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ABSTRACT
                An analysis of the structure and interpretation of
Spanish adverbs ending in "-mente" focuses on the grammatical status
of the constituent elements of those words. It begins by looking at
the grammatical properties of "-mente" adverbs (MAs), the word-level
properties of MA constituents, and the compound types and their
interpretation. It is argued that both the adjective and "-mente" are
word-level morphemes rather than stem+affix, implying that MAs are
compounds and raising the question of how MAs conform to compound
typology, which is characterized relative to the interpretation of
the compound. The types of compounds discussed by one researcher are
summarized, and it is proposed that the interpretation of MAs is
based on the thematic relationship between the base adjective and its
external (or subject) argument, satisfied by the nominal "-mente."
(MSE)

"Mente" Adverbs, Compound Interpretation and the Projection
Principle

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0. Introduction.

This paper is concerned with the structure and interpretation of Spanish adverbs of the type exemplified in (1), which I will refer to as Mente-Adverbs (or MA's):

(1) a. claramente 'clearly'   d. posiblemente 'possibly'
    b. francamente 'frankly'   e. cuidadosamente 'carefully'
    c. obviamente 'obviously'   f. sospechosamente 'suspiciously'

A central issue to be addressed is the status of the constituent elements of MA's. It is argued that both the adjective and mente are X^o (word-level) morphemes, rather than a stem+affix. This implies that MA's are compounds, and raises the issue of how MA's conform to compound typology, which is characterized relative to the interpretation of the compound. In section 3, the types of compounds discussed in Selkirk (1982) are summarized, and it is argued that the interpretation of MA's is based on the thematic relation between the base adjective and its external (or "subject") argument, which is satisfied by the nominal mente.

This analysis raises a further issue. It has been argued that external arguments cannot be represented as a position in a compound. Selkirk (1982) notes that nominal compounds of the type in (2) are ungrammatical, and states the constraint in (3):[1]

(2) a. *The hours for [girl swimming] at this pool are quite restricted.
    b. *There's been a lot of [weather changing] around here lately.
    c. *[Kid eating] makes such a mess.

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[1] This fact is suggested in Zubizarreta (1985) to follow automatically from the status of subject arguments as "external". such arguments cannot be syntactically represented phrase-internally. I will discuss Zubizarreta's analysis of lexical entries in more detain in section 4.

(3) The SUBJ argument of a lexical item may not be satisfied in compound structure. (Selkirk (1982:34.)

If the present analysis of MA's is correct, MA's constitute an exception to (3). In section 4., the status of (3) as a principle will be re-examined. It is argued that the correct distinction between Selkirk's examples in (2) and the structure of MA's follows from constraints on the relation between the lexicon and the syntax. Two principles which will be shown to interact crucially are the Projection Principle and Predication. The Projection Principle, informally stated, requires that lexical requirements must be met at every level of syntactic representation. Since subjects are unlinked (or external) in lexical representations, as argued in Zubizarreta (1985), it is predicted that a subject θ-role can never be assigned phrase-internally without violating the Projection Principle. However, I will argue that Predication coindexing (Rothstein (1983)), which is a syntactic wellformedness condition on non-argument categories, can provide a means of linking an additional position within a compound, and interpreting it as a subject. It is predicted that there can occur compounds of the form in (4), where X^0 is a predicate category:

(4) $[_{X^0}$ SUBJN^0 $X^0]$

As for the ungrammaticality of (2), where $X^0 = N^0$, Predication coindexing between the constituents of the compound will be shown to be impossible, since it results in dual indexing of the NP. Since Predication coindexing cannot apply, the left-hand member of the compound has no interpretation.

1. Grammatical Properties of _mente_ adverbs.

Spanish adverbs ending in _mente_ exhibit certain properties of derivational morphology, in that there appears to be a productive, rule-governed process which composes an adjective and _mente_, and derives a word class with grammatical properties distinct from those of the adjectives on which they are based. One distinct property is that the derived word class has the distribution of adverbs, rather than adjectives:

(5) a. Empieza a las ocho, probablemente.
      'It begins at eight, probably.'
   b. Trabajan lentamente.
      'They're working slowly.'
   c. Esto es meramente falso.
      'That's merely false.'

d. *Esa chica es/está lentamente.
   'That girl is slowly.'

The adverb in (5a) modifies the entire clause, that cf (5b) modifies VP, and that of (5c) modifies the AP falso. Like English -ly adverbs, MA's cannot appear in the position of predicate adjective.

A second distinct property of MA's is that, unlike adjectives in Spanish, MAs never agree in number or gender with an NP. Compare the adverb in (6a) with the corresponding adjective in (6b):

(6) a. Los niños se lavaron voluntariamente(*s).
       'The children washed themselves voluntarily.'
    b. respuestas voluntarias (*voluntaria)
       'voluntary answers'

The adverb voluntariamente in (6a) cannot be pluralized to agree with the subject los niños, even though it is "agent-oriented". By contrast, the adjective voluntarias in (6b) must agree with the modified noun.[2]

A third respect in which MA's differ from the corresponding adjectives is in argument structure. For example, an adjective like lento 'slow' selects a subject (denoting a movable object, eg., a slow dishwasher or a slow car, but not a slow sky or building) but the corresponding adverb does not:

(7) Llueve lentamente.
    'It's raining slowly.'

In (7), there is no sense in which the subject (weather it,) the only NP available, can fulfill the selectional or thematic requirements of the

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[2] The absence of number/gender agreement between an adverb and NP is general, but not absolutely so. There are agent-oriented adverbs which agree with a subject, such as descalzos 'barefoot' in (i)·

(i) Jugaron al tenis descalzos.
    'They played tennis barefoot(pl.).'

adjectival base of <u>lentamente</u>. In other words. like other non-agent-oriented adverbs, <u>lentamente</u> does not require an external argument.[3]

To summarize, by usual grammatical tests. such as distribution and inflectional properties, MA's appear to involve a change in category, and thus should be characterized as a derivational word-formation process. This is further supported by the absence of an external argument for the derived adverb, which may therefore have been deleted by a lexical process. Based on this evidence, the formation of MA's appears to be characterizable by the rule in (8a) or (8b), depending on the structure of the constituents·

(8) $[_{stem}$ Adj] + $[_{affix}$ -mente] $\rightarrow$ Adv^o

(9) $[_{A}{^o}$ Adj] + $[_{X}{^o}$ mente] $\rightarrow$ Adv^o

2. Word-level properties of MA constituents.

There is evidence that the constituents of MA's are independent words, as in (9) rather than a stem with a derivational suffix, as in (8). The evidence derives from the patterning of the internal elements--the adjective and <u>mente</u>--as independent words with respect to morphological, phonological and syntactic processes.

