounding, and not by syntactic incorporation.

Approaching the question of the source of these verbal composites from the perspective of adverbs, therefore, we reach the same conclusion that we did when we approached the question from the perspective of the verbs involved, namely that there is no evidence for a general syntactic rule of Adverb Incorporation in Greek.

5.4 Object composites

As noted above, Rivero extends her incorporation analysis to other types of arguments, specifically objects and most particularly (though not exclusively), anaphoric objects such as reflexives and reciprocals. Her incorporation analysis claims that anaphoric objects ought to be able to incorporate freely with appropriate verbs to create word-level units. As has already been discussed, the appearance of nonactive morphology in such anaphoric-object + Verb units is predicted by the requirements of Case Theory. In addition, there are ditransitive verbs that appear to be able to incorporate their notional direct object. In such instances, active morphology results, since the remaining object can absorb case from the verb.

However, these formations show some of the same hallmarks of lexical processes as the putative adverb ‘incorporations’, and moreover the predictions regarding the occurrence of nonactive morphology are not borne out over a wider range of data. In fact, the general patterns for noun-verb composites are investigated in some detail in Smirniotopoulos (1992) (see section 5.4.3). Non-active verb composites occur overwhelmingly more frequently with agent nouns as their first element, while active verb composites occur most frequently with object nouns, exactly contrary to the predictions of case theory.

We start with the results of the investigation of reflexive formations.

5.4.1 Reflexives

As the examples in (7a) above and (22a) indicate, Greek has a syntactic reflexive, in which there is an overt case-marked (accusative) reflexive nominal object, *ton eaftó*, literally ‘the self’, that cooccurs with a possessive form that agrees with the reflexive antecedent. Reflexivity can also be signaled in a different way, as (7b) and (22b) demonstrate, by a nonactive verb occurring together with a preverbal element *afto-*. In addition, though, a nonactive verb by itself can be interpreted as a reflexive, as (22c) shows:

(22) (a) qa katastrépsis ton eaftó su

fut destroyed/2sg.act the-self/acc your

‘You will destroy yourself.’

(b) qa afto-katastrafís

fut self-destroy/2sg.non.act

‘You will destroy yourself.’

(c) qa katastrafís

fut destroy/2sg.non.act

‘You will destroy yourself.’

Although all three types express reflexive action, they do exhibit subtle differences in meaning: Joseph & Philippaki-Warburton, for instance, observe (1987: 77) that ‘the addition of the prefix *afto-* ... indicates not where the action ends ... but rather where the action begins, i.e. *afto-* marks the agent as identical with the recipient (patient), the latter being expressed through the personal ending of the mediopassive verb. This view, with which we agree, contrasts sharply with Rivero’s view, where

afto- represents an object, not an agent (see also sections 5.4.3 and 8.3.2 below). Similarly, Manney (1997) makes the suggestion, among other relevant observations, that the *afto-* type “is clearly the most emphatic of the three, emphasizing that the subject willingly” acted on him/herself, whereas intentionality is not a part of the meaning of the other two types. Still at issue, though, is the matter of the productivity of the *afto-* reflexive formation. Therefore, in order to test the productivity of the reflexive composition process, therefore, we asked our consultants about the possibility of the syntactic reflexive (the type of (22a)) and of the *afto-* formation (the type of (22b)) with our test set of verbs.

In our data, there were 36 verbs, of which 9 were intransitive, for which no object should be possible, reflexive or nonreflexive. These 9 are excluded from further consideration in this section. Of the 27 remaining verbs, 22 could occur in the syntactic reflexive construction, and 5 could not. For these 5 that did not allow *ton eaftó* as an object, composite forms with *afto-* were also impossible, as illustrated in (23):

- (23) (a) *perijeló ton eaftó mu ‘I mock myself.’ / *afto-perijeljúme
 (b) *kiló ton eaftó mu ‘I roll myself.’ / *afto-kiljéme.

Of the 22 that allowed a reflexive direct object, 4 verbs, listed in (24), had a fully acceptable corresponding composite form with *afto-*:

- (24) (a) anakinóno ‘announce’ <--> afto-anakinónome ‘announce oneself’
 (b) viðóno ‘screw’ <--> afto-viðónome ‘get all wound up’
 (c) qerízo ‘harvest, mow’ <--> afto-qerízome ‘harvest oneself’
 (d) katastréfo ‘destroy’ <--> afto-katastréfome ‘destroy oneself.’

For 4 others of the 22, the *afto-* composite was questionable, to different degrees:

- (25) (a) onomázo ‘name’ <--> ?afto-onomázome ‘name oneself’
 (b) tripó ‘pierce’ <--> ??afto-tripjéme ‘pierce oneself’
 (c) fortóno ‘load’ <--> ??afto-fortónome ‘load oneself’
 (d) xirokrotó ‘applaud’ <--> ??afto-xirokrotjéme ‘applaud oneself.’

The remaining 14 verbs could not occur in the *afto*-composite form at all; a few such examples are given in (26):

- (26) (a) ðilitiriázo ton eaftó mu ‘I poison myself.’ / *afto-ðilitiriázome
 (b) ðiakrínó ton eaftó mu ‘I distinguish myself.’ / *afto-ðiakrínome
 (c) eksigó ton eaftó mu ‘I explain myself.’ / *afto-eksigúme.

If we count all of (23) - (25) as showing parallelism between the syntactic and the composite forms, then 13 out of the 27, 48%, follow the predictions of a syntactic analysis (5 from (23), 4 from (24), and 4 from (25)), while 14 of the 27, 52%, behave counter to these predictions. Moreover, if the three most questionable cases in (25) are counted in with the 14 negative exceptions, then the percentage of counter-examples is even higher, 17 of 27 or 63%. Even if the 9 intransitives are counted with (23), inasuch as they do show parallelism between an impossible phrasal form and an impossible composite form, then only 22 of 36 (61%) follow the predictions of the syntactic analysis while 14 (39%) are counterexamples. Thus even with this quite generous treatment of the facts, these results are hardly overwhelming support for a syntactic account of the derivation of *afto*-composites, especially since parallelism involving unacceptable forms is not a strong basis for positing a rule in the first place.

5.4.2. Reciprocals

From an investigation of reciprocals with respect to composite formation, results emerged that were somewhat similar, though interestingly divergent in one significant way, from those seen with reflexives. As with reflexives, Greek has three ways in which reciprocals can be realized. There is a syntactic (phrasal) reciprocal, as in (6a) and (27a), in which the pieces of the complex nominal unit consisting of *o énas o álos*, literally ‘the one the other’, occur as subject and object.³⁶ In addition, the combination of a preverbal element *alilo-* with a nonactive verb, as in (6b) and (27b), is an alternative expression of reciprocal meaning, as is a nonactive (plural) verb by itself, as in (27c):³⁷

- (27) (a) *katastréfun o énas ton álo*
 destroy/3pl.act the-one/nom the-other/acc
 ‘They are destroying each other.’
- (b) *alilo-katastréfonde*
 recip-destroy/3pl.non.act
 ‘They are destroying each other.’
- (c) *katastréfonde*
 destroy/3pl.non.act
 ‘They are destroying each other.’

Again, using our test set of verbs, we asked our consultant about the possibility of both syntactic-type reciprocals (the type of (27a)) and the *alilo-*composites (the type of (27b)), in order to test the productivity of the reciprocal composition process.

In our data, 36 verbs were tested. Of these, 13 verbs failed to occur with either the syntactic or the composite reciprocal, and of those 13 verbs, 10 were intransitives which would not be expected to take an object, reciprocal or otherwise, and 3 were

transitives. As with the reflexives (section 5.4.1), the intransitive cases are excluded from our initial calculation. For the 3 transitive verbs, as might be expected since the putative phrasal source was not acceptable, composite forms with *alilo-* were impossible, as the examples in (28) show:

- (28) (a) *kilún o énas ton álo ‘They roll each other.’ <--> *alilo-kiljúnde
 (b) *perijelún o énas ton álo ‘They mock each other.’ <--> *alilo-perijeljúnde
 (c) *provlépun o énas ton álo ‘*They predict each other.’ <--> *alilo-provlépunde.

Interestingly, though, for 2 intransitives, *sinergázome* ‘cooperate/work with’ (whose complement requires the preposition *me* ‘with’) and *apandó* ‘respond’ (whose complement is marked by the preposition *se* ‘to’), *alilo-*composites were acceptable, even though there is no ‘input’ to an ‘Object Incorporation’ process operating on direct objects (the prepositional markers *me* and *s*, respectively, being obligatory); rather what we see here is *alilo-* referring to an agent, much as *afto-* does (see section 5.4.1):

- (29) (a) *sinergázonde o énas *(me) ton álo* <--> *alilo-sinergázonde*
 ‘They are cooperating/working with one another.’
 (b) *apandún o énas *(s) ton álo* <--> *alilo-apandjúnde*
 ‘They respond to one another.’

The two positive exceptions in (29) are discussed further below in section 5.4.3 (see fn. 49). Of the remaining 23 verbs that allowed a reciprocal object, 14 had a fully acceptable corresponding composite form with *alilo-*, as exemplified in (30):

- (30) (a) *telefonún o énas ton álo* ‘telephone/3pl each other’
 <--> *alilo-telefonúnde*

(b) katastréfun o énas ton álo ‘destroy/3pl each other’

<--> alilo-katastréfonde

(c) eNgatalípun o énas ton álo ‘abandon/3pl each other’

<--> alilo-eNgatalíponde

(d) qerízun o énas ton álo ‘mow/3pl each other down’

<--> alilo-qerízonde

while 2 verbs showed composites that were only somewhat acceptable at best, rated ? by our consultant:

(31) (a) ksekufénun o énas ton álo ‘deafen/3pl each other’

<--> ?alilo-ksekufénonde

(b) paraðínun o énas ton álo ‘hand over/3pl each other’

<--> ?alilo-paraðínonde

and for 2 other verbs, *anakinóno* ‘announce’ and *viðóno* ‘screw’ (with an idiomatic meaning ‘get under the skin’), the phrasal reciprocal was questionable while the composite form was more acceptable:

(32) (a) ?anakínosan o énas ton álo ‘They announced each other.’

<--> alilo-anakinóqikan

(b) ??viðónun o énas ton álo ‘They get under each other’s skin.’

