A constructional analysis for the skeptical

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Abstract

This paper addresses the issue of phonologically null elements in HPSG by providing an analysis of the construction exemplified by NPs such as 'the rich', 'the beautiful', 'the unemployed', which lack an overt noun. The properties of this construction are explored in detail, and a number of approaches described: in particular approaches which posit a phonologically empty noun, and constructional approaches. It is shown that a constructional approach is empirically superior. This is interesting, theoretically, because empirical differences between such approaches have proved elusive hitherto.

1   Introduction

This paper addresses the issue of phonologically null elements in HPSG by providing an analysis of the construction exemplified by *the merely skeptical* in (1), and the examples in (2).

(1)   This will not convince a cynic but may persuade [the merely skeptical].

(2)   the (unconventionally) beautiful, the (recently) unemployed, the (severely) disabled, the (chronically) sick, the (truly) lazy, the (merely) incompetent, the (wretchedly) poor, the (obscenely) rich, the (unalterably) pious, the (unbearably) pompous, the old, the young. . .

The construction appears to involve an NP which lacks a nominal head, but which is otherwise normal. Our focus will be on discussing the empirical problems faced by analyses involving a null head, and on providing a constructional analysis that improves on existing accounts (though we will briefly discuss another approach which involves 'sharing'). Theoretically, this is an interesting result, because it is in general difficult to find empirical differences between constructional analyses and analyses involving a null head, and the choice has often been seen as a matter of simplicity, taste, or convenience.[1]

Apart from the presence of an adjective (potentially modified by an adverb), and absence of a head noun, the most obvious features of the NP in this construction are a definiteness requirement (so (3a) and (3b) are unacceptable), plurality (so in (3c) a plural verb form is required), and the interpretation (*the skeptical* means roughly 'individuals who are skeptical'):

[†]As well as HPSG 2015 in Singapore, versions of this paper have been presented at the Second European Workshop on HPSG (November 2014, in Paris), and the 2014 meeting of the Linguistics Association of Great Britain. We are grateful to participants at those meetings, to our colleagues at Essex, and anonymous referees for HPSG 2015, as well as Emily Bender, Olivier Bonami, Bob Borsley, Dan Flickinger, Daniele Godard, Taka Maekawa, Nurit Melnik, David Oshima, Frank Van Eynde, and Gert Webelhuth. Remaining deficiencies are entirely our responsibility: in particular, as example (1) makes clear, the title of this paper involves a weak pun, for which we apologize.

[1]See, for example, the different analyses of null-copula constructions in Bender (2001), and the discussion in Müller (2014, 102ff); other discussions bearing on the existence of phonologically null elements in HPSG include Nerbonne and Mullen (2000); Henri and Abeillé (2007); Laurens (2008); and Arnold and Borsley (2014).

(3) a. *This will convince even a skeptical.   (cf. a skeptical individual)
    b. *We met several skeptical.   (cf. several skeptical individuals)
    c. [The merely skeptical] are/*is easier to convince.

Following Fillmore et al. (2012), we will refer to this construction as the 'ANH' construction (Fillmore et al.'s `Adjective-as-Nominal.human` construction). These properties distinguish it from a number of superficially similar, but actually rather different, constructions which we will not discuss here (cf e.g. Huddleston and Pullum, 2002, 410ff).

First, there are normal NPs that are headed by nouns which happen to be homophonous with adjectives – nouns presumably derived from adjectives by a morphological conversion process. For example, *intellectual* as in (4b), behaves like a normal noun in accepting adjectival (rather than adverbial) modifiers, inflecting as a normal nouns (e.g. for plural, (4c)), and taking a full range of determiners (again, see (4c)).

(4) a. She is *an intellectual*.
    b. She is *an (alleged/*allegedly) intellectual*.
    c. *Some/All/Most intellectuals* accept these ideas.

There are also constructions which genuinely lack a nominal head, but which should also be distinguished from the construction we are concerned with. For example, superlative and definite comparative adjectives can appear without nominal heads, as in (6), but unlike the kind of NP we are interested in, such NPs can be singular, as shown in (5) and refer to inanimates, as in (6):

(5) [The most/more interesting] of his ideas has been ignored.
(6) [The older/oldest] of the books is also [the cheaper/cheapest].

There is also an elliptical construction, exemplified in (7): the *the merely geographical* in (7a) is interpreted as 'the merely geographical sense'; in (7b) *the abstract* means 'the abstract word'; in (7c) *a second* means 'a second child'. As example (7c) makes clear, the elliptical construction is not required to be either definite or plural:

(7) a. It is a distinct entity, in other senses than [the merely geographical].
    b. Prefer the concrete word to [the abstract].
    c. After having a first child, they decided they wanted [a second].

Finally, one should distinguish NPs which denote more or less abstract objects or qualities, as in (8), which are also singular, presumably because they denote uncountables:

(8) [The merely implausible] is often mistaken for [the completely impossible].

Of course, in the absence of a formal analysis any classification is at best tentative. However, we believe the construction we are concerned with here is sufficiently distinctive and productive to merit individual attention, and potentially provides a basis for a wider investigation of these other constructions.[2]

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[2]Many examples will be ambiguous, e.g. *[The immortal] can seem beyond our understanding* might

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The remainder of the paper is structured as follows. Section 2 will describe the key features of this construction in more detail, including some features that seem to have been overlooked. Section 3 will review some relevant literature and existing proposals, and develop explicit analyses: in Section 3.1 we briefly consider an approach based on multi-dominance or 'sharing', then in Section 3.2 we outline an analysis involving a phonologically empty noun, and discuss the problems it faces. In Section 3.3 we present a constructional analysis. Section 4 provides a summary.