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[3] Furthermore, the derived adverbs cannot have internal arguments, as shown in (ib) and (id):

(i) a. Sandra está cansada de estudiar.
       'Sandra is tired of studying.'
    b. *cansadamente de estudiar
       'tiredly of studying'
    c. Es apasionado de la literatura.
       'S/he is very fond of literature.'
    d. *apasionadamente de la literatura
       'fondly of literature'

Whereas the adjective on which the adverb is based is optionally transitive, such as <u>cansada</u> in (1a) and <u>apasionado</u> in (ib), the corresponding adverb is obligatorily intransitive. Presumably, an obligatorily transitive adjective could not undergo <u>mente</u> adverb formation. No such adjectives in Spanish come to mind. (Note that transitive adjectives in English such as <u>fond</u> can be -<u>ly</u> adverbs.)

The first piece of evidence which supports analyzing <u>mente</u> as an independent word is its ability to delete under conjunction:

    (10) a. inteligente y profundamente
         'intelligent- and profoundly'
      b. directa o indirectamente
         'direct- or indirectly'

This phenomenon, which is neither grammatically marginal nor dialectally restricted, does not extend to inflectional or derivational affixes, as shown in (11). Within compounds, however, word-level morphemes do delete under conjunction, as shown in both Spanish and English in (12):

    (11) a. *industrializa- y modernización
         'industrialize- and modernization'
      b. *hablar- y escribiré
         'I will say and write' (ø=1st person sg. affix)

    (12) a. una [[madre ø] y [esposa modelo]]
         'a model mother and wife'
      b. a [pick-up ø] and [delivery boy]]

Based on the contrast between the affixal elements in (11) and the word-level morphemes in (12), <u>mente</u> and the adjective with which it occurs do not behave like a suffix and stem.

It might be argued that the structure of the conjoined phrases in (10) does not involve a null instance of <u>mente</u>. However, as Suñer (1975) observes, there is evidence of a null element, based on the contrast between MA's and "bare" adverbs such as those in (13):

    (13) Habla quedo y lento.
         '3rd. sg. speaks softly and slowly.'

Suñer notes that while bare adverbs appear in the neutral (masculine) form--observable in (13) as the marker -<u>o</u> on both adverbs, MA's have the (feminine) marker -<u>a</u> in (10b) or -<u>e</u> in (10a). Consequently, the structure for (10b) must be (14a) rather than (14b):

    (14) a. [$_{Adv}$ [$_{Adj}$ directa] [ø]] o [$_{Adv}$ [$_{Adj}$ indirecta] [mente]]

b. [$_{Adv}$ directa] o [$_{Adv}$ [$_{Adj}$ indirecta] [mente]]

Thus, the ability of <u>mente</u> to be omitted under conjunction provides evidence for its status as an independent word, since this behavior is restricted to word-level morphemes.
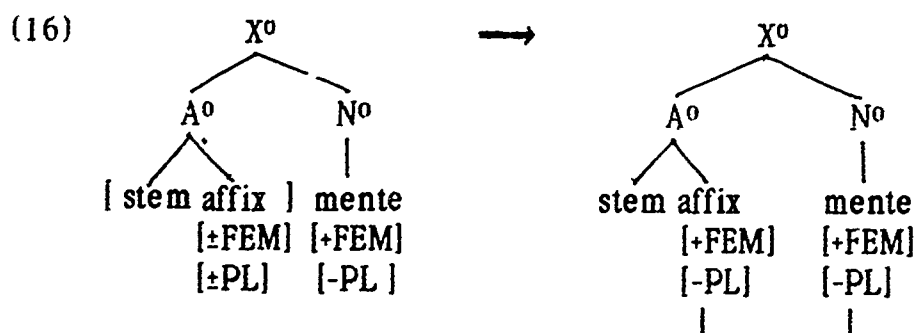
The affix, or gender marker mentioned above provides an additional argument for compound status. As Harris (1985) notes, these "word markers" generally occur only at the right periphery of X^0, and do not occur with further suffixation. In (15) for example, the underlined word markers in the column on the left disappear in the suffixed forms on the right (examples from Harris (1985)):

(15) lej<u>os</u> 'far'   lejano 'distant', lejanía 'distance'
     ram<u>a</u> 'branch'   ramificar 'to branch'
     clar<u>o</u> 'clear'   clarificar 'to clarify'

Harris notes the following exceptions to the right-peripheral distribution of word markers. They occur word-internally (a) when suffixed by the plural morpheme (eg., ram<u>a</u> 'branch' ram<u>as</u> 'branches';) (b) within compounds and (c) in <u>mente</u> adverbs. If MAs were formed by a process of derivational affixation, that process would be unique in terms of the occurrence of a word marker within the word (eg., direct<u>a</u>mente, lent<u>a</u>mente, etc.) However, if it is assumed, as is argued in Fabb (1983), that compounds involve recursion of X' levels (eg., X^0 -> ...X^0 ..,) compounds do not constitute a genuine exception to Harris' generalization, since the word marker occurs at the right periphery of an X^0. The patterning of MAs with compounds in this respect indicates that the adjective is to be analyzed as a word rather than as a stem which is suffixed by <u>mente</u>.

Harris' discussion shows that it is impossible to characterize these markers as invariably expressing gender. However, in the case of adjectives, the word-marker is the grammatical morpheme which provides a phonological matrix for expressing gender features which are assigned by agreement rules, as shown in section 1. Assuming the obligatoriness of agreement for adjectives, the feminine marker which occurs on the adjective in MA's is easily explained under a compound analysis which analyzes the second member, <u>mente</u> as a noun. One argument for treating <u>mente</u> as a nominal is its historical relation to the independent feminine noun <u>mente</u> 'mind', which is the historical source of adverbial <u>mente</u>. If the latter retains its grammatical features, including its categorial features, the adjective may be said to agree with <u>mente</u> for the features [+FEM, +SG]:

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(16)

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        X⁰                  ⟶              X⁰
       ╱  ╲                              ╱  ╲
     A⁰    N⁰                          A⁰    N⁰
    ╱ ╲     |                         ╱ ╲     |
[ stem affix ] mente              stem affix  mente
  [±FEM] [+FEM]                     [+FEM]   [+FEM]
  [±PL]  [-PL ]                     [-PL]    [-PL]
                                      |_____|
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If this is correct (and further arguments for analyzing <u>mente</u> as a nominal are given in section 3,) the constituents of MA's behave in a manner characteristic of other compounds, which may exhibit internal agreement (e.g., <u>buenaventura</u> 'good(fem.) fortune(fem.)'.)