<--> ?alilo-viðónonde.

The remaining 5 verbs could not occur in the *alilo*-composite form at all:

(33) (a) ðiakrínun o énas ton álo ‘distinguish/3pl each other’

<--> *alilodíakrínonde

(b) eksigún o énas ton álo ‘explain/3pl each other’ <--> *alilo-eksigúnde

(c) lipún o énas ton álo ‘sadden /3pl each other’ <--> *alilo-lipúnde

(d) lipúnde o énas ton álo ‘feel-sorry-for/3pl each other’

<--> *alilo-lipúnde

(e) sinandún o énas ton álo ‘meet/3pl each other’ <--> *alilo-sinandjúnde.

Again, if we count the 3 transitive verbs which fail to occur in both reciprocal forms (in (28)), the 14 which occur acceptably in both forms (as in (30)), and the 4 which are questionable in one form or the other (in (31) and (32)) as all showing the parallelism consistent with Rivero’s claims, then 21 of 26, i.e. 81%, of our data support the syntactic incorporation analysis. The 5 verbs which occur acceptably with a syntactic reciprocal but not in a composite with *alilo-* (in (33)) represent 19% counter to the predictions of the syntactic analysis. If the 10 intransitives are added (including the 2 positive exceptions of (29)), the positive evidence is 29 of 36 verbs, or 81%, while the percentage of counterevidence (the 5 transitive cases from (33) and the 2 intransitives from (29)) is 19% (7 of 36). These percentages are within a range that is high enough to suggest a syntactic account, though it is difficult to decide where the cut-off point should be, and the 7 counter-examples would remain unexplained.

Moreover, there is a substantial difference in the degree of exceptionality found with the *afto*-reflexive cases and the *alilo*-reciprocals. This difference is strikingly inexplicable under a syntactic account, for it is difficult to conceive of a reason for the same syntactic rule of object incorporation to operate at such different levels of productivity for the two anaphoric object constructions.³⁸ The overall evidence of the anaphoric object ‘incorporation’ cases, therefore, is rather against Rivero’s syntactic rule analysis and in favor of a lexical rule analysis, especially when the notion of “lexical rule” includes “one-time-only rules” (see section 3).

5.4.3 ‘Incorporation’ of non-anaphoric nominals

Though Rivero talks in terms of Noun Incorporation, in fact, the only cases she treats as incorporation of nominal arguments are those involving anaphoric nominals, i.e. reflexives and reciprocals, and a single transitive verb, namely *trofodotó* ‘nourish (i.e. give food to)’, which, as discussed in section 2, she treats as lexically decomposable into a ditransitive underlying structure. As noted above, these are the types that fit the generalization she makes concerning the appearance of active vs. nonactive voice on the verb involved in the incorporation (nonactive if no object remains to absorb Case, active if one does). It is not clear why there should be such a restriction on the application of what apparently is claimed otherwise to be a (relatively) general process, and indeed, there are a few more decomposable transitive verbs that fit Rivero’s generalization about voice distribution. For example, *fotagogó* ‘illuminate’ takes a direct object and occurs in the active voice, as (34a) indicates, and is amenable to being lexically decomposed into a ditransitive starting point, as suggested in (34b); similarly analyzable is *panikoválo* ‘throw into panic’, as indicated in (35):

- (34) (a) fotagogó tin akrópoli / *fotagogúme
 illuminate/1sg.act the-Acropolis/acc illuminate/1sg.non-act
 ‘I illuminate the Acropolis.’
- (b) ágo fós s tin akrópoli
 bring/1sg.act light/acc to the-Acropolis/acc
 ‘I bring light to the Acropolis.’
- (35) (a) panikoválo ólo ton kózmo / *panikoválome
 throw-into-panic/1sg.act all-the-world/acc panic/1sg.non.act

‘I throw everyone into a panic.’

(b) férho panikó s ólo ton kózmo

bring/1sg panic/acc to all-the-world/acc

‘I bring panic to everyone’ (= ‘Everyone is scared stiff of me.’)

Still, even with a few additional examples that fit Rivero’s analysis,³⁹ the analysis she presents of underlyingly ditransitive verbs and of incorporations of nonanaphoric objects in general is problematic.⁴⁰ In particular, the verb *logodotó* ‘account for, give an account for’ is quite parallel to *trofodotó* in terms of morphological structure, in that both show a noun-stem in *-o-* combining with an end-stressed verbal stem *-dot-*, but *logodotó* shows a different behavior vis-à-vis a putative ‘noun incorporation.’ Just as Rivero posited a lexical decomposition of *trofodotó* into ‘GIVE FOOD TO SOMEONE’ (*ðíno fajitó se kápjon*), *logodotó* can be decomposed into ‘GIVE A-REASON TO SOMEONE’ (*ðíno lógo se kápjon*). However, the syntax of *logodotó* differs from that of *trofodotó*; in particular, while *trofodotó* is transitive, with a direct object, *logodotó* is intransitive, marking its remaining object with the preposition *se*:

(36) qa logodotíso s ton patéra ja aftó / *qa logodotíso ton patéra .
fut account/1sg.ACT to the-father for this

‘I’ll account to father for this.’

Thus, if *logodotó* derives by Incorporation, then either it should be active and fully transitive, with no prepositional marking of its remaining object, or it should be nonactive (i.e., something like ***logodotúme*), yet it is neither. An Incorporation analysis, therefore, makes the wrong prediction regarding this one case out of the rather limited set of semantically ditransitive verbs in Greek.⁴¹ Rivero presumably

would treat *logodotó* as being derived by lexical compounding and not syntactic incorporation, and claim that Case Absorption requirements and thus voice distribution were irrelevant, and in any case, one exception might not in itself be sufficient to warrant rejection of a syntactic incorporation treatment of decomposable ditransitives. Even in such a limited set, *logodotó* seems to be particularly telling, because of its structural parallel with *trofodotó*. That is, there appears to be a generalization here over *trofodotó* and *logodotó* as to their internal structure that such an analysis fails to take into account or to reflect in any way, especially if one is derived by Incorporation and one derived by lexical compounding.⁴²

One significant fact unifying *trofodotó*, *fotagogó*, and *panikoválo*, all of which lend themselves to an analysis involving noun incorporation of a nonanaphoric object, and *logodotó*, which does not fit the requirements of Rivero's analysis but can be taken as a complex lexical item with nonanaphoric object as its first part, is that in all of them, the verb is in the active voice. Rivero chose to generalize over the type of complex lexical items represented by *trofodotó* and the type involving anaphoric objects, and link the two in terms of their behavior vis-à-vis Case Absorption and the appearance of active versus nonactive voice, thus excluding items like *logodotó* from consideration with respect to Incorporation. However, another natural grouping for the relevant data is to treat active voice as the norm, as the expected outcome, with any type of complex lexical item involving a nonanaphoric object as first member, that is, generalizing over the type of *trofodotó* and the type of *logodotó*. Such a step would of course require a different treatment for incorporation-like structures involving anaphoric objects, and an account in that vein

is proposed in the following section. In the remainder of this section, then, we present evidence that supports the claim that in complex verbs with a noun-verb structure where the nominal first part corresponds to a nonanaphoric direct object, the regular outcome is active voice, regardless of the availability of other argument nominals to meet the requirements of case absorption.

This evidence takes several forms. For one thing, Greek shows many object-verb composites which do not follow Rivero's predictions in that they are intransitives yet do not have nonactive morphology. Moreover, many of these verbs show the specialized noncompositional semantics characteristic of nonsyntactic derivation. We list below only the synchronically most transparently derived ones,⁴³ mostly taken from Kourmoulis (1967) (the literal glosses show English word-order; in the actual composites, the noun object is the first member and the verb the second member):

- (37) *aero-kopanízo* 'talk nonsense' (literally: 'beat the air')
- emo-ftíno* 'spit blood'
- volo-ðérno* 'crush clods of earth; suffer; try hard under difficult conditions'
- gaiðaro-ðéno* 'be sure, be positive' (literally: 'tie donkey')
- karðjo-flogízo* 'inflame the heart'⁴⁴
- kraso-píno* 'drink' (literally: 'drink wine')
- lafo-kinijó* 'hunt deer'
- malio-travó* 'pull hair'⁴⁵
- ftero-kopó* 'flutter, flap' (literally: 'beat feather')
- filo-maðó* 'pluck flowers; tear to pieces'
- xarto-pézo* 'gamble' (literally: 'play cards')

xrono-trivó ‘waste time’

psixo-tarázo ‘make someone upset’ (literally: ‘disturb soul’)⁴⁶

psomo-zitó ‘be a beggar’ (literally: ‘ask for bread’)

psomo-trógo ‘be poor’ (literally: ‘eat bread’).

Rivero considers all formations like these to be lexically derived compounds, as opposed to syntactically derived incorporations, since they do not meet the case absorption requirements of incorporation. However, it is striking that there is such a large number of these⁴⁷ as compared to just a handful of object-verb composites involving nonanaphoric objects as first member that meet her requirements for incorporation.

Furthermore, there are clear indications that the productive pattern for novel object-verb formations is just that seen in (37). For instance, appropriate nonce-forms, i.e., spur-of-the-moment creations, are generally active and intransitive; our chief consultant, when asked to produce any such composite forms that came to mind, volunteered *gato-vlépo* ‘look at cats; be a cat-looker’, *pito-trógo* ‘eat pittas; be a pitta-eater’, and *rodó-kiló* ‘roll-tires; be a tire-roller’, all with active voice. Also, Smirniotopoulos (1992: 259), in a survey of Noun + Active-Verb composites taken from a variety of dictionaries, found that of 92 such formations, the most common role for the nominal element was that of object to a transitive verb second member, covering 32 of the 91 forms examined (= 36%).⁴⁸ And, in the Noun-Verb composite type that is ostensibly consistent with Rivero’s predictions, i.e. with a nonactive verbal second member, the most common role for the nominal element, found in 19 of the 30 forms examined (= 63%), is as subject of a corresponding

transitive verb, filling the role of agent of the nonactive verb, e.g. *eroto-xtipjéme* ‘be love-struck’ (i.e. ‘be-struck (*xtipjéme*) by-love (*eroto-*)’).