For the sake of concreteness we assume the framework of Ginzburg and Sag (2001) (G&S).

2 Phenomenon

Typical examples of the ANH construction have been shown in (1) and (2). It is often thought of as a rather marginal construction, but as will be clear from attested examples like those in (9), it is highly productive (*pace, e.g.* Huddleston and Pullum, 2002, p417):

(9) a. Back in The Smoke (i.e. London) amongst [the habitually abusive] and [the floridly psychotic].
     b. That mostly means the [habitually abusive] or [uncivil], or those who go out of their way to shill for a particular perspective. . .
     c. When they don't find him (i.e. the ideal man), they . . . settle for [the sociable but unattractive], [the attractive but unsociable], and, as a last resort, for [the merely available].
     d. Yet it's another Monday 4:30 am, in the land of [the barely awake].

Externally, ANH NPs behave like normal definite plurals – they allow e.g. possessive marking (10), post-modification by PP (11), restrictive relative clauses (12), non-restrictive relatives (13), and coordination with normal (i.e. lexically headed) NPs (14):

(10) the very poor's main problem. . .   (possessive marking)
(11) the very poor in the country. . .   (PP postmodification)
(12) the very poor who live in rural areas. . .   (restrictive relative)
(13) the very poor, who are barely mentioned here,. . .   (non-restrictive)
(14) [the very poor] and [some inhabitants of slum areas]. . .   (coordination)

These NPs are plural, triggering plural agreement, and taking plural reflexives:

(15) [The very poor] are/*is present in every area of the city.
(16) [The very poor] find/*finds themselves/*herself without defence in these

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be interpreted as involving an instance of the ANH construction ('those whose reputation does not die', perhaps) or an abstract object ('the phenomenon of immortality'), or as an ellipsis in a context like 'When you think simultaneously about his few immortal compositions and his massive commercial output, [the immortal] stand out more clearly.'

conditions.

The interpretation is 'generic' (loosely speaking), and primarily human — roughly 'individuals (people or perhaps beings including people) who are Adj', 'the kind of individual (person/being) who is Adj'. Thus, adjectives that are not plausibly applied to humans are hard to accept (so, e.g. *the aflame* is hard to accept, but *the aflame with enthusiasm* is acceptable), and in (17) *the immortal* means 'those who are immortal', but its primary interpretation relates (however implausibly) to humans, and does not include (e.g.) divinities.[3]

(17) [The immortal] do not truly appreciate the gift of immortality.

Moreover, only adjectives that can be applied to human individuals are permitted, adjectives that can only apply to collections or groups seem to be excluded. So, for example, while a group of people can be widespread, we cannot talk about *the widespread*.

As regards internal structure, ANH NPs have no nominal head, instead there is an adjective – in fact an AP – which can have complements as in (20a), and can be coordinated as in (19):

(18) These proposals will not help [the extremely poor].
(19) [The lazy, ignorant, and stupid] are harder to deal with than the merely stupid.

The adjective can be pre-modified by adverbs relatively freely, as in (20a), but one significant restriction is that the degree modifiers *how* and *however* are impossible – cf. (20b) and (20c) (this seems not to have been previously noted):

(20) a. the very rich, the nearly famous, the merely skeptical, the compulsively addicted to chocolate, the excessively fond of self-analysis, . . .
b. *[The however rich] do not care about taxation.
c. *[The how rich] do not care about taxation.

Most 'normal' adjectives are possible, so long as they are compatible with a 'generic' interpretation in relation to individual 'people' – in (21) there is an adjective (*awake*) that is normally postnominal, and (22) features an adjective with its complement which can only appear post-nominally. The examples in (23) involve what one would normally think of as 'stage level' predicates (which have been coerced to be 'characteristic' by adverbial pre-modifiers).

(21) the barely awake (**the barely awake individuals* vs *individuals barely awake*)
(22) the compulsively addicted to chocolate   (**compulsively addicted to chocolate individuals*)
(23) the permanently upset, the congenitally unavailable, the merely available ('stage level')

However, though most 'normal' adjectives are possible, there are several classes

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[3]This restriction to humans is shared by other 'null-nominal' constructions, e.g. those involving noun-less determiners, as in *All (welcome), Some (came running), Many (are called), but few (are chosen)*, and also by many nouns, for example *inhabitants* is prototypically taken to mean '*people* who live in a place' (excluding animals).

of adjective that are not possible in this construction.

'Process oriented' adjectives like *strong* in (24) (where it is interpreted as modifying *swim*, specifying the manner of swimming, rather than indicating a general attribute of strength) are excluded. So in (25), from a Robert Frost poem, *the strong* is interpreted as those who are strong in general (not in relation to some activity or process):

(24) Sam is a strong swimmer.
(25) [The strong] are saying nothing until they see.

Conceivably there is a semantic basis for this (for example, a process reading in (25) might be excluded because there is no process for *strong* to modify), but other restrictions are harder to explain. For example 'modal' adjectives like *alleged*, and *former* are excluded despite the theoretical possibility of interpreting them as denoting something like 'alleged people' (i.e. individuals who are alleged to be people) or 'former people' (individuals who used to be people):

(26) *[The alleged] have no opportunities here.
(27) *[The former] have no opportunities here.

Similarly, 'emotive' uses of adjectives are excluded. For example as a noun modifier *poor* can either be used descriptively to mean 'financially disadvantaged' or emotively to express the speaker's sympathy. Thus, (28a) is ambiguous. This ambiguity is absent in the ANH construction (28b). Similarly, an adjective like *frigging*, which has only an emotive use, is impossible in this construction (**the frigging*), though there is nothing wrong with *the frigging people* interpreted as 'the people' with an negative implication.