The third type of evidence which supports analyzing the adjective and <u>mente</u> as independent words is stress assignment. MAs exhibit compound stress, which is characterized in Spanish by a second primary stress on the the same syllable of the lefthand member of the compound as is normally stressed when that word stands in isolation. These are shown for compounds in (17a) and for MAs in (17b):

(17) a. políticorreligióso   b. literálménte
        cámposánto   ágilménte
        cúmpleáños   frenéticaménte
        hispánohablánte   exquisítaménte

The main stress in the examples in (17) is penultimate. The secondary stress on the lefthand member falls on the syllable which receives primary stress independently:

(18) a. político   b. literál
        cámpo   ágil
        cúmple   frenética
        hispáno   exquisíta

By contrast, non-compounds--in at least some dialects--have secondary stress on the first syllable, regardless of whether that syllable would receive stress in isolation:

(19) a. institucionalidád
        *institucionàlidád (institucionál)
        *instituciònalidád (institución)

b. gèneralización
*generalìzación (generalíza)
*generàlización (generál)

c. còndicionamiénto
*condiciònamiénto (condición)

In (19), the secondary stress is shifted to the first syllable, differing from the stress pattern of the isolated word (on the right.) It should be noted as well that secondary stress in non-compounds is less heavy (indicated by a grave accent) and may be treated as optional.[4]

It might be argued that the stress patterns in (18) versus (19) do not show conclusively that <u>mente</u> is an independent word. An alternative explanation of the contrast might be based on a distinction between morpheme boundaries associated with different affixes, as in the model proposed in Chomsky and Halle (1968):

(20) + boundary   eléctric + ity   → electrícity
     # boundary   háppy # ness   → háppiness

Suffixes are distinguished according to whether word-internal segmental rules such as velar softening and word-level stress apply to the derived sequence. Extending this to the Spanish cases discussed above, we would get the correct stress under an analysis like (21):

(21) a. #mente   generál # ménte
     b. +ción   gèneral + iza + ción
     c. +miento   àbandona + miénto

However, there is no independent motivation for distinguishing morpheme boundary types for Spanish affixes. There are no affixes which pattern with

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[4] Certain compounds also fail to exhibit secondary stress, but the variation may be lexically governed, i.e., determined by the extent to which the compound is lexicalized. Contreras (1985) distinguishes the partially lexicalized compounds in (i), which do not necessarily exhibit compound stress, from (ii), which does:

(i) paráguas, tocadíscos
(ii) ármalíos

<u>mente</u> in deriving compound stress, and the analysis would thus be purely stipulative.[5]

To summarize, MAs behave as independent words with respect to phonological, morphological and syntactic processes of Spanish. <u>Mente</u> patterns with words rather than with affixes in its ability to be omitted under conjunction; the adjective patterns with words (not with suffixed stems) in its ability to bear a word marker; and the derived adverbs pattern with compounds in stress assignment. These facts support internal structure as in (9), rather than a structure involving affixation, as in (8). I will furthermore assume provisionally that the category of <u>mente</u> may be nominal, based on the agreement facts noted above. Thus, (9) may be restated as (22):

(22) $[_{A^0}$ Adj $] + [_{N^0}$ mente $] \rightarrow Adv^0$

3. Compound Types and Interpretation.

Under an analysis such as (22), it is necessary to consider whether the hypothesized process falls into an independently motivated class of compounds.

3.1. Compound Types

The two broad classes which have been traditionally assumed[6] include endocentric, or headed compounds and exocentric (non-headed) compounds.

Endocentric compounds are of two types: verbal and nonverbal. As characterized in Selkirk (1982), verbal compounds involve the formation of a noun or adjective with a deverbal head, and a non-head member which

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[5]   An alternative explanation, proposed in Brame (1974) is that word stress applies cyclically in <u>mente</u> adverbs:
   (i) 1st cycle: [generál]
        2nd cycle: [[generál] ménte]

Suñer (1975) shows that under a cyclic account of stress assignment, these cases would still be exceptional in failing to undergo erasure of non-rightmost stress (Harris (1969)) indicating that <u>mente</u> should be bracketed separately. Phonologically then, it behaves as an independent word.
[6] See for example Selkirk (1982) and Fabb (1983).

fulfills a thematic role with respect to the verb. For example. the left-hand member of the following compounds is interpreted as a Theme of the head:[7]

(23) <u>Verbal Compounds:</u>
time-saver
housecleaning
water-repellent
troop deployment
property appraisal

Nonverbal compounds do not involve a thematic relation between the head and non-head member. Any type of modification relation can be involved:

(24) <u>Non-verbal Compounds:</u>
high school
overdose
swearword
tongue-lashing
white-hot

A characteristic of both verbal and nonverbal endocentric compounds in English is that they conform to the Right-hand Head Rule (Williams (1981),) according to which the righthand member of a morphologically complex word is defined as the head. So, for example, a compound noun can be formed by composing any lexical category as a left-hand member, with a noun as the right-hand member. The derived word is a noun, and the interpretation takes the right-hand member as the nucleus (examples from Selkirk (1982)):

(25) apron string N N
smallpox A N
underdog P N

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[7] Spanish does not have verbal compounds of the type in (23). For example, corresponding to English deverbal compounds in (i), there are only the non-compound forms in Spanish in (ii):
(i) a. train-conductor
b. housecleaning
(ii) a. conductor de trenes (cf. *tren-conductor)
'conductor of trains'
b. limpieza de casas (cf. *casa-limpianza)
'cleaning of houses'

rattlesnake   V N

Contreras (1985) has argued that Spanish endocentric compounds are headed by their left-hand member. For example:

(26) camposanto 'cemetary, burial-ground' N+A → N
      buque escuela 'school ship' N+N → N

The first example takes its category from the left-hand member, and is a type of ground (campo). A buque escuela is a type of ship (buque), not a type of school (escuela). However, the only exception to the left-hand head generalization for Spanish which Contreras notes are those involving A+N, which derive nouns:

(27) [$_A$vana] [$_N$gloria] 'vainglory'
      [$_A$buena] [$_N$ventura] 'good luck, fortune'

Looking now at exocentric compounds, examples are the following:

(28) Exocentric Compounds:
      a. cutthroat pickpocket, sawbones   (V+N → N)
         sacamuelas, abrelatas, tocadiscos
         'pull-teeth (dentist) open-cans (can opener) play-records
          (record player)
      b. redhead, longlegs, heavyweight   (A+N → N)
         pelirrojo, patizambo, patisucio   (N+A → N)
         'redhead' 'knock-knee' dirty foot'

The compounds in (28) are considered exocentric (in Selkirk (1982) for English, and Contreras (1985) for Spanish)) because their interpretation does not derive from either member (with the other member functioning as a modifier.) Both elements taken together modify someone or something with the property described by the compound. A pickpocket is not a type of picking action, nor a type of pocket, but rather someone who does pick pockets. Similarly, a redhead is not a type of head, but a person with the property of redheadedness.