Finally, it is important to note that in general, there are very few Noun + Nonactive Verb formations where the noun corresponds to an object of the corresponding active verb, and those that do occur may not actually have a real direct object ‘incorporated.’ Thus, *stiqo-xtipjéme*, composed of ‘breast’ and ‘beat/nonact’, and meaning ‘beat one’s breast in despair’, could actually involve a locative first member, being instead ‘beat oneself on the breast.’ Similarly, *maliotraviéme*, composed of ‘hair’ and ‘pull/nonact’, and meaning ‘to get in a fight (said of women)’, perhaps a specialization of ‘pull the-hair’, could actually be instead ‘pull on the hair’, with a locative first member.

Rivero acknowledges the existence of such compounds, including even ones involving the elements *afto-* and *alilo-* which figure in her most productive Incorporation structures, e.g. *afto-ktonó* ‘commit suicide, kill oneself’, *alilo-grafó* ‘correspond with, write one another.’⁴⁹ However, she claims that such items are generally back-formations from related nouns. To a certain extent, this claim is justified, for alongside *xartopézo* ‘play cards’, *xronotrivó* ‘waste time’, *psomozitó* ‘be a beggar’, and *alilografó*, to take just a few examples, one finds respectively *xartopéxtis* ‘card-player’, *xronotriví* ‘a delay’, *psomozítis* ‘beggar’, and *alilografía* ‘correspondence. Even *logodotó* has a related noun *logodosía* ‘an accounting for.’

However, beside the fact that treating these compounds as ‘back-formations’ does not really explain any aspect of their internal composition, there are some problematic aspects to Rivero’s claim. For instance, there is no reason why *logodotó* is to be treated as a backformation but *trofoðotó*, which, as noted above, is

parallel to it in internal structure, is not, even though *trofodotó* has a related noun, *trofodótis* ‘provider, caterer’ from which it could be backformed. Also, it is not clear what decides the direction of derivation; the noun *psomozítis* ‘beggar’ is as likely to be a derivative of the verb *psomozító* ‘be a beggar’ as the verb is to be a derivative of the noun, and is perhaps even more so. Thus, there is a real circularity to the reasoning here — a formation is said to involve syntactic Incorporation only if it follows the requirements of Incorporation but generalizations about the requirements of Incorporation are derived, at least in part, from the behavior of particular formations; it is hard to know what an independent test for Incorporation would be. What Rivero wants to treat as essentially an aberrant type of compound, one that arises only via a presumably sporadic process of back-formation, in fact is quite robustly attested and appears instead to represent the norm for Noun-Verb combinations.

5.5 Summary re Noun-Incorporation

Based on the above, we conclude that overall the evidence indicates that at best a syntactic Noun Incorporation analysis could be justified only for the *alilo*-Verb reciprocals, which, with their roughly 80% productivity rate in our sample, are the closest of any types examined to full productivity. However, even these reciprocals do not show the high degree of productivity that one might demand from a syntactic formation.⁵⁰ All the other formations involving noun-verb combinations display characteristics more consistent with a lexical treatment rather than a syntactic one. Overall, then, there is no strong evidence in favor of a syntactic rule of Noun Incorporation in Modern Greek.

6. A further problem: the morphology of ‘incorporation’

The preceding discussion has made it clear that there is good reason, based on well-accepted properties of lexical as opposed to syntactic rules, to reject a syntactic analysis for Modern Greek ‘argument incorporation.’ However, there is another side to incorporation structures beyond their syntactic properties: without additional assumptions about the formal realization of the structures created by a syntactic rule of incorporation, a syntactic analysis makes very strong claims about the morphology of the output. As it turns out, these claims are wrong, and the assumptions needed to make them right lead to missed generalizations.

First, as noted in section 5.4.3, Rivero proposes a lexical decomposition of *trofoðotó* ‘nourish’ into // *ðíno fajitó se kápjon* //, literally ‘give food to someone.’ However, a straight syntactic derivation would lead one to expect a verb **fajito-ðíno*, with the incorporated form corresponding to the ‘sum’, as it were, of its input elements (as is the case, for instance, with *ksanaðilitiriástike* ‘(s)he was poisoned again’ from // *ðilitiriástike ksaná* //); **fajito-ðíno*, though, does not occur. Instead, in this derivation, Rivero is obliged to stipulate that there occur suppletive variants of the lexemes FOOD and GIVE that show up in incorporation structures. Such suppletion is completely unexplained, and must be invoked simply because the insistence on a syntactic analysis of *trofoðotó* produces the wrong form. If, on the other hand, this verb has a lexical derivation involving the noun *trofoðotís* ‘caterer, provider’, as suggested in section 5.4.3, in the same way that *logoðotó* is related to *logoðosía*, then a rationale for the form the verb takes is provided by this derivation (what Rivero calls a ‘back-formation’). In particular, *trofo-* occurs for FOOD because that is what occurs in the related noun that the verb is based on, and more

significantly, the form of the GIVE part, *ðot-* becomes understandable. Whereas *ðo-* occurs in the paradigm of *ðíno*, e.g. in the past perfective stem *ðos-*, the source of the *-t-* is not obvious, unless one accepts the derivation of the verb from the noun, where the *-t-* is part of the agentive suffix *-ti*.⁵¹ The morphology of the verb, therefore, is a clue to its derivation, and speaks against a syntactic account — treating it as a ‘back-formation’ from the noun is, in Rivero’s terms, inconsistent with the verb being derived via syntactic incorporation. A lexical account, however, allows for a generalization over *trofoðotó* and *logoðotó* in terms of their derivation and their form (and see below) and obviates the need for the abstractness inherent in Rivero’s lexical decomposition of *trofoðotó*. The syntactic differences between these two verbs, discussed above in section 5.4.3, are not surprising if each is the result of a lexical rule, since outputs of lexical rules are subject to idiosyncratic developments affecting individual lexical items.

Moreover, there are other generalizations to be made which a syntactic analysis has no straightforward way to capture. For example, as noted in section 5.4.3, among the forms which even Rivero would recognize as lexically-derived compounds are some with *afto-* and *alilo-* as first members, and which have reflexive and reciprocal meanings respectively, e.g. *afto-ktonó* ‘commit suicide, kill oneself’, *alilo-grafó* ‘correspond with, write one another.’ These are exactly the same formal elements as those found in Rivero’s reflexive and reciprocal ‘anaphor incorporation’ structures, such as *afto-katastréfome* ‘destroy oneself’ or *alilo-katastréfonde* ‘they destroy each other.’ However, in Rivero’s account, *afto-ktonó* and *afto-katastréfome* have entirely different derivations, the former as a lexically-derived compound and the latter as a syntactically-derived incorporation structure.

As a result, there is no natural way to capture the ostensible similarity they show in their first elements; and, the same holds for *alilo-* as found in *alilo-grafó* and *alilo-katastréfonde*. However, if both types are derived by lexical processes, then there is a single mechanism by which the first elements can be generated.

We note also the extreme difference between the free reciprocal form *o énas ton álo* and the combining form *alilo-*, meaning that a high degree of abstractness would be needed in a syntactic derivation of reciprocal ‘anaphor incorporation’ structures.

A further morphological problem arises with a single segment that recurs in virtually all of the ‘incorporations’ that Rivero discusses and all the compounds presented in section 5, namely the *-o-* that occurs at the end of the first member of the adverb-verb complexes, as in *anapóðo-jirízo*, *kako-férome*, etc. For one thing, this combining form in *-o-*, as opposed to the free form of the adverb, generally in *-a*, e.g. *anápoða*, *kaká*, etc., is unexplained, and no generalization is possible between it and the *-o-* that occurs at the end of the first member of most compounds, nonsyntactically derived even according to Rivero, e.g. *kraso-píno*, versus the free form *krasí* ‘wine’ (and note all the first members of the 15 compounds in (37)). On the other hand, if all of these forms, *kako-férome* as well as *kraso-píno*, are derived lexically by a compounding process, then the *-o-* is expected in all these forms, for it is recognized as the ‘union’ vowel in Greek compounds (see, e.g., Ralli (1992)). The absence of the *-o-* with *ksaná* compounds is admittedly somewhat problematic, unless *ksana-* is treated as an affix here (see below, §7.2); however, it can be noted that for the most part, adverbs in *-a* having combining forms with the union vowel *-o-* are systematically related to adjectives in *-o-* (e.g. *kakó-* ‘bad’, *kaló-* ‘good’, *anápoðo-* ‘reverse’, etc.), a correlation not found with *ksaná*. Accordingly,

Nespor & Ralli (1996) suggest that *-a* in *ksaná* is part of the stem, and not an ending marking an adverb, as it is in, e.g., *kaká* ‘badly’, *kalá* ‘well’, etc. Thus there is a morphologically-based generalization concerning the relation between adverbs that combine, *o*-stem adjectives, and the presence of the union-vowel *-o-*, a generalization that is strong though not without some exceptions.⁵²

We see these problems as characteristic of theoretical frameworks, such as the one adopted by Rivero, in which morphology is not accorded its own place in the grammar. In such frameworks, the following assumptions about the relation between syntax and morphology are generally made:

- (38) (a) There is no autonomous morphological component.
- (b) Apparent morphological operations are carried out by the same (sorts of) rules of syntax that manipulate words (e.g. ‘Move-alpha’).
- (c) However, suppletion can occur so that morphemes can have quite different forms in different syntactic environments (e.g. when occurring in incorporated structures versus when occurring independently).

Such assumptions, however, lead to the morphological problems discussed above. The inexplicitness, abstractness, and ad hoc stipulations that are needed with a syntactic rule of incorporation, therefore, constitute a further argument in favor of a lexically-based account in which all these formations are compounds.

7. Other potential evidence and non-evidence

We turn next to an examination of two other phenomena involving adverbial composites which Rivero takes to support her incorporation analysis. As with the other phenomena already discussed, however, we argue that a syntactic analysis is

plausible only for *ksana-*, whereas the lexical analysis we favor accounts for all other facts.