(28) a. The poor people need our help.
      b. [The poor] need our help.

(29) a. The frigging people need our help.
      b. *[The frigging] need our help.

These restrictions are often expressed in terms of only a subset of attributive adjectives being allowed (e.g. Huddleston and Pullum, 2002, pp 529,553): specifically, only attributive adjectives that can also be used predicatively. While it is clear that there is some kind of 'predicative' restriction at work here (for example, emotives, modals, and process oriented uses of adjectives are impossible predicatively), it is not clear to us that this is the right characterisation, because we find examples of this construction with adjectives which cannot be used attributively. For example, the adjectives *sorry*, *glad*, and *content* can all be used in this construction, in their predicative senses, senses which are excluded when they are used attributively:[4]

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[4]The paraphrases given in italics are intended to clarify that these examples involve predicative senses. *Sorry* has an attributive use, meaning 'pathetic' (rather than regretful), as in a *sorry sight*, which is not involved here; attributively *glad* means 'causing happiness' (as in *glad tidings*), predicatively it means 'feeling happy', which is clearly the sense involved in (30b) (from a headline *The Guardian* newspaper); *content* does not appear attributively, instead we get *contented* (as in *a contented person*), thus, **a content person* is ruled out.

(30) a. This page is only for [the genuinely sorry].   (=*those who are genuinely sorry)*
    b. the good, [the glad] and the celebrities   (=*those who are glad*)
    c. None but [the content] are truly happy.   (=*those who are content*)

In fact, it seems to us that a better characterisation is that this construction excludes attributive adjectives, and is restricted to *predicative* adjectives.[5]

It seems to be generally assumed (e.g. in Huddleston and Pullum (2002) and Fillmore et al. (2012)) that the ANH construction requires the definite article (*the*). This is incorrect. One can find examples of other kinds of definite, as in attested examples like (33) and (34). However, indefinites are impossible, as are quantifiers.[6]

(31) [The very poor] are to be found everywhere.
(32) As a group, [America's poor] are far from being chronically undernourished.
(33) Most of [Asia's newly rich] are simply the first winners in a rush to own markets.
(34) . . . it must be appreciated that [those poor who were included in these surveys] were those who were deemed to be in need. . . [7]
(35) *[All/most/some/no very poor] have the same problems.

Finally, and interestingly, though as we have seen above, internal modification by adverbs like *merely* is possible, internal modification by adjectives (like *worried*, *lazy*, *well-educated*, and *deserving*) is also possible (and as (37) shows, both can appear at once):

(36) the worried well, the lazy rich, the well-educated young, the undernourished and deserving poor
(37) Asia's well-educated newly rich

There is a straightforward semantic contrast between adjectival and adverbial modification:

(38) the unconventionally beautiful
(39) the unconventional beautiful

The *unconventionally beautiful* are those who are beautiful in an unconventional way – whose beauty is unconventional. The *unconventional beautiful* are 'the

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[5]We take 'predicative' to involve the semantic type $\langle e, t \rangle$. Predicative adjectives are those that can appear as complement to verbs like *be, become, seem* and *consider*. We take 'attributive' to mean noun-modifying – i.e. having semantic type $\langle \langle e, t \rangle \langle e, t \rangle \rangle$ – hence including both pre- and post-nominal adjectives.

[6]It is worth noting that the notion of 'definite' involved here is that involved in the 'downstairs' nominal in partitives (compare *two of the boxes* vs. **two of some boxes*). In particular, NPs involving just the quantifier *all* count as indefinite by this test (cf. **two of all boxes*), though they count as definite in other ways (e.g. by being unable to appear with existential *there* – cf. **There are all boxes in the corridor*). Thanks to Dan Flickinger for discussion of this point.

[7]Notice, however, that with *those*, as in (34), a relative clause is needed: **[Those poor] are discussed below* vs *Those poor who were included are discussed below*. We have no account of this, but rather than being an issue with this construction, it may reflect a property of the demonstrative, because one sees the same behaviour in the contrast between **those came* vs. *those who were called came*.

beautiful' who are unconventional (i.e. as individuals) — this is exactly parallel to the interpretations with overt nouns (*unconventionally beautiful people* vs *unconventional beautiful people*).

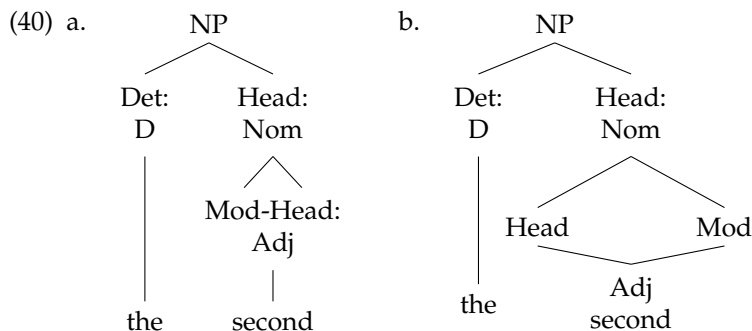We will return to all these properties below.

3 Analyses

Descriptive discussion of this construction goes back at least to Jespersen (1987, 80-1), and Pullum (1975) for more formal discussion, but fully worked out formal analyses are thin on the ground. Hence, rather than attempting a full literature review, we will concentrate on three styles of approach that seem potentially feasible: one based on multi-dominance or 'sharing', one based on the existence of a phonologically null head, and a constructional approach.

3.1 Multi-dominance and Sharing Analyses

A form of multi-dominance or 'sharing' is presented in H&P, and a sharing analysis for similar constructions is proposed in Wescoat (2002), which develops an analysis of 'pronominal' determiners like *this* and *those* which can constitute an NP in the absence of a head noun (e.g. *This is a good idea, but those are better*).