The exocentric compounds in (28a) differ from those in (28b) in terms of whether the relation between the two members of the compound is thematic or is one of modification. In pickpocket and sacamuelas, the second member of the compound is the theme, or object of the underlying verb. In

(28b), the relation is simply one of modification: longlegs involves modification of legs, and the Spanish form pelirrojo involve a modification of peli 'hair(archaic plural form)'.

3.2. Interpretation of MA's.

Under a compound analysis of MA's, the questions of interpretation which arise include those in (29):

(29) a. Is the relation between the adjective and mente thematic or of modification?
b. Are MA's endocentric or exocentric?
c. If MA's are endocentric, which member is the head?

3.2.1. The relation between the adjective and mente.

Beginning with the question in (29a), the interpretation of MA's excludes the possibility that the the relation between the adjective and mente is one of modification. Suppose, for example that mente were assumed to modify the adjective. Such an interpretation, however, cannot be given. Compare, for example, sky-blue, which is a particular type of blueness characteristic of the sky, with lentamente, 'slowly'. Lentamente is not a type of slowness: its meaning is not restricted or modified by the addition of mente.

One might suppose that the adjective modifies mente. A plausible interpretation of mente, which would function well in a variety of cases, is 'manner'. Thus, lentamente is a slow manner, and rápidamente i. a quick or rapid manner. However, there are a number of exceptions to this interpretation. Two very general exceptions to manner interpretation are exemplified in (30) and (31):

(30) Empieza a las ocho, (probablemente, posiblemente, obviamente.)
'It starts at eight, (probably, possibly, obviously.)
(cf. *in a probable, possible, obvious manner)

(31) Esto es (meramente/completamente) falso.
'That's (merely/completely) false.'
(cf. *in a mere, complete manner.)

In (30), the MAs modify a clause, and are based on adjectives which ი. ჲ modal or 'speaker-oriented'. They cannot be construed with manner

interpretation. In (31), the MA modifies an adjective, and has degree rather than manner interpretation. It appears then, that the manner interpretation usually attributed to MAs is determined by syntactic context, specifically that of VPs which permit manner modification.

Since neither member of MA compounds can be construed as modifying the other, it follows that, whether MA's are exocentric or endocentric, the relation between the two members--the adjective and mente--is not modificational. It remains to provide evidence that there is a plausible interpretation involving a thematic relation between the adjective and mente. However, it should be noted that the examples of compounds illustrated in 3.1. which involve a thematic relation are based on verb stems. The thematically related elements are interpreted as objects of the underlying verb. MA's do not, of course, contain a verb stem as a base, and do not involve an object of the adjective (see note 3). However, verbs and adjectives share the property of assigning a thematic role to a subject (external) argument. The term "verbal" compound may thus be extended to include compounds of any predicative category whose interpretation involves a relation between the head which selects an argument and that argument.

There is evidence that mente satisfies the external argument of the underlying adjective on which MA's are based. The first type of evidence concerns the variable interpretation of mente according to individual properties of the adjective. As the discussion of (30)-(31) showed, it is not possible to analyze mente as having a uniform meaning. Under an analysis which treats mente as expressing the subject of the adjective, it is expected that the relation between the adjective and mente will reflect the thematic and selectional relations between the adjective and its subject. For example, probablemente is equivalent to: "x is probable", and lentamente is equivalent to "x is slow". The distribution of the MA can then be stated in

terms of selectional relations between the predication expressed by the adverb and the phrase which it modifies.[8]

A second piece of evidence concerns the fact that there are certain types of adjectives which cannot serve as the base for MA's. One type is referred to in Demonte (1982) as "relational" adjectives which express a thematic relation such as source or location, rather than expressing a property:

(32)   Adjective: Adverb:
         paterna 'paternal'   *paternalmente
         pirenaica 'of the Pyrenees'   *pirenaicamente
         roussoniana 'Rousseauian'   *roussonianamente
         documental   *documentalmente

By contrast, relational adjectives which can express a property can be adverbialized:

(33)   Adjective: Adverb:
         visual 'visual'   visualmente

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[8] Note that the problem of characterizing a uniform interpretation of mente is not an artifice of the compound analysis. On the contrary, the same problem counts as an argument against a derivational affix analysis of mente. It is invariably the case that productive derivational affixes can be inherently specified with respect to a semantic or thematic role which contributes to the interpretation of the derived word class. For example, the Spanish and English derivational affixes in (i) and (ii) may be roughly glossed as shown:

(i) a. -ada (mirada, lavada): action
     b. -dero (matadero, comedero): place
     c. -dero (abridor, medidor): instrument
     d. -azo (latigazo, cañonazo): blow
     e. -dor (cobrador, conductor): agent
     f. -ura (altura, espesura): quality

(ii) a. -er (buyer, seller): agent
     b. -ness (redness, awareness): state of

The impossibility of characterizing mente in this way is thus problematic in either case. Under the compound analysis, however, it is problematic only for certain types of compound classification, rather than in principle.

natural 'natural'	naturalmente
físico 'physical'	físicamente
eléctrico 'electric'	eléctricamente

If the interpretation of the adjectives in (32) derives from the thematic role (location, source) associated with the adjectival affix (-ica, -al etc.), rather than from a property predicated of a subject, it is natural to assume that these adjectives have no argument structure, and therefore cannot express a subject argument within a corresponding MA. The predicative adjectives in (33) however, can be interpreted by predication (i.e., by relatedness to a subject which they select), and therefore can be converted to MA's by expressing the subject as mente.