The phenomena in question are ‘multiple incorporations’, in which two composite-forming elements occur preverbally, parallel to non-composite and mono-composite forms, as in (39), and ‘discontinuous’ or ‘long distance incorporations’, in which a composite-forming element can appear on either part (auxiliary or main verb) of compound tenses, as in (40):

- (39) (a) o yánis diafimízi ton eaftó tu sixná
the-John/nom advertise/3sg.act the-self/acc his often
‘John promotes himself often.’
- (b) o yánis aftodiafimízete sixná
the-John/nom self-advertise/3sg.non-act often
‘John self-promotes often.’
- (c) o yánis sixno diafimízi ton eaftón tu
the-John/nom often-advertise/3sg.act the-self/acc his
‘John often promotes himself.’
- (d) o yánis sixnoaftodiafimízete
the-John/nom often-self-advertise/3sg.non-act
‘John often promotes himself.’
- (40) (a) éxo diavási ksaná
have/1sg read/perf again
‘I have read again.’
- (b) éxo ksana-díavási
- (c) ksana-éxo díavási.

Regarding the multiple composites, Rivero herself admits that this ‘pattern is grammatical, not frequently used, but one of the productive devices to create humorous words’ (p. 322). We have no quarrel with this observation, but we note that productivity in and of itself does not indicate a syntactic phenomenon, as argued in section 5.1 regarding *para-* prefixation. Furthermore, as long as the lexical rules in question (see section 8) are properly formulated, recursion to produce multiple composites is possible. Indeed, the occasional nature of the multiple composites, and their humorous effects, would suggest that these formations are not ‘productive’ in the usual sense — it can be argued that ‘humorous’ forms like these are funny because they are not words; the ‘rule’ is stretched and extended beyond its conventional domain, as it were.

The discontinuous composites at first glance would appear to be exactly the sort of movement that would betoken the workings of a syntactic rule. However, the availability of this option turns out to be quite restricted. As Alexiadou (1994: 207) has observed, speakers’ judgments of such patterns ‘vary and not all adverbs can appear together with the auxiliary.’ She cites as ungrammatical (41a-b), and we can add (41c) from our consultants, and (41d), cited as grammatical by Rivero but questioned by our consultants (hence our % marker):

- (41) (a) **anapodo-éxo* *jirísi* (OK: *éxo anapodo-jirísi*)
 upside-down - have/1sg turn/perf
 ‘I have turned upside down.’
- (b) **sfixto-éxo* *angaliási* (OK: *éxo sfixto-angaliási*)
 tightly-have/1sg embraced/perf
 ‘I have tightly embraced.’

(c) *sigo-éxo tragudísi (OK: *éxo sigo-tragudísi*)

softly-have/1sg sing/perf

‘I have sung softly.’

(d) %kalo-éxo fai (OK: *éxo kalo-fái*)

well-have/1sg eat/perf

‘I have eaten well.’

In fact, the best such examples are with the adverb *ksaná*; no other adverb that participates in the adverbial composites is as ‘mobile’ as *ksaná*. Such gaps and variability would point to a nonsyntactic treatment, or at least to one that does not range over the whole domain of VP-internal adverbs. Again, the mobility of the adverb seems really to be a property of *ksana-* alone, so that at best, one would have to reckon with a lexically governed syntactic rule, one that applied just to this one lexical item. As noted earlier, such a situation is not conducive to the formulation of a syntactic process.⁵³

Consequently, as interesting as these facts are in general, they do not lead inescapably to a conclusion that syntax must be involved in the formation of adverb-verb and noun-verb composites.

8. A lexically-based compound account

We believe we have shown that examining a larger and more random set of data leads to the conclusion that both putative syntactic ‘incorporation’ rules discussed by Rivero are not obviously syntactic in nature. Prior to additional discussion, and to the formulation of our lexically-based account, we give below the basis for this conclusion:

- (i) Adverb + Verb composites are not particularly productive, whether one takes the verb as the element determining composition or the adverb, except in the case of *ksaná*.
- (ii) Anaphor + Verb composites, treated as a unitary phenomenon by Rivero taking in both the reflexives with *afto-* and the reciprocals in *alilo-*, are not identically productive.
- (iii) Noun + Verb composites, of which Rivero discusses only the double-object cases, do not behave as predicted by her syntactic analysis in which the verb should appear in the active form only if a case-marked object, and not a prepositional object, remains after the operation of incorporation.
- (iv) Noun + Verb composites in which the Noun is the object of the verb, a type which Rivero does not discuss in any detail, are typically active, not nonactive as her analysis would predict. This class includes cases where the composite is an attested word, as well as nonce-formations.
- (v) The morphological detail of composites is not given serious consideration by Rivero. Thus her analysis accounts for neither predictable morphological facts such as the *-o*-union-vowel, nor unpredictable ones such as the extreme ‘allomorphy’ in the derivation of *trofoðotó* or *alilo-*.

These difficulties suggest that the correct account of these phenomena, as indeed recognized already by Spencer (1995), will be lexical in nature. A syntactic process is expected to be very close to fully productive, to involve very close to no semantic unpredictability, very close to no morphological irregularity, and is permitted to be nonlocal in its operation; a lexical process is permitted to be less than fully

productive, to show a range of semantic unpredictability and morphological irregularity, and must be local in its operation.

We do not claim that all of these putative ‘incorporation’ phenomena must receive a unitary account, beyond being lexical in nature. Given the nature of Greek word-structure, there are two possibilities for these lexical processes (and recall that lexical processes here are viewed as once-only rules, not as operating to produce the forms every time such forms are used). We might be dealing with compounding or with affixation. Compounding processes are characterized as taking input from word classes, or sub-classes, defined syntactically (e.g. Verb, Noun) or semantically (e.g. material, agent) or both. Affixation, on the other hand, in a Stem + Affix structure, is characterized by the recurrence of form of an element (the affix) in many words, while the other element (the stem) is defined as in compounding, that is by syntactic or semantic class or both. Thus the elements of compounds will be less restricted than the elements in affixation processes.

8.1 Adverb + V compounding

We have observed no principle for the Adverb + Verb composites which predicts exactly which adverbs should be combinable with which verbs, beyond the requirement that the adverbs are VP- or, in McConnell-Ginet’s treatment, V-, adverbs.⁵⁴ This requirement is predicted by the locality criterion that lexical rules must adhere to. The result, as far as we can tell, is that any lexical (VP or V) adverb could in principle occur as the first element of a composite and any verb⁵⁵ could occur as the second element; that not all in fact do is a reflection of this process being realized in a lexically idiosyncratic way. Such a situation requires a compounding analysis, as opposed to a prefixing one, once a syntactic analysis is

rejected, since neither of the elements in the composite is apparently limited by anything other than membership in a part-of-speech class.

Accordingly, the rule for the Adverb-Verb composites is very simple:

(42) Adverb]_{STEM} - o - Verb = Verb

Such a rule would have an associated ‘first interpretation’ semantic rule which would provide an appropriate interpretation for Ad-Verbs, as in McConnell-Ginet’s treatment. Since these forms, once created, are simply words, the interpretation provided by the semantic rule can be replaced (i.e. over time), allowing for noncompositional meanings of compound words. This meaning replacement is probably more likely when the relationship of the elements of the compound to existing free words is not transparent, e.g. because of the loss of one of the source words, or some morphological or phonological alteration in either source words or elements in the compound. For example, the replacement of the free reciprocal pronoun of Ancient Greek, *allélo-* (e.g. the accusative plural *allévlous*) by the periphrastic *o énas ton álo*, which did not affect the combining form in the reciprocal composite, *alilo-* (from Ancient Greek *allélo-*), led to the modern situation in which the combining form is formally quite distinct from the free form.⁵⁶

8.2 *ksana* + Verb composites

As noted earlier, the combination of *ksana* + Verb is essentially exceptionless.⁵⁷ This situation allows for a number of analyses. For this adverb, and only this one, an incorporation analysis is possible. We feel, however, that the proper use of incorporation is not as a severely lexically governed rule, as this one would have to be. Such an analysis, of course, would offer no support to the bases of Rivero’s

analyses, since she clearly is interested in the implications of an incorporation rule which operates freely, whenever an unincorporated source phrase exists.

ksana + Verb composites clearly could represent an especially productive case of Adverb + Verb compounding, in particular because a likely account of the frequency of elements in compounds might involve their frequency in the language overall, and the rate of occurrence of *ksaná* is most likely relatively high, certainly more so than most other of the combining adverbs.⁵⁸ But since the form *ksana-* is recurrent in many words, it might be just as justifiable to treat it as a prefix on verbs (as in Warburton (1970), and in practical dictionaries, such as Stavropoulos (1989)). *ksana-* lacks the usual union-vowel, as discussed in section 6, and while that might be attributable to the status of *-a*, as part of the adverbial stem and not an adverbial ending, it could also indicate that *ksana-* is indeed a prefix, much as *para-* is (see above section 5.1). Unlike *para-*, however, *ksana-* does have a free word source that it can be related to synchronically.⁵⁹ This situation certainly indicates a prefixal analysis of *para-*,⁶⁰ but a decision about the prefixal vs. compound status of composites with *ksana-* would essentially be arbitrary. In any case, the rule looks more or less the same as the Adverb + Verb rule (except for the absence of the union vowel); only its classification is at issue:

(43) Adverb]_{STEM} + Verb = Verb

or *ksana-* + Verb = Verb.

8.3. Noun + Verb compounding and prefixing

Rivero's examples of Noun + Verb composites, plus our extension to nonanaphoric and non-double-object cases, present a slightly more complicated situation, since semantic features (the role of the noun) and voice play a part in the process.

8.3.1. Anaphor composites

We treat the composites of *alilo-* + Verb and *afto-* + Verb as cases of prefixation. These forms both recur in many words and fail to occur as free words, indicating that they are to be taken as prefixes. They occur overwhelmingly, but not solely, with nonactive verbs as second elements. Rivero treats this fact as a result of syntax, arising from the requirements of case absorption in the aftermath of object incorporation; the examples in which active voice occurs are predicted in her account to have double-object sources. Our view is substantially different: nonactive verbs are themselves lexical entities, not syntactic ones (see Smirniotopoulos (1992) for discussion), and the *alilo-/afto-* forms represent agents, not objects.⁶¹ If *alilo-* and *afto-* are agents, their occurrence with nonactive verbs is permitted by the locality condition on lexical rules, for agents are sisters of nonactive but not of active verbs. Since we are positing lexical rules, the difference in productivity between *alilo-* and *afto-* is not problematic; words come into existence individually, and only once. The greater productivity of *alilo-* may be related to greater ‘name-worthiness’ of reciprocal words compared to reflexive words, for example because of the possibly greater frequency of reflexive interpretations of unprefixated nonactive verbs.