H&P have relatively little to say about the ANH construction *per se* (it is just one of several instances of constructions involving '(fused) modifier-head with special interpretations' which are exemplified (Huddleston and Pullum, 2002, p417)), and no explicit representation is provided. However, H&P's approach to constructions of this kind assumes that two functions (for example the head and modifier functions) are 'fused' – that is realised simultaneously by one element – and they provide a representation for an example involving an ordinal adjective (*the second*) as in (40a).[8]

(40) a.

```
            NP
          /    \
       Det:    Head:
        D       Nom
        |        |
        |     Mod-Head:
        |       Adj
        |        |
       the     second
```

b.

```
            NP
          /    \
       Det:    Head:
        D       Nom
        |      /    \
        |   Head    Mod
        |      \    /
        |       Adj
       the     second
```

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[8]See Huddleston and Pullum (2002, p412). For us, as for H&P, this is a distinct construction from the ANH construction, as it is not restricted in the same way: the construction involving an ordinal adjective can be singular, and indefinite, and is not restricted to humans, as in an example like *Having had one drink, I decided I wanted [a second]*.

Of course, this is a descriptive, not a formal analysis, and H&P do not discuss how the various restrictions we have observed above might be captured. Nor is it immediately clear what a proper formal implementation should be. In particular, it might appear from (40a) that what H&P have in mind is essentially a constructional view, but here the representation is misleading because (as is evident from the analysis of other fused-head constructions) what H&P really have in mind involves multi-domination or 'sharing': the adjective in (40) fullfils two functions, and could be thought of as having two mothers, so an alternative representation might be as in (40b) (see for example Huddleston and Pullum (2002, p412), and the representation of fused (i.e. headless) relatives on p1073, where it is clear that this is that this is what H&P have in mind).

While this is not a formal analysis, a similar fully formalised analysis for similar constructions is proposed in Wescoat (2002). This involves *lexical* sharing, an idea which has sometimes been proposed in the HPSG literature (e.g. Kim et al., 2008). Applied to the ANH construction, it might give representations along the lines of (41).

(41)

```
              NP
           /      \
         Det       Nom
          |       /    \
         the    N       AP
                 \     /   \
                  \   A     PP
                   \  |      |
                 addicted  to chocolate
```
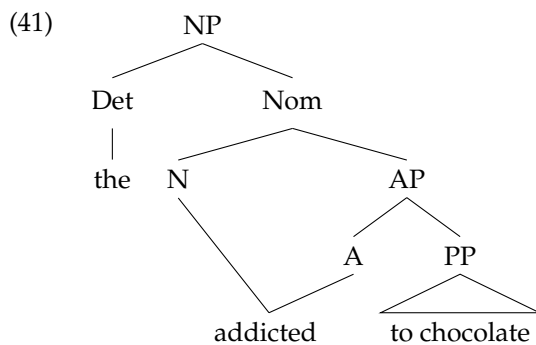
Here the idea is that the single item *addicted* fullfils both the role of nominal head (of Nom), and adjectival head (of AP).

While this is an intriguing idea, it is still not an analysis (as well as accounting for the empirical restrictions described above, one would need to explain the precise combination of nominal and adjectival properties that one sees), but we will not pursue this here, because as Kim et al. (2008) point out, it is a theorem of Wescoat's axiomatisation of lexical sharing that a single word cannot be the exponent of multiple atoms unless those atoms are adjacent. So a prediction of this approach would be that nothing can intervene between the nominal and adjectival positions in this construction. This prediction is simply disconfirmed by examples where the adjective is pre-modified. For example in (42), the adverb *compulsively* intervenes between the nominal and adjectival positions (cf also many examples in Sections 1 and 2):

(42) a. the __ compulsively <u>addicted</u> to chocolate
      b. the people compulsively addicted to chocolate

Accordingly, we will not pursue this analysis here.[9]

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[9]It should be pointed out that H&P do not assume *lexical* sharing, so this might not be a problem for a formalisation of their approach.

3.2 Empty Noun Analyses

In this section, we will outline an approach to the ANH construction that involves an empty noun.[10]
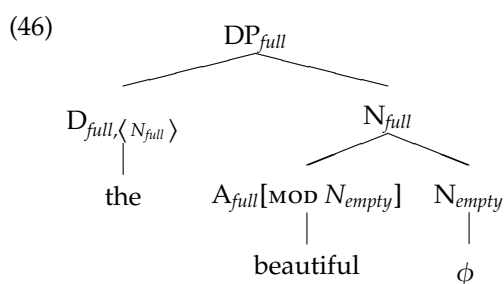
Nerbonne and Mullen (2000) (N&M) give an analysis of some 'empty N' phenomena for German and English, which one could imagine extending, giving representations along the lines of (46). The idea of their analysis is that determiners should be classified with respect to whether they allow phonologically empty nominals, where whether a nominal is empty or not is determined by a feature LEFT-PERIPHERY that percolates up its left edge.