A further argument for mente as the bearer of the external theta-role of the adjective is that it accounts for the impossibility of mente adverbs based on passive participles. Compare the ill-formed adverbs in (34) with those in (35):

(34) *ordenadamente 'orderedly'
     *odiadamente 'hatedly'
     *permitidamente 'permittedly'
     *acusadamente 'accusedly'

(35) supuestamente 'supposedly'
     desesperadamente 'desperately'
     cerradamente 'closedly'
     inusitadamente 'unexpectedly'

The participles in (34) are passive participles rather than lexically formed adjectives. They occur in syntactic passive constructions such as (36), but not with copular estar 'be' as in (37), and do not take in- 'un-' prefixation:

(36) a. fue ordenado/odiado/permitido/acusado
     b. se ordenó/odió/permitió/acusó

(37) *Está ordenado/odiado/permitido/acusado

(38) *inordenado, *inodiado, *impermitido, *inacusado

It has been argued in much recent work that the external argument associated with the verb underlying passive participles is an implicit argument. In other words, it is present syntactically, although the theta role is not assigned to an argument position. This 'implicit' argument has been

analyzed, for example in Zubizarreta (1985), as involving absorption of the theta-role by the passive affix. The predictions for the present analysis are the following. Since only lexical adjectives have the ability to assign a subject theta role, and if mente adverbs require assignment to some syntactic position, then only lexical adjectives should be subject to mente adverb formation. Since the process which derives passive participles has the effect of absorbing or "deargumentalizing" the external argument, assignment of that role to mente would lead to a Theta-criterion violation (dual assignment), or to an uninterpretable adverb (if mente is not assigned a theta-role.)

The forms in (25), on the other hand, which do undergo mente adverb formation, exhibit properties of lexically formed adjectives. Those in (39), for example, cannot occur in syntactic passive constructions:

(39) a. *fue supuesto que...
     b. *fue desesperado
     c. *fue inusitado

The participle cerrado does occur in passive constructions, but must also occur as an adjective at D-structure, based on its occurrence with estar:

(40) Está cerrado. 'It's closed.'

Unlike lexically formed adjectives, passive participles, which are derived in the syntax and which have implicit external arguments, cannot undergo mente adverb formation. This supports the analysis of mente as a nominal which requires assignment of a thematic role: that of the external argument of the adjective.

3.2.2. Are MA's Endocentric or Exocentric?

Under an exocentric analysis of mente adverbs, an interpretation could be based on the predication relation between the adjective and its subject. However, there are two respects in which this analysis does not extend neatly to mente adverbs. First, the derived words are not nominals, and it is consequently counterintuitive to characterize the semantic nucleus as the subject of the predication. For example, lentamente is not 'some x which is slow.' Second, this analysis does not account for the role of mente in the interpretation. Recall that the exocentric compounds discussed in 3.1. could also be characterized in terms of whether the elements of the compound are related thematically or by modification. If MA's were analyzed as exocentric, it would still be necessary to account for the thematic

relation between the adjective and _mente_. As the discussion of 3.2.1. has shown, this relation can only be characterized as thematic--with _mente_ expressing the subject of the adjective--rather than as modificational. An exocentric analysis of MA's would therefore require it to be assumed that the subject thematic role could be assigned twice: once within the compound, and once external to the compound. Since this would violate the Theta-Criterion of Chomsky (1981), according to which a thematic role must be uniquely assigned, such an analysis is untenable.

3.2.3. If MA's are endocentric, which member is the head?

This section argues that the adjective is the head of MA's. Arguments in favor of treating the adjective as the head include the following. First, if the adjective is the head, MA's conform to template of Left-hand heads in Spanish, as discussed in 3.1. Recall, however, that it was noted in 3.1. that the only exception is compounds of the form (41):

(41) $A^0 + N^0 \rightarrow N^0$ (eg., buenaventura, vanagloria)

The predictability of left-hand heads, with this exception, may not require stipulation if compounds simply reflect syntactic constituent ordering. The fact that heads precede objects and modifiers in compounds such as (42)

(42) a. _buque_ escuela
     b. _saca_muelas

reflects the "head-initial" structure of phrasal constituents in Spanish. In (42a), the noun-noun compound is head-initial. In (42b), while _saca_ is not the semantic head of the exocentric compound, it is the head with respect to the noun, and the verb+object order again reflects syntactic order. The exception noted in (41) is also reflected in the order of phrasal constituents While adjectives both precede and follow the nouns they modify, the order in (41) is a possible syntactic order. An analysis of MA's which treats _mente_ as the subject should then be expected to follow the unmarked order of subjects with respect to predicates. As in the case of adjective-noun pairs, both orders are possible:

(43) Subject precedes predicate:
     Los niños duermen.
     'The children are sleeping.'

(44) Predicate precedes subject:
     a. Consideraron [inteligentes a esos estudiantes]

'(They) considered [intelligent those students]
b. Hicieron [salir a Marta]
'(They) made [leave Marta].'
c. la foto de Juan
'Juan's photo'

It should therefore be possible for a subject to follow the predicate which
assigns it a thematic role within compounds. The difference between MA's
and compounds of the type in (41), both of which consist of $A^0 + N^0$, may
simply follow from the distinct relations which obtain within the compound.
If the basic order is head-initial, MA's conform to expected ordering, while
the compounds in (41) do not, and it is the latter which must be treated as
exceptional.

A second argument in favor of treating the adjective as the head is
that the distribution of MA's is contingent on selectional features of the
adjective. It was noted above that MA's such as probablemente and
posiblemente modify clauses, while lentamente, claramente may modify a
VP. If the head were mente, its features should be dominant selectionally.

Third, if it is correct that mente is a noun, treating it as the head
would incorrectly predict that the phrase should have the distribution of a
noun phrase. While NP's must be assigned a thematic role and can only
occur in argument positions, MA's occur in positions which are not assigned
any thematic role. On the other hand, if the adjective is the head, the
distribution of MA's can be accounted for. As a predicate category, an MA
does not occur in argument positions. Furthermore, since its subject
thematic role is assigned internally to mente, it cannot occur in positions of
obligatory predication, such as predicate adjective positions. Note as well
that if this is correct, it is not necessary to assume that the rule assumed
thus far in fact has the effect of changing the category of the underlying
adjective. Rather than (45a), the process in (45b) can be assumed:

(45) a. $A^0 + N^0 \rightarrow Adv^0$
b. $A^0 + N^0 \rightarrow Adj$

The distribution of adjectives with this structure follows from the
internalization of the subject argument.[9]

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[9] The prediction as to the distribution of MA's is due to Arnold Evers,
personal communication.