The rules for these anaphor composites again are very simple:

(44) *alilo-* / *afto-* + Verb_[nonactive] = Verb_[nonactive]

Again, there is an associated first-interpretation semantic rule, and it allows the meaning for each word described by the rule to be different in unpredictable ways from the compositional meaning of the source elements.

8.3.2. Noun + Verb compounding

The collection of Noun + Verb composites discussed in Smirniotopoulos (1992) and in section 5.4.3 shows that object nouns frequently form composites with active verbs, and agent nouns form composites with nonactive verbs. We require, therefore, two different rules, and these are compounding rules because the class of inputs for both the first and the second elements is defined syntactically and semantically; it is not the form of the element that is recurrent. Note however that the syntactic/semantic classes for *afto-/alilo-* prefixation and for agent-nonactive verb compounding are the same (and *afto-* and *alilo-* do show the union vowel); thus, as with *ksana-*, this is a case where the lines between compounding and affixation are blurred to some extent. *afto-* and *alilo-*, however, like *para-*, have no (obvious) free-word sources, and must therefore be classed as prefixes. This state of affairs is not so unusual, however, once we consider the possible interaction of once-only rules lexical rules with language change.

Once a compound (or prefixed form, for that matter) is established, its history is basically independent of its sources. Thus the free-word source of any element in a complex word could be lost from the language, or change in meaning or form, leaving the complex word with a nontransparent structure. This is essentially what happened with *alilo-*, as discussed in section 7.1.⁶² When such events occur, an element which is found very frequently in complex words is liable to be analyzed as an affix, while an element that occurs less frequently might be best taken as just a bound word. When the source free-word is neither lost nor rendered unrecognizable, the complex word containing it is typically to be analyzed as a compound. Thus this blurring for *ksana-* vis-à-vis the Adverb + Verb composites,

or for *alilo-/afto-* vis-à-vis the Agent + nonactive Verb composites, can be seen as a possibly temporary artifact of language history.⁶³

The rules for these object composites are as follows:⁶⁴

- (45) a. Noun_{OBJECT} + Verb_[ACTIVE] = Verb_[ACTIVE]
 b. Noun_{AGENT} + Verb_[NONACTIVE] = Verb_[NONACTIVE]

The required semantic rules will be more complex since the object compounding rule involves a notion of habitual action as a first interpretation, e.g. our consultant's *rodó-kiló* 'roll tires, be a tire-roller', and the agent compounding rule involves agents which are typically forces of nature or abstract to some degree (supernatural or groups), e.g. *anemo-ðérnome* 'be battered by the wind' (*anemo-* 'wind', *ðérno* 'beat, flay'), *jineko-kratúme* 'be dominated by women' (*jinek-* 'woman', *krató* 'hold, keep, take').⁶⁵

These lexical rules together provide the means by which the various composites can be formed; note further that their formulation allows for interaction, in that the output of one can serve as input to another, thereby making it possible for a speaker exercising creativity in word-formation, say for humorous effect, to generate an occasional multiple composite.⁶⁶

9. Conclusion

Our basic finding can be stated as follows: There is no syntactic rule of Argument Incorporation in Modern Greek, whether Adverb Incorporation, Anaphoric Object Incorporation, or whatever; rather, there are a number of lexical processes, for instance compounding rules, that generate the forms under consideration. Such a view explains the facts regarding productivity and semantic compositionality

discussed above, as well as the morphology of these forms, in a non-ad hoc way, given certain properties of lexical as opposed to syntactic processes.

While this result is at odds with the conclusions of Rivero's examination of similar facts, we acknowledge that part of the discrepancy between our conclusions and Rivero's derives from different sets of criteria being applied for distinguishing lexical from syntactic processes. As we see it, for Rivero, if a given construction or formation adheres to the requirements of Incorporation, then it is syntactic, and if it does not, then it is (lexical) compounding. Thus, as pointed out in section 5.4.3, for her, a verb like *trofoðotó* must be syntactically derived, since it governs a direct object yet has a first member that satisfies a thematic requirement of the base verb; a verb like *logoðotó*, however, would be lexically derived, since it does not govern a direct object even though its first member ostensibly satisfies a thematic requirement. In doing this, she is thus ignoring more traditional (and well-founded) characteristics of lexical phenomena and runs the risk of circularity, in that she has no independent tests for the correctness of the incorporation requirements.

In some cases, her criteria would lead to the right results, in that some formations which are actually quite productive can be lexically-derived compounds (compare the result with *para-* discussed in section 5.1). For instance, Greek has deverbal adjectives formed with *ðiskolo-* 'hard' or *efkolo-* 'easy' as first member, e.g. *ðiskolo-púlitos* 'hard to sell, unmarketable' (see Joseph (1980)), and this type shows considerable productivity. However, since Rivero (p. 326-7) derives these formations from adverbs that she treats as sentential (*ðískola* 'with difficulty' and *éfkola* 'easily'), elements not within the same VP are involved, contrary to the restrictions imposed by Incorporation. While we would agree with this result for

these adjectival formations — note that a lexical analysis is called for since locality is violated (see fn. 10) — the converse case using these criteria, i.e. syntactic derivations of low productivity, is more problematic, for one is led to say that *trofo- δ otó* is syntactically derived even though it is a highly restricted type of formation, that is, exactly the sort that has traditionally been recognized as lexical in nature because it is so unproductive.

As we noted in section 6, Rivero was led to her conclusions by some general assumptions she made about the relation between syntax and morphology, effectively treating morphology as a part of the syntactic component, rather than as a separate component of grammar, subject to its own principles and constraints. The full range of facts about Greek adverbial and argument composites, therefore, provide an important challenge not just to Rivero's particular analysis, but more generally to any framework built around these assumptions. That is, the extent to which her framework fails to construct a fully plausible account of the Greek composites can be taken as an argument against any such framework. By contrast, in our account, all of these formations are compounds or affixed forms, produced (or checked for well-formedness and for a first pass at semantic interpretation) by lexical processes, i.e., by word-formation rules, with all of the properties one typically finds in such rules (e.g., gaps and idiosyncrasies of various sorts, possibility of noncompositionality, etc.) and the morphological characteristics one expects of compounds in Greek (e.g. *-o-* as default union-vowel, single accent, etc.).

We close with a paradox that our conclusions lead us to: if most of these forms are lexical entries, and are 'checked' by the word-formation rules, how do they get there in the first place? We envision a system in which there is some productive

generative ‘device’ for creating word-level units, be it a lexical word-formation or compounding process or even a process that is more syntactic in nature, by the criteria we have adopted throughout here, e.g. incorporation in a language in which the equivalents of the ungrammatical Greek forms *ftoxo-fajito-ðíno* ‘poor-food-give’ (i.e. ‘I give food to the poor’) or *peðo-vivlio-ðíxno* ‘child-book-show’ (i.e. ‘I show the book to the child’), or *pando-ðiefqindi-kafedo-psíno* ‘always-director-coffee-roast’ (i.e. ‘I always make some coffee for the director’) were all fully acceptable; the words that are the output of this device, however, under certain circumstances, for instance from frequency of use or because they fill a useful lexical niche, can come to be entered in the lexicon and thus need not be generated each time they are used. There would therefore be an ‘edge’ between the lexicon and the syntax that particular forms — and thus also the processes that produce them — can straddle. In a sense, lexically governed syntactic rules would be on this edge, as would some idioms, frequent collocations, and the like, i.e., the essentially ‘word-size’ or word-like chunks of output.⁶⁷ In such a system, it would be possible for Rivero and for us both to be right, and the real issue would be the scope and extent of each type of rule, and how long-lasting its effects are. That is, syntactic rules of the sort Rivero invokes could be part of a grammar in the sense of being available for novel productions, but with a dynamically evolving border between forms that are syntactically derived and those that are lexically derived, between rules that are in the syntax and those that are in the lexicon. Some of the outputs that one might cite in favor of such a rule being syntactic (as Rivero did) could actually then turn out to be lexical in nature. The relevance of such outputs to the syntax would be moot, once they have been entered in the lexicon. The paradox, then, is that we

readily admit the need for productive, even syntactic, generation for word-sized units, but feel that speakers look more to the lexicon for those same units, especially when they provide ready 'names' for conventionalized meanings.⁶⁸

References

- Alexiadou, Artemis. (1994). *Issues in the syntax of adverbs*. Ph.D. Dissertation, Universität Potsdam.
- Arvaniti, Amalia & Joseph, Brian D. (1993). The sociophonetics of nasal suppression in Greek: sound change in progress. Paper presented at annual meeting of the Linguistic Society of America, Los Angeles. [To appear in *Glossologia, a Greek journal for general and historical linguistics* Vol. 11 (1998).]
- Baker, Mark. (1988). *Incorporation: a theory of grammatical function changing*. Chicago: The University of Chicago Press.
- Bien, Peter, Rassias, John, Yiannakou-Bien, Chrysanthi, & Alexiou, Christos. (1982). *O iptamenos thalamos. The flying telephone booth*. Hanover, NH: University Press of New England.
- Bien, Peter, Rassias, John, Yiannakou-Bien, Chrysanthi & Alexiou, Christos. (1983). *Demotic Greek I, 4th edn.*. Hanover, NH: University Press of New England.
- Chomsky, Noam. (1970). Remarks on Nominalization. In *Readings in English transformational grammar*, Jacobs, Roderick & Rosenbaum, Peter (eds.). Waltham, MA: Blaisdell.
- Coltheart, Max. (1981). The MRC psycholinguistic database. *Quarterly journal of experimental psychology* 33A. 497-505.