(43) every car/*ϕ left.   (*every* requires a 'full' nominal)
(44) none *car/ϕ left.   (*none* requires an 'empty' nominal)
(45) many cars/ϕ left.   (*many* allows 'full' or 'empty' nominals)

One could extend this to a treatment of the construction we are concerned with by allowing adjectives to select the nominals they modify (via the usual MOD, or SELECT apparatus), giving representations like (46):[11]

(46)

$$
\begin{array}{c}
\text{DP}_{full} \\
\diagup \quad \diagdown \\
\text{D}_{full,\langle N_{full} \rangle} \qquad\qquad \text{N}_{full} \\
| \qquad\qquad\qquad \diagup \quad \diagdown \\
\text{the} \qquad \text{A}_{full}[\text{MOD } N_{empty}] \quad \text{N}_{empty} \\
| \qquad\qquad\qquad | \\
\text{beautiful} \qquad\qquad \phi
\end{array}
$$

Here *beautiful* has been given a MOD feature that allows it to modify the empty nominal. N&M claim that their analysis requires a 'DP' analysis, which takes the determiner to be the head of what G&S, in common with most other work in HPSG, call NPs (as can be seen in (46)). This in itself might be an objection to the analysis, but we doubt it is necessary. So far as we can see, the analysis could be re-cast straightforwardly using the SELECT apparatus introduced by Van Eynde (2007) (or indeed with the earlier MOD and SPEC features).

The general shape of a G&S-style analysis involving a phonologically empty noun is fairly easy to imagine: it would involve a lexical entry along the lines of (47), and give rise to structures like those in (48).

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[10]See Borer and Roy (2010) for a recent empty noun analyses of closely related, but not identical, constructions in French and Hebrew in a generative framework.

[11]Note, however, that N&M themselves are quite tentative about the feasibility or desirability of such an extension (cf Nerbonne and Mullen, 2000, p156).

(47) $\begin{bmatrix} word \\ \text{PHON} \quad \langle \, \rangle \\ \text{SYNSEM} \begin{bmatrix} \text{LOCAL} \begin{bmatrix} \text{CAT} \begin{bmatrix} \text{SPR} \quad \langle [] \rangle \\ \text{HEAD} \begin{bmatrix} noun \\ \text{DEF} \quad + \\ \text{AGR} \; [\text{NUM} \; pl] \end{bmatrix} \end{bmatrix} \\ \text{CONT} \begin{bmatrix} \text{INDEX} \; \boxed{1} \, pl \\ \text{RESTR} \; \{ people_{gen} \} \end{bmatrix} \end{bmatrix} \\ \text{EDGE} \,|\, \text{LEFT} \; empty \end{bmatrix} \end{bmatrix}$
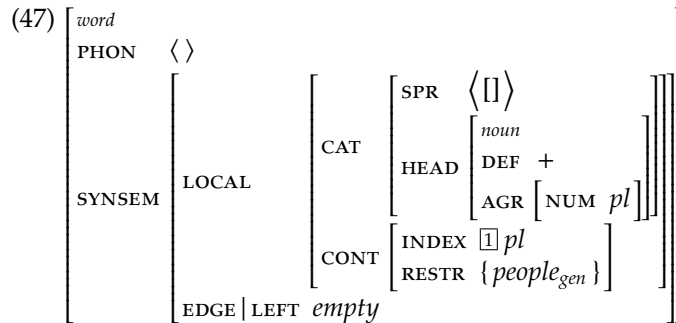
This is a phonologically empty *noun* which is plural and definite, with a non-empty SPR value (i.e. lacking a specifier) whose semantics is 'generic people', and which carries an *empty* EDGE feature which is intended to percolate up the left-branch of structures. Normal nouns will be *non-empty* for this feature.[12]

(48)
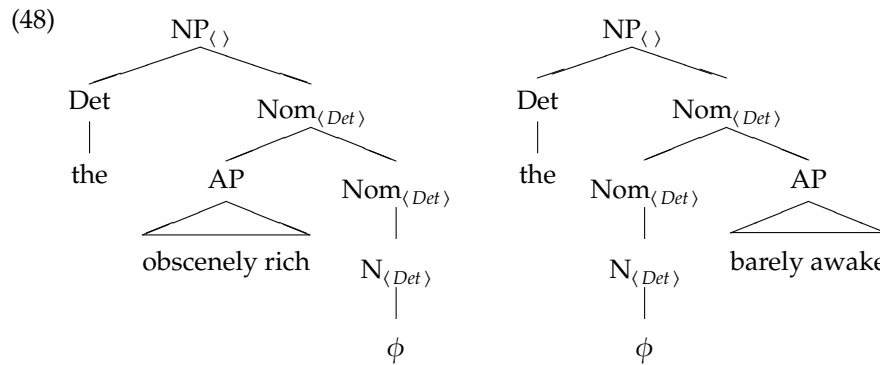
Clearly, this can provide an account of most of the phenomena described in Section 2: in particular, the plurality, definiteness, and the special interpretation all follow directly from the lexical entry.

The impossibility of examples like those in (49) poses a potential problem for empty-nominal analyses:

(49)   a. *[the ϕ]   (with an interpretation roughly 'people' in general)
       b. *[The ϕ] can always surprise you.   (intended: 'people in general')

However, these can be avoided here if we assume that *the* SELECTS *non-empty* heads.[13]

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[12]Here *people_{gen}* is intended as shorthand for however the semantics of plural generic reference should be represented. Plurality is also here expressed via both the AGR feature, and the *index* value. Both are necessary (because the noun is plural, both in terms of its agreement properties and in terms of the kind of entity it denotes), but one or other is probably redundant. We assume there is a HEAD feature [DEF *boolean*], so that a noun specified as [DEF +] will only appear with definite determiners. The use of an EDGE feature essentially re-implements the N&M proposal. The idea derives from Miller (1992), see e.g. Tseng (2003).

[13]However, notice that this requires EDGE to be a *synsem* feature, which is not standard. It is normally taken to be a feature at the level of *sign*s (see, e.g. Tseng, 2003). It is not clear if this is problematic.

The price of such an analysis is (i) an additional lexical entry, and (ii) some extra feature apparatus (the EDGE feature apparatus – which might be independently motivated).[14] It is thus an attractive approach.

However, it faces two empirical difficulties.