Finally, a potential argument against treating the adjective as the head is given in Bosque (1986). Based on the omissibility of <u>mente</u> under conjunction, Bosque proposes treating <u>mente</u> as a head, based on the generalization that only heads can be null.[10] Bosque observes the similarity between examples such as (46) and MA's:

(46) a. naciones infra y superdesarrolladas
'under- and super-developed nations'
b. sociología pre y protohistórica
'pre- and protohistorical sociology'

The structure of these constituents is argued to be as in (47) with the overt morpheme functioning as a modifier:

(47) $[_{A'}$ $[_A$ pre ε] y [pos electorales]]
'pre- and post-electoral'

The phenomenon of null heads in conjunction structures is also observed in English, as shown in the glosses for (46), and in compounds such as (48):

---

[10] Spanish pronominal clitics, which might be analyzed as independent morphemes at some level of syntactic analysis, cannot generally be omitted under conjunction either, as in the ungrammatical (i)-(iii):

(i). *Me lo escribirá o dirá.
'to me it s/he will write or say'
(ii). *Siguen tocando y cantándomela.
'They keep playing and singing it to me.'
(iii). *para escribir o decírmelo
'in order to write or say it to me'

Bosque (1986), however, cites examples of structures such as (iv), which are well-formed with a proclitic, if the conjoined verbs carry identical person and number features:

(iv). Lo leyó y resumió
'it (s/he) read and summarized'

These contrast with enclitic structures in grammaticality:

(v). *(Lee y resume)lo 'Read and summarize it.'

(48) a. [[pick-up ø] and [delivery boy]]
     b. [[table ø] and [floor-lamps]]
     c. [[grain ø] and [feed-storage]]

Generalizing this analysis to _mente_ adverbs, Bosque suggests analyzing _mente_ as a head. _Mente_ is then predicted to be modified by the adjective, rather than functioning as its subject argument.

If the above arguments in favor of analyzing the adjective as the head are correct, the question then arises as to the conditions which permit a non-head, _mente_, to mirror behavior under conjunction (omissibility) which is apparently otherwise restricted to heads. One explanation for this anomaly would be to relate the omissibility of _mente_ to that of other null subjects in Spanish, i.e., to the Null-subject parameter. The occurrence of the empty category, as in other null subject constructions, is licensed by the "richness of inflection" of Spanish, specifically, the feminine singular inflection on the adjective. If this is correct, the aspect of the omissibility of _mente_ that would require further explanation is that it is only possible in conjunction structures, and not more generally. This may be derivable from the non-pronominal character of the empty category. Since _mente_ is not a pronominal, its features are not fully recoverable from the number and gender features of the adjective.

## 4. Internal Subjects and the Projection Principle.

In this section I return to the issue of the constraint proposed in Selkirk (1982) regarding the impossibility of subjects internal to compounds. The constraint is repeated as (49):

(49) The SUBJ argument of a lexical item may not be satisfied in compound structure.

4.1. Lexical Representations and the External Argument.

Zubizarreta (1985) claims that this restriction on compounds follows from the structure of lexical entries, in which internal and external arguments are distinct. Internal arguments, it is argued, are inherently linked to syntactic frames, while external arguments are not. For example, the verbs _cry_ and _hand_ have the entries in (50a) and (50b):

(50) a. cry: arg

```
b.  hand: arg, arg,    arg
             |      |
          <__NP>  <__to>
```
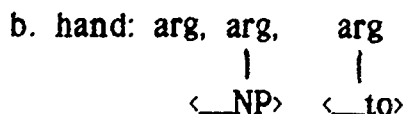
Since <u>cry</u> has only an external argument, there is no specification of a syntactic frame. The verb <u>hand</u> has two internal arguments, the first of which is realized syntactically as NP, the second is a PP headed by <u>to</u>. Again, the subject argument of <u>hand</u> is not linked to a subcategorization frame in the lexicon.

The arguments for this type of lexical representation are the following. First, the syntactic frames of internal arguments are not predictable, while those of external arguments are (NP or S.) Second, lexical rules can refer to syntactic frames.[11] Third, external arguments can be syntactically unrealized, while internal arguments must be syntactically realized.

Two cases of external arguments which are "lexically present" but syntactically unrealized are the subject arguments of derived nominals and of passive participles. These "implicit arguments" have syntactically distinct properties from subjects which are lexically absent by virtue of the application of a lexical rule which deletes them. Compare the possibility of agent-orented adverbs and purpose clauses with passive participles in (51) versus the impossibility of the same with the inchoatives (or anticausatives) in (52):

(51) a. The boat was sunk voluntarily/intentionally.
     b. The house was burned in order to collect the insurance.

(52) a. *The boat sunk voluntarily/intentionally.
     b. *The boat sunk in order to collect the insurance.

The anticausatives are derived from transitive verbs by a lexical operation which deletes the subject argument. That argument is thus purely absent throughout any syntactic derivation involving it. The passives in (51), however, have a subject which is not syntactically present, but is lexically present. It has not been deleted by any operation, and is lexically present for the syntax, and can control agent-oriented adverbs and the subject of purpose clauses. It is interpreted as an indefinite or generic argument, depending on the choice of verb and its aspect.

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[11] One instance which seems compatible with Zubizarreta's analysis is Roeper and Siegel's (1978) verbal compound rule, which operates on subcategorization frames.

The failure of external arguments to occur within compounds is claimed by Zubizarreta to follow by definition, since an external argument must be realized outside the syntactic projection of the V. Under this analysis, *girl swimming is an ungrammatical compound for the same reason that *swim children is an ungrammatical VP: the subject is realized phrase-internally.[12] The only condition under which a subject may be realized phrase-internally is when it takes the form of an adverbial modifier, as in the by-phrases which restrict the reference of an implicit subject:

(53) a. the destruction of the city by the enemy
 b. John was killed by the robbers.
 c. The law forbids [cigarette-smoking by children].

Under Zubizarreta's analysis then, the external argument of a head may be (a) deleted by a lexical operation (b) unrealized syntactically (with a potential adverbial modifier) or (c) projected syntactically to a phrase-external position. It cannot be syntactically represented phrase-internally, as evidenced in the ungrammaticality of compounds such as *girl-swimming.

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[12] Zubizarreta argues that the by-phrase restricts the meaning of the implicit subject, in the same way that other adverbials can restrict the meaning of other arguments. For example, in (ii):

(ii) John put the box in the closet under the blanket.

the adverbial under the blanket restricts the locative in the closet. Further arguments for adverbial status of by-phrases are given by Zubizarreta, and will not be reviewed here.

Fabb (1983) also notes that forms like government-financing are grammatical, but do not have compound stress. They may be analyzed as having phrasal structure, with government functioning as a modifier.