- Di Sciullo, Anna Maria & Williams, Edwin. 1988. *On the definition of word* (*Linguistic inquiry monographs*, 14). Cambridge, MA: The MIT Press.
- Dowty, David R. (1978). Lexically governed transformations as lexical rules in a Montague Grammar. *Linguistic inquiry* 9.3. 393-426.
- Drachman, Gaberell & Malikouti-Drachman, Angeliki. (1992). Stress and Greek compounding. Paper presented at International Phonology Meeting, Krems, Austria. [To appear in *Phonologica* 1992.]
- Janda, Richard D. & Joseph, Brian D. (1986). One rule or many? Sanskrit reduplication as fragmented affixation. In *Proceedings of the second eastern states conference on linguistics (ESCOL '85)*. Columbus: OSU Department of Linguistics. 103-119.[Revised version in *Studies on language change. Ohio State University working papers in linguistics* 34. 84-107.]
- Joseph, Brian D. (1980). Lexical productivity versus syntactic generativity. *Linguistic inquiry* 11. 420-426.
- Joseph, Brian D. & Philippaki-Warbuton, Irene. (1987). *Modern Greek*. London: Croom Helm Ltd.
- Joseph, Brian D. (1992). More on *-gate* words: a perspective from abroad. *American speech* 67. 222-223.
- Kakouriotis, Athanasios, Papastathi Maria, & Tsangalidis, Anastasios. (1997). Incorporation in Modern Greek: Lexical or syntactic?. In Drachman, G., Malikouti-Drachman, A., Fykias, J. & Klidi, C. (eds.) *Greek linguistics '95. Proceedings of the 2nd international conference on Greek linguistics*. Graz: Neubauer Verlag. 77-86.

- Kourmoulis, Georgios. (1967). *Andístrofon leksikón tis néas elinikís*. Athens: G. Kourmoulis.
- Manney, Linda. (1997). The reflexive archetype and its various realizations in Modern Greek. To appear in *Studies in language 21*.
- McConnell-Ginet, Sally. (1982). Adverbs and logical form. *Language 58*. 144-184.
- Mendez Dosuna, Julian. (To appear). Fusion, fission, and relevance in language change: de-univerbation in Greek verb morphology. *Studies in language* (1997).
- Nespor, Marina & Ralli, Angela. (1996). Morphology-phonology interface: the case of stress in Greek compounds. *The linguistic review 4*. 357-382.
- Nevis, Joel A., Joseph, Brian D., Wanner, Dieter, & Zwicky, Arnold M. (1994). *Clitics: A Comprehensive Bibliography 1892-1991* (Amsterdam Studies in the Theory and History of Linguistic Science, Series V: Library & Information Sources in Linguistics, 22). Amsterdam & Philadelphia: John Benjamins Publishing Co.
- Ralli, Angela. (1992). Compounds in Modern Greek. *Rivista di linguistica 4.1*. 143-174.
- Rivero, María-Luisa. (1992). Adverb incorporation and the syntax of adverbs in Modern Greek. *Linguistics and philosophy 15*. 289-331.
- Smirniotopoulos, Jane C. (1992). *Lexical passives in Modern Greek*. New York: Garland Publishing, Inc.
- Smirniotopoulos, Jane C. & Joseph, Brian D. (1997). On So-Called “Adverb-Incorporation” in Modern Greek. In Drachman, G., Malikouti-Drachman, A.,

- Fykias, J. & Klidi, C. (eds.) *Greek linguistics '95. Proceedings of the 2nd international conference on Greek linguistics*. Graz: Neubauer Verlag. 117-128.
- Spencer, Andrew. (1991). *Morphological theory*. Oxford, UK & Cambridge, MA: Blackwell Publishers.
- Spencer, Andrew. (1995). Incorporation in Chukchi. *Language* 71.3. 439-489.
- Stavropoulos, D. N. (1989). *Oxford Greek-English learner's dictionary*. Oxford: Oxford University Press.
- Warburton, Irene. (1970). *On the verb in Modern Greek*. Bloomington, IN: Indiana University Publications.
- Wasow, Thomas. (1977). Transformations and the lexicon. In Culicover, Peter W., Wasow, Thomas, & Akmajian, Adrian (eds.) *Formal syntax*. New York: Academic Press. 327-360.
- Wolfart, H. Christoph. (1973). *Plains Cree: a grammatical study* (Transactions of the American Philosophical Society, New Series, 63.5). Philadelphia: The American Philosophical Society.
- Zwicky, Arnold M. (1994). What is a clitic? In Nevis et al., xii-xx.
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¹We would like to thank Eva Konstantellou and Panayiotis Pappas, who served as our primary consultants, as well as Anastasia Christofides, all of whose native judgments were extremely valuable to our research. In addition, we thank Craig Hilts for his help in the preparation of the final manuscript. Earlier versions of this paper were presented at the Workshop on Greek Linguistics at the LSA Institute (Columbus, August 1993), at the Georgetown University Round Table Greek Linguistics Pre-session (Washington DC, March 1994), at the Ohio State University Linguistics Department Colloquium (May 1995), and at the Second International Conference on Greek Linguistics (Salzburg, September 1995), this last being the basis for a much briefer written version in the conference proceedings (Smirniotopoulos & Joseph 1997). We benefited greatly from comments from the audiences at all of those presentations, but especially from those by Rich Janda, Artemis Alexiadou, and Gaberell Drachman. Finally, the observations of two anonymous reviewers were of considerable help to us in revising, and improving, the paper. Naturally, we take responsibility for any errors remaining in this study.

²We say this without taking sides on whether or not the lexicon could be considered part of a morphological component, a defensible position inasmuch as morphology deals with word-structure and the lexicon is (at least) a listing of words and facts about them.

³The reference here is of course to the “lexicalist” controversy that dates back at least to the 1970s, sparked by Chomsky (1970). See Spencer (1991: 67-73) for some discussion and references.

⁴See Zwicky (1994) for a consideration of what the notion of “clitic” can mean, and Nevis et al. (1994) for extensive bibliography on the topic.

⁵This term is used as a theoretically neutral one at this point; as the analysis we propose becomes clearer, other terminology is used.

⁶The standard citation form for Greek verbs is the first person singular present active (or nonactive if the verb has no active forms), and we follow that convention here (though some examples with reciprocals, which require a plural, are given in the third person plural). Note that we write nasal + stop clusters as such here, even though they can be (and for some speakers categorically are) realized as pure oral stops with no nasality; this variation is subject to a number of factors (as discussed in Arvaniti & Joseph (1993)), and in the speech community at large, pronouncing a nasal in these clusters is possible even if not preferred by all speakers.

⁷Rivero refers to *ksaná* as being in the class of ‘Aktionsart adverbs’, which would still be VP-internal and thus arguments in her account, like manner adverbs. A somewhat different classificatory scheme is given by Alexiadou (1994) (passim, but especially Chapter 6), where a distinction is drawn between ‘Specifier-type and Complement-type’ adverbs, and ‘only the latter can incorporate’ (p. 202); still, Alexiadou argues for Adverb Incorporation as a ‘case of syntactic movement which applies when specific conditions are met’ (p. 198).

⁸The indirect object in (8a) is marked with the preposition *s(e)* ‘to’ (also ‘in, on, at, into’); the absence of the preposition in (8b) indicates a transitive structure.

⁹We take Wasow (1977) to be the ‘classic’ work on the subject within the general framework of generative grammar; see also Dowty (1978) for important discussion.

¹⁰Other criteria can be mentioned, but they turn out not to be conclusive for the data to be discussed here, though they are consistent with our ultimate conclusions. For example, lexical rules are generally held to be local in that they ‘ought not to be able to refer to aspects of the environment in which the lexical item appears’ (Wasow (1977:330)), thus possibly being restricted to arguments of a verb, for instance. Still, a process that affects only local elements could be syntactic, and in the present case, where what is at issue is the combination of a verb with one of its arguments, this property will not decide between the two types of rules. Similarly, the property of being able to change the part of speech (category) of an input expression, claimed for lexical rules but not for syntactic rules, is irrelevant here since the input is a verb and the output is a verb.

¹¹Note for instance that the same scandal can be labeled by different *-gate* formations, a fact which also betokens productivity. For example, the term *sex-gate* has also been used, parallel to *Monica-*

gate; other such examples with *-gate*, with relevant discussion and references, are given in Joseph (1992).

¹²We realize that Di Sciullo & Williams (1988: 10) are skeptical of the value of productivity as a distinguishing characteristic, noting that “it would be wrong to consider productivity as a criterial difference between syntax and morphology”. We agree to a certain extent, in that productivity can for us be associated with syntactic or with lexical rules, but importantly, we take the *absence* of (a high degree of) productivity as a clear indicator of a lexical rule.

¹³For example, one cannot know that a combination of *V N to N* will allow Dative Movement without knowing something special about the *V*, but once that is known, the phrasal outcome is known also.

¹⁴Admittedly, this preposition belongs to the high-style ‘katharevousa’ variety of Greek; however, without going into the numerous complex issues pertaining to diglossia in Greek, it suffices to point out here that *epí* occurs in several uses that are found in standard colloquial Greek, as in, e.g., *epí trís mínes* ‘for three months’, *epí ta íxni* ‘on the scent/track’, *epí skinís* ‘on the scene’, etc.

¹⁵Warburton (1970), for instance, discusses *endiaférome* ‘be interested in’ in the same way, concluding that it is not the result of a productive combining of *en* ‘in’ with *dia* ‘through’ and *férome* ‘behave’.

¹⁶We say ‘appropriate’ here, because Rivero restricts her discussion of Noun Incorporation to Anaphor Incorporation, taking in reflexive and reciprocal objects, and Double-Object Incorporation as with *trofodotó*; see also the discussion in section 5.4.3 below.

¹⁷Similarly, Kakouriotis, Papastathi, & Tsangalidis (1997) reached the same conclusion (a paper first presented at the Second International Conference on Greek Linguistics in Salzburg, September 1995), based on some considerations similar to those developed here, though with a less extensive coverage of relevant data. The first to argue for this view, counter to Rivero’s analysis, was Drachman & Malikouti-Drachman (1992), in which the cases Rivero presents as incorporation are instead analyzed as compounding, in part using some of the same considerations utilized here (e.g. semantic mismatches between composites and phrasal forms, as with *kutso-perpatáo* ‘I walk a little’ vs. *perpatáo kutsá* ‘I walk lamely’). However, they follow Borer (1990) and suggest that the morphology module of a grammar can reapply in the syntax to generate at least some of these Greek formations, so that for them, these forms are still syntactic in a certain sense, and in addition they treat the anaphor-verb composites as derived by syntactic incorporation.