The first relates to the impossibility of adjective phrases with non-empty WH values, like *how rich* and *however rich* in this construction (cf. **the how rich*, and **the however rich*, see (20), above). The way WH-percolation works in the G&S framework is that head words amalgamate the WH values of their arguments, with the result being percolated by the Generalized Head Feature Principle (see Ginzburg and Sag, 2001, p189). *Wh*-expressions like *how* and *however* have non-empty WH values, and since G&S treat degree words as arguments of the head adjective, adjectives like *rich* will have non-empty WH values when accompanied by *how* or *however*, and so will APs like *how rich* and *however rich*. The problem is that the G&S framework (or indeed any other version of HPSG) provides no mechanism for heads to select adjuncts. Thus, there is no mechanism for the null noun to exclude expressions like *how rich* or *however rich* as adjuncts, and no way to avoid producing **the how rich ϕ*, and **the however rich ϕ*.[15]

The second, and we think fatal, difficulty is that the approach provides no account of why attributive adjectives – in particular, modal and emotive adjectives – are excluded from the construction, cf. the discussion of example in (28) and (29), and why predicative only adjectives are allowed, as witness examples (30). Why should this empty noun (uniquely among English nouns) reject normal attributive modifiers and accept predicative ones?

We consider these to be convincing reasons for rejecting this approach. Accordingly, in the following section we will develop a constructional analysis.
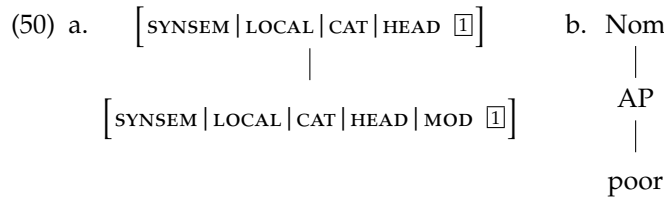
3.3 Constructional Analyses

Branco and Costa (2006) provide an interesting analysis of elliptical NPs (e.g. *those two*, and examples like those in (7)), and while they mention examples of the ANH construction only in passing, it might be extended to deal with the ANH construction. In outline, what they propose is to exploit the fact that 'functor' daughters (i.e. daughters which are neither heads nor complements) select their head daughters, and use a unary rule in which a single functor

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[14]Notice, however, that it really is an *additional* lexical item – its syntactic and semantic idiosyncracies mean it will not be possible to collapse it with the entries for any other empty nominals (this is why N&M were skeptical about extending their analysis, as noted in footnote 11).

[15]A potential response to this might be to argue the APs here are not adjuncts, but complements (or perhaps, following Bouma et al. (2001), adjuncts *and* complements), which might provide a way round this problem. However, note that it is not common to argue that *all* adjuncts should be treated in this way. For example, while Bouma et al. (2001) treat post-verbal adjuncts as complements they do not assume this for pre-verbal ones. But to deal with the facts here, one would need to treat both pre- and post-nominal adjectives as complements, since **the ϕ however awake* is just as bad as **the however rich ϕ*. While something along these lines might be technically possible, we think it would entirely eliminate the theoretical appeal of a null head analysis.

daughter projects a phrase whose HEAD properties are those of the (absent) head the functor would normally require, roughly as in (50a). Since an adjective like *poor* is specified as modifying a nominal, this would give rise to structures like (50b), which might combine with a determiner to produce an expression like *the poor*.

(50) a. $\left[\text{SYNSEM}\,|\,\text{LOCAL}\,|\,\text{CAT}\,|\,\text{HEAD}\ \boxed{1}\right]$
      |
      $\left[\text{SYNSEM}\,|\,\text{LOCAL}\,|\,\text{CAT}\,|\,\text{HEAD}\,|\,\text{MOD}\ \boxed{1}\right]$

b.   Nom
      |
      AP
      |
     poor

Though it is an interesting approach to nominal ellipsis, we will not pursue it here, because while it does not posit an empty nominal, it suffers from the same flaw as approaches that do. Notice in particular, that only adjectives that have a *mod* feature will be able to participate in (2a), which is to say only *attributive* adjectives. This is entirely wrong, as we have seen.

Instead, we will take as our starting point the Sign-based Construction Grammar analysis of this construction provided in Fillmore et al. (2012, p350) (the 'Adjective-as-Nominal.human' construction). The construction is specified as in (51).

$$(51)\ \begin{bmatrix} \text{FORM} & \langle\, the, X\,\rangle \\[1em] \text{SYN} & \begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{NUM} & pl \end{bmatrix} \\ \text{MRKG} & det \end{bmatrix} \\[2em] \text{SEM} & \begin{bmatrix} \text{INDEX} & i \\[1em] \text{FRAMES} & \left\langle \begin{bmatrix} \textit{generic-fr} \\ \text{GENERIC-OBJ} & i \end{bmatrix}, \begin{bmatrix} \textit{human-fr} \\ \text{ENTITY-OBJ} & i \end{bmatrix} \right\rangle \oplus L \end{bmatrix} \end{bmatrix}$$