4.2. Internal Subjects and Predication.

From Zubizarreta's analysis it appears to follow that no structure of the form (54) is possible as a syntactic representation:

(54)

$$A^0$$
$$A^0 \quad N^0_{(subj)}$$
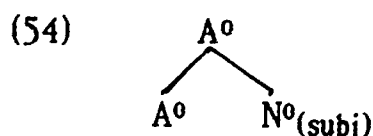
Such a structure would appear to violate the Projection Principle:

> (55) Projection Principle: Representations at each syntactic level (i.e., LF, and D- and S-structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items. (Chomsky 1981:29)

The argument position represented by N^0 in (54) is not projected from the lexicon, since, following Zubizarreta, no head can provide a subcategorization frame for its subject argument, either inherently or as a result of a lexical process.

However, the fact that subject arguments can be "lexically present" in structures like (51) and (53) without being syntactically realized indicates that the constraint against phrase-internal subjects is not a constraint against the presence of subject θ-roles per se, but is rather a constraint on the assignment of such roles. Note that the constraint also cannot be construed as prohibiting positions to which no role is assigned. If this were correct, there should be no modifiers possible phrase-internally or compound internally. It must be that such a position cannot be directly θ-marked by the head such that it is interpreted as an internal argument of the head.

Suppose, however, that a phrase-internal (or compound-internal) position could be licensed by some means which does not involve direct assignment of a θ-role, so that the lexical properties of the head are projected from the lexicon throughout the syntax. For example, if the structure in (54) permits the subject argument to be implicit, or retained as an unassigned feature of the head, as shown in (56),

(56)

$$A^0$$
$$A^0 \quad N^0$$
$$[+\theta]$$
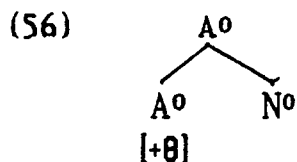
the N^0 would not be interpreted as an argument, and the Projection Principle is not violated. The remaining question is how the N^0 can be interpreted as the subject without the Projection Principle being violated.

I will propose that the interpretation of an N^0 as subject of a compound results from extending the process of Predication to the X^0 level of representation. As argued in Rothstein (1983), Predication is an S-structure coindexing procedure which saturates a predicate (an open function) by linking it to an argument, as in (9):

(57) Rule of Predicate Linking (for English):

    a. Every non-theta-marked XP must be linked at S-structure to an argument which it immediately c-commands and which immediately c-commands it.

    b. Linking is from right to left (i.e., a subject precedes its predicate.)

An argument, within this context is not necessarily a position to wl.. h a theta-role is assigned, but is a closed, i.e., non-predicative XP. Immediate c-command can be stated informally as a relation between two elements which are dominated by all the same nodes.

If Predicate Linking (represented as coindexing) were permitted to apply to X^0 elements as well as phrasal level elements, the A^0 and N^0 in (56) could be linked if the directionality condition in (57b) were ignored:

(58)

$$A^0$$
$$A^0_i \quad N^0_i$$
$$[+\theta]$$
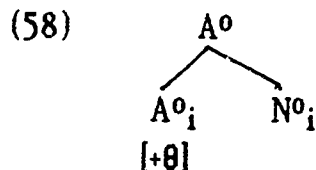
Recall from section 3.2. that Spanish subjects can follow predicates. I will assume that the directionality specified in (57b) does not hold for Spanish.

As a result of Predicate Linking, N^0 can be interpreted as the subject of the adjective under the definition of subject in (59):

> (59) X is the subject of γ if and only if γ is linked to X under [(57)].
> (Rothstein 1983:27)

This linking satisfies the syntactic (S-structure) requirement for a subject of the adjectival head of the compound. It should be the case, however, that the coindexed N^0 can be associated with the unassigned theta-role which is borne by the head. The relation between the "formal" subject determined by coindexing and the "semantic" subject determined by thematic roles is provided for as in (60):

> (60) If X is the formal subject of γ at LF, and the head of γ denotes an n-place relation, then at SR [Semantic Representation], X is interpreted as being the first argument in the relation denoted by the head of γ.

A potential problem for the present proposal concerns the relation between the head and the phrasal level. If the phrase is predicated internally by relating the head to another phrase-internal element, it would appear that the principle in (57) would be violated unless the maximal projection of the adjective were also predicated. However, an additional instance of predication coindexing would attribute two subjects to the phrase, under the assumption that the phrase is a projection of the features of the head. However, this assumption, made explicit in Chomsky (1986) provides a solution for this problem. Chomsky assumes that heads agree with their maximal projections, which permits the Predication index shared by A^0 and N^0 to percolate to the phrasal level:

(61)

$$AP_i$$
$$|$$
$$A_i$$
$$A_i \quad N_i$$
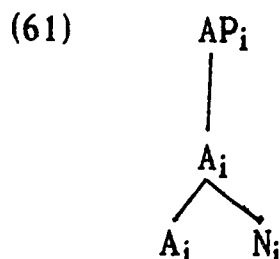
Since the head agrees with its maximal projection, both the head and AP are predicated of N^0. The phrase cannot be further predicated, since all predicates are assumed by Rothstein to be monadic.
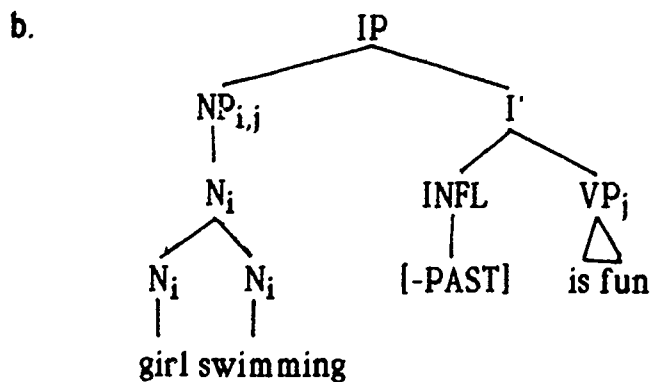
4.3. Predication and NP

The impossibility of compounds which Selkirk's principle excludes, such as *girl-swimming, can be independently ruled out by the impossibility of applying predication within NP. The structure of these compounds after predication is (62):

(62)

$$NP_i$$
$$|$$
$$N_i$$

$$N_i \qquad N_i$$
$$| \qquad |$$
$$girl \quad swimming$$
$$[+\theta]$$
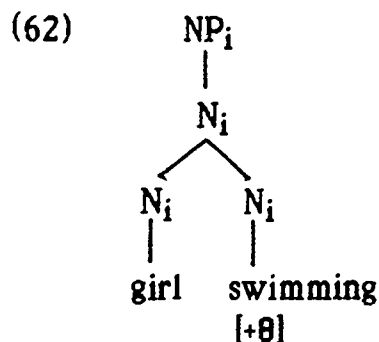
The NP dominating the compound bears the index of the internal subject, girl which is interpreted at SR as bearing the subject role of the verb swim. The predicate swim is "closed" by being linked to the internal subject girl. Unlike the predicative compound discussed above, these must appear in an argument position, and be assigned a theta-role from outside. Consequently, the maximal projection is associated with two theta-roles: the role assigned from outside, and the role associated with the subject of predication:

(63) a. *Girl-swimming is fun.

b.

$$IP$$

$$NP_{i,j} \qquad\qquad I'$$
$$| $$
$$N_i \qquad\qquad INFL \quad VP_j$$

$$N_i \qquad N_i \qquad [-PAST] \quad is\ fun$$
$$| \qquad |$$
$$girl\ swimming$$

Thus, the hypothesis that Predication may occur at the X^0 level, together with the assumption that indices percolate to maximal projections, exclude compounds of this type.[13]

Finally, consider the compounds in (64), discussed in Fabb (1984):

(64) moth eaten   expert tested   god forsaken
      time honored   state owned   worker initiated
      sun dried   moon struck

The syntactic structure of these compounds, after predication is predicted to be (65):

(65)

$$AP_i$$
$$|$$
$$A_i$$

$N_i \qquad A_i$

$|\qquad\quad|$

moth eaten

[+θ]
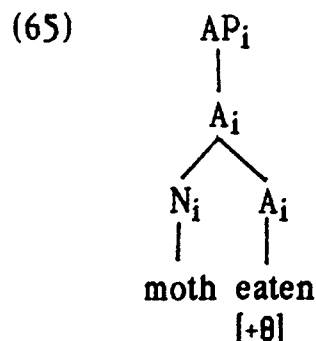
These compounds are problematic both for Selkirk's and Zubizarreta's claims as well as for the present analysis. They provide a counterexample to the claim that subject arguments cannot occur compound-internally, but they also provide a counterexample to the claim that compounds subject to internal predication cannot be further predicated due to percolation of the predication index to the phrasal level. The possibility of predicating these phrases externally is shown by the fact that they can occur (marginally, perhaps) in predicate adjective positions:

(66) a. Those blankets look moth-eaten.
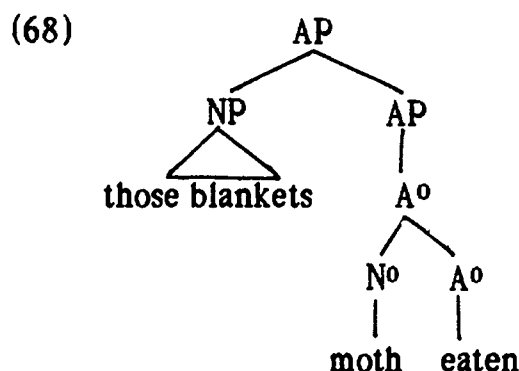   b. These raisins don't seem sun-dried.

The indexing for (17a) would then have to be as in (18):

(67) [$_{NP}$ those blankets]$_i$ look [$_{AP_i}$ moth$_j$ eaten$_j$].

---

[13] See Williams (1982) for arguments that Predication cannot occur within NP. Grimshaw (1986) argues that possessives are not external arguments of NP, but are adjuncts.

Based on (67), it appears that a predication index assigned within a compound does not have to percolate to the phrasal level. If this is correct, there is no longer a clear explanation for the ungrammaticality of (63).

The framework of Chomsky (1986) provides a potential explanation for the contrast between (63) and (67). It is assumed there that movement can occur in any component of the grammar, and a lexical process which externalizes an object can be taken as an instance of such movement. In this case, the syntactic representation of this movement may be as in (68):

(68)

```
              AP
            /    \
         NP        AP
        / \         |
  those blankets    A⁰
                   /  \
                 N⁰    A⁰
                  |     |
                moth  eaten
```

The adjunction structure in (68) is present at D-structure as a consequence of lexical movement and the Projection Principle. Now there are two APs which can each bear a predication index as in (69):

(69) $[_{NP}$ Those blankets $]_i$ look $[_{AP_i}$ t_i $[_{AP_j}$ moth$_j$ eaten$_j$ $]$ $]$.
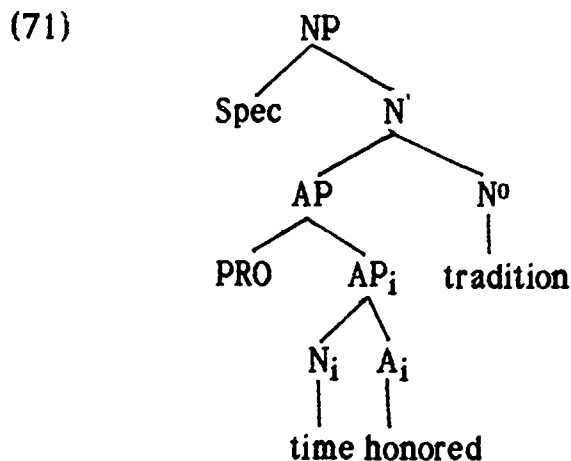
In (69), t_i is the trace of the lexically externalized object, which has moved to the clausal subject position to be assigned Case. The NP (or its trace) provides a predication index for the higher AP; the lower AP is licensed by the internal subject.

The core of this explanation relies on the possibility that an adjoined XP, which has no true lexical head, may bear a Predication index distinct from that of a lower segment of the same category (AP_j in (69)). If this is possible, an account of the ungrammaticality of (63) is maintained, because adjunction to NP is permissible only to a non-argument, so adjunction to NP is impossible.

While the analysis in (20) should perhaps be considered marginal, such a conclusion coincides with the fact that compounds of the type in (64) occur much more freely in prenominal position:

(70) a. a time-honored tradition
   b. a worker-initiated plan
   c. an expert-tested product
   d. a moth eaten blanket

The structure for (70a) is shown in (71):

(71)

```
                  NP
                /    \
            Spec      N'
                    /    \
                  AP      N⁰
                 /  \      |
              PRO    AP_i  tradition
                    /  \
                  N_i   A_i
                   |     |
                 time  honored
```

In (71), PRO can be controlled by the head tradition, without Predication coindexing assigning a distinct index to the higher AP.

   To conclude, it has been shown that the prohibition against phrase-internal subject arguments does not necessarily follow from the impossibility of lexical linking of subject arguments, taken together with the projection principle. Since Predication coindexing provides a means of syntactically linking a predicative head with a noun, and since subject theta-roles can remain unassigned (and thus carried by the head), subjects can be contained within compounds.

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