¹⁸Our primary consultant was a graduate student in linguistics who was raised on the island of Thasos but schooled in Thessaloniki; he was asked about all the forms we discuss here, but other speakers as well were consulted on some of the forms. Moreover, numerous Greek speakers were in the audience of four public presentations of the paper we have made (see fn. 1) and no objections were ever raised to any of the data presented here.

¹⁹We acknowledge that there are several ways in which a consultant’s response concerning a “possible word” might be interpreted. Nonetheless, given that the mere existence of exceptions and idiosyncrasies was what was crucial for our study, and given our assumptions about productivity and compositionality, we worked with a binary choice of possible or impossible, and asked about idiosyncratic behavior as well.

²⁰We restricted ourselves to manner adverbs because of Rivero’s demonstration, noted above, that temporal adverbs could not combine. Therefore, if the fifth adverb was a time adverb, we skipped it until we found the next manner adverb. Also, since adverbs were not plentiful in the glossary, we took the liberty of creating adverbs from adjectives listed therein, in order to have a sufficient number of adverbs. In some instances, however, the adverbs we created were not forms that could be acceptably used as adverbs; thus, we threw those out and moved on to the next (potential) adverb.

²¹One reviewer noted that a form synonymous with the questionable *ksanaperijélasan*, namely *ksanakoróidepsan*, is well-formed for him/her and suggested that frequency may affect acceptability,

inasmuch as *perijeló* is less frequent than *koroiðévo*. That may well be true, but we do not see how frequency could be a condition for the operation of a syntactic rule. And, from our point of view, the synonymy of these forms shows that there is no semantic problem with *ksanaperijélasan*, so that it cannot be ruled out in any way predictable from the grammar itself.

²²Though see sections 5.3, 7, and 8.2 for other possible interpretations of the nature of *ksana-* composites.

²³Note that Rivero (p. 299) mentions *para-* as being among the set of incorporated elements.

²⁴We give both accentual possibilities for a free adverb corresponding to the prefix *para-*, since there is no basis, in the absence of an actual form, for assigning the stress to one syllable or the other; stress placement in Greek can fall on one of the last three syllables in a word, and while there are some morphologically based generalizations as to which syllable it falls on, nothing about *para-* or adverbs in general would predict where accent on a free adverb *parápara* would fall.

²⁵We take no position on whether the preposition *pará* and the conjunction *pará* are the ‘same’ word, in any substantive sense.

²⁶See below also, section 6, regarding the role of other missed morphological generalizations in this debate.

²⁷Admittedly, it is not clear in this word whether *poli* here functions as an intensity adverbial (i.e., ‘I want something a lot’) or as an object (i.e., ‘I want a lot (of something)’). Both could involve, in Rivero’s terms, an incorporation, though it seems to us that she would most likely label the object interpretation a lexical compounding instead (see below on this matter). One reviewer pointed out, correctly, that *poli-VERB* forms occur most naturally only in negative sentences whereas *para-VERB* forms are not restricted in this way; this fact, however, does not count against our analysis, but rather is a type of exceptionality in the composite form with *poli-* vis-à-vis the noncomposite phrasal form that would point to a nonsyntactic treatment of these composites.

²⁸Though written, we realize, before there was a serious interest in the distinction between lexical and syntactic rules, Warburton (1970) treats *para-* as a prefix, part of a lexical prefixation process.

²⁹We deliberately took a very broad view of how to interpret what it meant for a formation to be “allowed” in order to be as fair to Rivero’s position as possible. A reviewer noted that most of the composites with *kalo-* sound natural only in negative sentences and thus are not directly substitutable paraphrases for the phrasal counterparts. The existence of such restrictions, we would argue, only strengthens our claim that these composites are not syntactically formed. See also fnn. 27 and 31.

³⁰The same sort of difference in meaning was found with the verb *piðó* ‘bounce’, e.g. when used with ‘ball’ as subject. We acknowledge, of course, that there is a parallelism in the way in which the combined form and the phrasal form differ in meaning in (15a,b) as well as with *piðó*; however, our contention is that such a difference is not predictable from the workings of the putative incorporation rule itself.

³¹Our consultant actually reported that the composite form had a sarcastic value, as if one were to add ‘like you really care about how I am sitting’. Such a sarcastic value was not present, he claimed, with the phrasal form, and that is the crucial point here.

³²Several other sources of evidence point toward the same conclusion. First, a search of a moderate-sized dictionary, Stavropoulos (1989), reveals noncompositional semantics for several of the *kalo-VERB* combinations listed therein. Judging by fairly conservative standards, 6 of the 35 such formations had only noncompositional semantics, and 5 had a noncompositional sense in addition to a compositional one, e.g.: *kalopjáno* ‘cajole; coax; flatter’ (≠ *pjáno kalá* ‘seize well’); *kalopéfto* ‘fall into good hands’ (≠ *péfto kalá* ‘fall well’); *kalokitázo* ‘covet’ (≠ *kitázo kalá*, though also compositional as ‘examine closely, i.e. well’); *kalonixtóni* ‘it is quite dark’ (≠ *nixtóni kalá* ‘it darkens well’); *kalomaqéno* ‘spoil; pamper’ (≠ *maqéno kalá*; though also compositional as ‘teach / learn well’); *kalofénete* ‘take kindly to’ (≠ *fénete kalá*, though also compositional as ‘be seen clearly’). Second, it can be noted that *kalo-* shows other combinatory possibilities, none very productively though, so that a process of *kalo-* compounding would seem to be needed in the

grammar anyway. For instance, it can combine with (some) nouns to form nouns, e.g. *kalokéri* ‘summer’ (cf. *kalós kerós* ‘good weather’), and adjectives, e.g. *kalókefos* ‘good-spirited’ (cf. *kéfi* ‘high spirits’), and with verbal adjectives as well, e.g. *kalo-diménos* ‘well-dressed’. Finally, similar results can be found with other adverbial elements that form verbal composites. Though for reasons of space we cannot give the details here, one with several composites listed in the dictionary (though far fewer than *kalo-*, hence our choice to focus on *kalo-*) is *gliko-* ‘sweet’, and it too shows examples with noncompositional semantics and an overall lack of parallelism between phrasal and composite forms.

³³Similar cases are mentioned by Drachman & Malikouti-Drachman (1992) (see fn. 17 above), and by Alexiadou (1994: 174)

³⁴Note that the problem with **nostó páli* is not (just) the free occurrence of the adverb, for the independent verb *nostó* is exceedingly rare in Modern Greek; though there are some independent uses of it recorded in the late 19th century (e.g. in works by Jean Psicharis), it generally now occurs only as a bound stem in this and related verbs (and is thus not unlike the *-dot-* that occurs as a bound stem in *trofo-dotó* ‘nourish’ discussed below). It is likely that *palinostó* is a lexicalized form inherited as a unit from Ancient Greek *pali-nostéo* ‘return home’ (literally: ‘back-again return-home’), though that does not affect its synchronic analyzability in Modern Greek; note for instance that the adverb *páli* occurs independently, and *ksana-nostó*, with the adverbial *ksana-* ‘again’, is also a word in Modern Greek, synonymous with *pali-nostó*. The form *ksana-nostó* is also interesting because it is a positive exception (contrary to prediction (9b)) to a putative syntactic Incorporation rule; for most contemporary speakers, no phrasal source (i.e., *nostó ksaná*) exists (see (13) for a parallel case with *kalá*).

³⁵See also section 7 for further discussion of this point, and section 8.2 for another interpretation of the status of *ksana-* in composites.

³⁶The complex phrasal reciprocal *o énas o álos* is clearly compositional in some respects but it behaves like a unit in others. For instance, the two parts (*o énas* and *o álos*) obey the case requirements demanded by the functions of their corresponding (possibly implicit) antecedents, almost as if the reciprocal phrase were an elliptical sentence or small clause. That is, if the reciprocal action involves a subject and an object, as in (27a), then *o énas* is nominative and *o álos* is accusative, as if it were ‘They destroy, the one [destroying] the other’, whereas if the reciprocity was between an object and an indirect object (e.g. ‘I introduced the men to each other’), then *o énas* is accusative and *o álos* is the object of a preposition (i.e. *sístisa tus andres ton éna s ton álo*, literally ‘I-introduced the-men the-one(ACC) to the-other(ACC)’). These parts must also obey the gender requirements of their antecedents, so that if the subject of (27a) were *i jinékes* ‘the women’, the reciprocal parts would be feminine, *i mja tin áli* (with the requisite feminine singular forms). On the other hand, despite this clear compositionality of the phrasal reciprocal with respect to agreement and case specifications, it behaves as a unit, in that, for instance, the two parts can never be interchanged (see Joseph & Philippaki-Warburton (1987: 86-7) for some discussion).

³⁷Note that such nonactive verbs can also be interpreted, under appropriate conditions, as a reflexive (cf. (22c)) or as an agentless passive. See Joseph & Philippaki-Warburton (1987: 76) for some discussion of these conditions.

³⁸This difference in productivity is certainly interesting, invites investigation, and requires explanation, even in a lexical treatment. It might have to do with frequency issues or blocking effects from related or synonymous forms, for instance, and thus we assume it is a more complicated issue that we have to leave to further study.

³⁹There are some other possible verbs that are consistent with her analysis, but it is hard to be certain as to how to treat them. For example, to judge from information given in dictionaries, *ðendrofitévo* ‘to plant trees’ (possibly to be decomposed into *fitévo ðéndra* ‘to plant trees (somewhere)’), which occurs in the active voice and would seem able to take direct objects, fits the incorporation analysis. However, judgments on this verb for native speakers we have consulted are quite elusive, making it hard to confirm any aspects of its syntax. Similarly, *efesiválo* ‘to lodge

an appeal' (possibly to be decomposed into *káno éfesi katá* 'to make an appeal against (something)'), can occur with a direct object (e.g. *efesivális tin apófasi* 'you-appeal the decision'), as the incorporation analysis would predict; this verb also, however, provoked considerable indecision on the part of native speakers we consulted, so that we are not altogether confident as to its status vis-à-vis incorporation.