|

$$\begin{bmatrix} \text{FORM} & \langle\, X\,\rangle \\[1em] \text{SYN} & \begin{bmatrix} \text{CAT} & adj \\ \text{VAL} & \langle\,\rangle \end{bmatrix} \\[2em] \text{SEM} & \begin{bmatrix} \text{FRAMES} & L{:}list\left(\begin{bmatrix} \textit{property-fr} \\ \text{ENTITY} & i \end{bmatrix} \right) \end{bmatrix} \end{bmatrix}$$
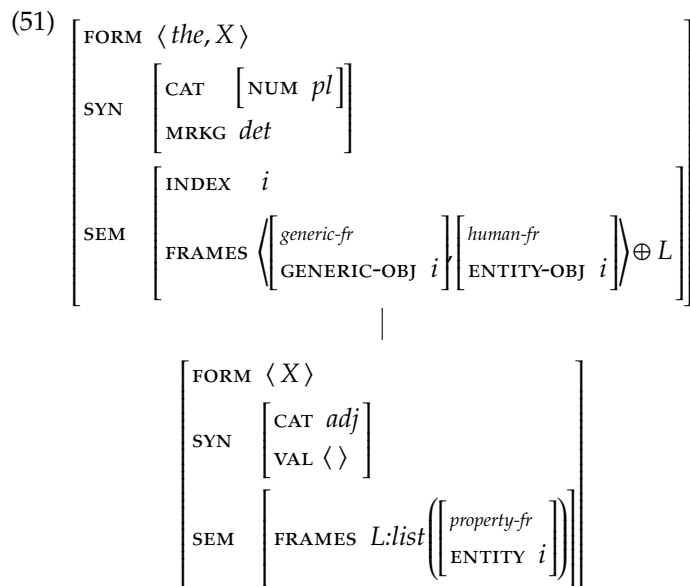
Here a plural NP containing ⟨ *the* ⟩ as part of its FORM directly dominates a valence saturated adjective (i.e. an AP). The semantics given (in the FRAMES attribute) combines the semantics of the adjective with 'genericitity' and 'humanness' specifications by appending the FRAMES of the adjective to these specifications in the construction.

This clearly captures the main features of the construction – definiteness, plurality, and the special interpretation.
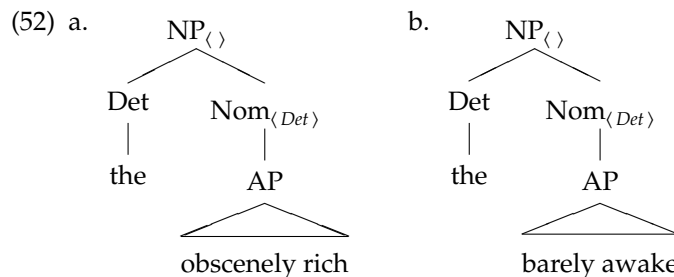
It is not clear whether it could avoid allowing examples like *the however rich*, or deal with the restriction to predicative adjectives, and we will not speculate here, because there are other problems with the formulation.

First, notice that the structure of an expression like *the poor* is simply an NP containing an AP – there is no internal N′ or Nom, hence no scope for adjectival modification following the determiner as in examples like those in (36) (*the worried well*, *the lazy rich* etc.)

Second, notice that the construction requires the presence of *the*. However, we have seen there are examples of this construction with other specifiers (cf. (33), *Asia's newly rich*, etc.)

Moreover, notice that the presence of *the* is simply stipulated as part of the FORM – the actual definite article is not part of the construction, which in fact lacks a determiner: *the* makes no semantic contribution, and its presence is unrelated to the definiteness of the construction, or general principles of English grammar (e.g. that only *indefinite* plural NPs lack determiners).[16]

However, we can improve on this straightforwardly. What we want is a construction that will build a Nominal (Nom, in X-bar terms an N′) out of an AP, to give structures along the lines of (52).

(52) a.

$$
\begin{array}{c}
\text{NP}_{\langle\,\rangle} \\
\diagup\qquad\diagdown \\
\text{Det}\qquad\text{Nom}_{\langle\,Det\,\rangle} \\
\mid\qquad\qquad\mid \\
\text{the}\qquad\qquad\text{AP} \\
\diagup\quad\diagdown \\
\text{obscenely rich}
\end{array}
$$

b.

$$
\begin{array}{c}
\text{NP}_{\langle\,\rangle} \\
\diagup\qquad\diagdown \\
\text{Det}\qquad\text{Nom}_{\langle\,Det\,\rangle} \\
\mid\qquad\qquad\mid \\
\text{the}\qquad\qquad\text{AP} \\
\diagup\quad\diagdown \\
\text{barely awake}
\end{array}
$$

We can produce these with a construction which we will call *nominal-adj-ph*, a sub-sort of *non-headed-phrase*.

In outline, what this construction must do is take a predicative AP, and produce a nominal, where the *index* of the nominal has the semantic role associated with the subject of the adjective. That is, something like (53):

(53) $\text{Nom}_{\boxed{1}} \rightarrow \text{AP}_{\left\langle NP_{\boxed{1}}\right\rangle}$

Though the outline of this analysis is straightforward, getting the details of it right in the G&S framework involves a slight complication as regards the semantics (i.e. the CONTENT). G&S assume that a predicative adjective like *beautiful* projects a phrase like (54) (and similarly for phrases like *obscenely rich*,

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[16]While it is true that the semantic contribution of *the* does not involve the kind of familiarity requirement that one normally expects, it *does* reflect some notion of uniqueness, e.g. *the rich* denotes the totality of rich individuals (which is unique, of course).

barely awake, and *compulsively addicted to chocolate*, with suitable changes to the PHON and CONT values).

$$
(54)\quad
\begin{bmatrix}
\textit{phrase} \\[2pt]
\text{PHON} \quad \langle \textit{beautiful} \rangle \\[6pt]
\text{SS}\,|\,\text{LOC}
\begin{bmatrix}
\text{CAT}
\begin{bmatrix}
\text{SUBJ} \quad \langle \text{NP}_{\boxed{1}} \rangle \\[6pt]
\text{HEAD}
\begin{bmatrix}
\textit{adj} \\
\text{PRED} \ +
\end{bmatrix}
\end{bmatrix} \\[18pt]
\text{CONT} \quad \textit{beautiful-rel}(\boxed{1})
\end{bmatrix}
\end{bmatrix}
$$