⁴⁰Note also that there are morphological problems, such as those regarding *trofodotó*, *alilo-*, etc. to be discussed in greater detail in section 6. For example, the *-agogó* part of *fotagogó* does not occur independently, nor, for that matter, does *ágo*, though given in (34b) as a morphologically close source for *-agogó* (after all, they are historically related) so as to minimize the morphological readjustment needed in the incorporation analysis. Similarly, the meanings of the putative starting points are not really the same as the meaning of the output of the incorporation in all cases; for example, *trofodotó* does not mean 'give food to' so much as 'cater, supply', and 'illuminate' is not the same as 'bring light to'.

⁴¹It is interesting to note that with verbs in Greek that are syntactically ditransitive, that is the relatively few verbs which are not just semantically decomposable into a ditransitive but which occur on the surface with two arguments, incorporation seems not to be possible. Thus *didásko* 'teach' can occur with two arguments, either an accusative direct object and a prepositionally-marked indirect object (e.g. *didásko gramatikí s tus fitités* 'I teach grammar to the students') or two accusatives (e.g. *didásko tus fitités gramatikí* 'I teach the students grammar'), but noun incorporation does not yield acceptable results (e.g. **gramatiko-didásko tus fitités*).

⁴²It is not clear, moreover, from Rivero's analysis, how Noun Incorporation would be prevented from reapplying to its own output, even though from *trofodotó tus ftoxís* 'I feed the poor' something like **ftoxo-trofo-dotúme* 'I poor-feed', in the nonactive voice, is quite impossible. Admittedly, any analysis has to prevent reapplication of whatever process creates 'incorporated' structures.

⁴³This step allows us to avoid potential problems with the morphology of these formations (see next section for relevant discussion).

⁴⁴This meaning was a guess on our consultant's part; Kourmoulis (1967) is a reverse dictionary, but gives no meanings.

⁴⁵This verb is more usual in the nonactive voice, about which for this item see below.

⁴⁶This verb occurs more commonly in the nonactive voice, with the meaning 'be upset'.

⁴⁷As noted, we offer in (37) just the most transparent forms. A perusal of Kourmoulis (1967) yields many more object-verb compounds, but for the most part, even for educated native speakers we consulted, the meanings are obscure and/or the synchronic derivations are ambiguous (see below regarding some of the nonactive voice forms, for instance). See Smirniotopoulos (1992: 261-280) for some discussion.

⁴⁸The other functions of the nominal first member included subject of an intransitive verbal second member, or material (e.g. *emato-váfo* 'paint (váfo) with blood (emato-)', among others).

⁴⁹Thus the positive exceptions noted in (29) could be treated by Rivero as compounds with *alilo-*, for they do not follow the requirements of Incorporation, in her analysis. We note, however, that even unlike *alilo-grafó* or *afio-htonó*, their meanings are compositional and they involve no special form of the verb, traits that might otherwise suggest Incorporation.

⁵⁰At issue here is the cut-off for what constitutes sufficient productivity to declare a process to be syntactic. It would seem that 50% is clearly too low, and that 98% is certainly high enough, but where the line is drawn between such extremes is hard to tell and no one in the literature seems willing, perhaps rightly enough, to take a direct stand in this matter.

⁵¹Although *logodosía* has an *-s-* in its stem, this is a surface *-s-* that is morphophonemically treatable as an underlying *-t-* (compare the parallel morphophonemics of *trofodos-ía* 'catering' alongside *trofodót-is* 'caterer'), providing a basis for the derivation of *logodotó*. Note also that even though *logdótis* does not exist per se (e.g. it is not in dictionaries) as an agent noun for 'one who gives an account' or a similar meaning, our consultant tells us that it is an interpretable form.

⁵²For instance, although *sigá* ‘gently’ occurs with the union-vowel *-o-* (e.g. *sigo-traguðó* ‘sing softly’), there is no corresponding adjective *sigo-*; however, there is a related adjective *siganó-* ‘soft, gentle’. Still, it is clear that *sig-* is a stem (and thus the *-a* of *sigá* the adverbial ending), given forms such as *sigí* ‘silence, still(ness)’, as well as *siganó-* and its variant *sigaló-* ‘soft, gentle’.

⁵³We note that *para-éxo fái* ‘I have over-eaten’, a variant of *éxo para-fái*, is grammatical. From our perspective, this acceptability is due more to the independent occurrence of a verb *paraéxo* ‘have too much’ than to ‘long-distance incorporation’. Blocking of a multiple occurrence of *para-*, i.e. **para-éxo para-fái*, can be achieved by reference to a restriction on morphological repetition, a sort of morphemic dissimilation effect.

⁵⁴Nor are there observable phonological requirements. While the combining adverbs tend to be two syllables in length, e.g. *kalo-*, *kako-*, *ksana-*, etc., there is no absolute restriction, since the four-syllable *anapódo-* enters into these composites.

⁵⁵‘Verb’ here refers to any form marked by a feature [+V], since Adverb-*o-* occurs with active and passive finite verbs and participial forms indiscriminately.

⁵⁶Diachronic separation of combining forms from changes in free forms is a common phenomenon. See section 8.3.2 (and especially fn. 62) for more discussion and some examples.

⁵⁷Besides the exceptions we found in our data, noted in section 5.1 (and especially in (11)), two interesting positive exceptions are discussed in Mendez Dosuna (To appear). He notes the existence of two apparent composite verbs with no phrasal counterparts: *ksananióno* ‘to rejuvenate, become young again’ (cf. **nióno ksaná*, there being no independent verb *nióno* with an appropriate meaning (rather, the free verb *nióno*, to the extent it occurs (it is basically a regionalism within Greek), means ‘think, sense, feel’)); and *ksanávo* ‘to light up again, get excited’, where either haplogy of an earlier *ksana-anávo*, from *ksana-* with *anávo* ‘to light up, ignite, excite’ or else direct development out of earlier *eks-an-áptó* has led to there being no phrasal counterpart, inasmuch as there is no independent verb **vo* that *ksanávo* could be composed from (nor a combining form **ksa-* for *ksana-*).

⁵⁸This is admittedly speculative, as we know of no frequency count for words in Greek. Still, in the MRC Psycholinguistic Database of English, as described in Coltheart (1981), only *well* has a frequency among manner adverbs greater than that of *again*, making it reasonable to assume a similar frequency for the Greek counterpart. We thank Stefanie Jannedy for her help obtaining this information.

⁵⁹Admittedly, a formal relationship between a prefix and a free word is not easily captured in most current theories of morphology; see Janda & Joseph (1986) for some discussion of the ‘morphological constellation’ as a formal construct that, among other things, would allow one to capture formally such a connection of a prefix to a free word.

⁶⁰A further suggestion of prefixal status comes from the facts cited by Mendez Dosuna (To appear) on reductions in coordinated structures, where a sequence such as *ksanakatévika ke ksanaéfaga* ‘I-again-went-down and I-again-ate’ cannot reduce to *ksanakatévika ke éfaga*, which has only the meaning ‘I-again-went-down and I-ate (once)’; however, since a similar effect is found with the free adverb *ksaná*, in that *katévika ksaná ke éfaga* means ‘I-went-down again and I-ate (once)’, not ‘I-went-down again and I-ate (again)’, there really is no argument to be made here about a prefixal *ksana-*.

⁶¹On the agentive interpretation of *afto-*prefixation, see the discussion of the meaning of examples (22a-c) in section 5.4.1.

⁶²Two interrelated examples from English make this clear. When the Middle English comitative preposition *mid* ‘with’ was replaced in this meaning by *with*, this replacement did not affect the compound *midwife*, which thus preserves the original meaning of the combining element. Similarly, when Middle English *with* ‘against’ changed its meaning to that of a comitative (among other things), the original meaning was preserved in the compound verb *withstand*, literally ‘stand against’.

⁶³For what it is worth, the bound usage *ksana-* represents the older form, from an Ancient Greek double prefixal sequence *eks - ana-*, and the free adverb was extracted out of this combination after the regular loss of unstressed initial vowels. For discussion of this interesting variation of the usual pattern of a free word developing into an affix, see Mendez Dosuna (To appear).

⁶⁴Note that *trofoðotó*, for us, was derived via ‘backformation’ from the agent noun *trofoðótis*, and thus originally meant ‘be a provider’ (see section 6); thus it is not derived by the rules in (45). However, *trofoðotó* and forms like it are described by the compound rule, as long as the lexicon contains *ðot-* as a (bound) V(erb) stem. Also, in a generally lexical framework, forms like *aftoktonó* ‘commit suicide, kill oneself’ and *alilo-grafó* ‘correspond’ (see sections 5.4.3 and 6, and fn. 49) might be analyzed either as the exceptional product of the *alilo-lafto-* rule (44) (exceptional since it is active) or as a slightly deviant product of the object rule (45a) (exceptional since the noun is the ostensible reflexive form *afto-* rather than a freely occurring noun). We lean towards an analysis in which these are products of the *alilo-lafto-* rule since it gives a unitary source for *alilo-lafto-* in all the Greek words discussed. Either way, *aftoktonó* and *alilo-grafó* are special cases, but we emphasize that exceptional behavior with respect to lexical rules is to be expected.

⁶⁵There is an interesting parallel to the ‘supernatural agent’ specification in a verbal formation in Plains Cree in which the argument-marking suffix *-iko:wisi-* gives the meaning of ‘action by supernatural powers’ to the verbal root it attaches to (Wolfart (1973: 70)); the *-iko:w-* contains a variant of the verbal suffix */-ekw-/* which figures also in several formations which Wolfart labels as ‘mediopassive’ or ‘passive’ formations.

⁶⁶An extreme example, for instance, was provided on the spur of the moment by our primary consultant:

- i. *ksana-alilo-anapoðo-ðaxtilo-kumbonómaste*
 again-RECIP-backwards-finger-button/1PL.NONACT
 ‘We button each other again backwards with our fingers’

and this form, for him, clearly had a humorous flavor to it.

⁶⁷And indeed, the accidents of history may produce a situation in which there are exceptions — *ksananíño* and *ksanávo* (see fn. 57) are cases in point — that in a sense provide the first lexical ‘chinks’ in the syntactic armor of a given process, so that the process might begin to straddle the syntax/lexicon border.

⁶⁸As Béjout (1983: 71) notes, lexical items ‘occur in dictionaries only when they are socialized’, and a similar observation may well hold also for speakers’ internal ‘dictionaries’, i.e. for their mental lexicons.