This is a predicative phrase which is looking for an NP subject, whose *index* is identified with the 'instance' of the semantic relation *beautiful-rel*.[17]

What we need is a construction that will take such a structure as its daughter and produce a nominal. The complication here is that we need to convert the 'predicative' semantics of the adjective to the 'attributive' semantics of a nominal. The content of a predicative adjective is assumed to be a *'state-of-affairs'* (*soa*), just like that of a verb. The CONTENT (CONT) value of a nominal is a *scope-object*, that is, and *index* and a set of *restrictions*, as in (55). We need to embed the CONTENT of the adjective as the *soa* in such a structure:[18]

$$
(55)\quad
\begin{bmatrix}
\text{INDEX} \quad \textit{index} \\[6pt]
\text{RESTR}
\begin{bmatrix}
\textit{fact} \\[4pt]
\text{PROP}
\begin{bmatrix}
\textit{proposition} \\
\text{SOA} \quad \textit{soa}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

Taking this into account, the construction can be formulated as in (56).

---

[17] *beautiful-rel*($\boxed{1}$) is an abbreviation for:

$$
\begin{bmatrix}
\textit{soa} \\[4pt]
\text{NUC}
\begin{bmatrix}
\textit{beautiful-rel} \\
\text{INST} \ \boxed{1}
\end{bmatrix}
\end{bmatrix}
$$

The PRED+ specification in (54) may be redundant, depending on one's view of whether attributive adjectives have SUBJ values – an issue we avoid here.

[18] This complication is a consequence of the G&S view of adjectival and nominal contents. It could be avoided if a more traditional semantics is assumed, where nominals and predictive adjectives are both of the semantic type $\langle e, t \rangle$. The semantics of the mother could just be given as the function in (i), applied to the content of the adjectival daughter.

(i) $\lambda P.\lambda x.P(x) \wedge \textit{people}_{gen}(x)$

55

(56)
$$
\begin{bmatrix}
\textit{nominal-adj-ph} \\
\text{SS} \mid \text{LOC}
\begin{bmatrix}
\text{CAT}
\begin{bmatrix}
\text{SPR} \quad \big\langle [\,] \big\rangle \\
\text{HEAD}
\begin{bmatrix}
\textit{noun} \\
\text{DEF} \ + \\
\text{AGR} \ [\text{NUM} \ pl]
\end{bmatrix}
\end{bmatrix} \\
\text{CONT}
\begin{bmatrix}
\text{INDEX} \ \boxed{1}pl \\
\text{RESTR} \ \Big\{ \begin{bmatrix} \textit{fact} \\ \text{PROP} \mid \text{SOA} \ \boxed{2} \end{bmatrix} \Big\} \cup \Big\{ \begin{bmatrix} \textit{fact} \\ \text{PROP} \mid \text{SOA} \ people_{gen}(\boxed{1}) \end{bmatrix} \Big\}
\end{bmatrix}
\end{bmatrix} \\
\mid \\
\begin{bmatrix}
\text{SS}
\begin{bmatrix}
\text{LOC}
\begin{bmatrix}
\text{CAT}
\begin{bmatrix}
\text{HEAD} \ \textit{adj} \\
\text{SUBJ} \ \big\langle \text{NP}_{\boxed{1}} \big\rangle
\end{bmatrix} \\
\text{CONT} \ \boxed{2} \ \textit{soa}
\end{bmatrix} \\
\text{WH} \ \{\,\}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$
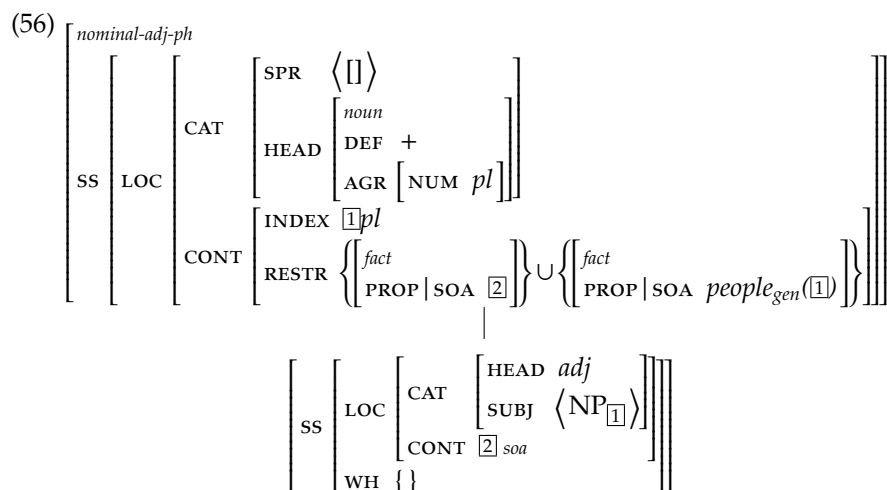
This construction takes an adjectival daughter, which is predicative (because lacking a SUBJ), and produces a nominal mother, which is definite, and plural. It combines the content of the adjective with a specification of the semantics of the nominal (*viz* that it is restricted to 'people*gen*'), and identifies the *instance* of the adjective (i.e. the object the adjective is predicated of) with the index of the nominal. The intuitive effect is that an AP such as *beautiful* can be interpreted as denoting a plurality of beautiful individuals, as one would hope.

This nominal will combine with a determiner to produce structures like those in (52).

Let us now spell out how this construction accounts for the phenomena described in Section 2.

The definiteness restriction follows from the DEF+ specification on the mother nominal – only determiners that can combine with such a nominal will be permitted. Hence the contrast in (57):

(57) a. *This will convince even the skeptical.
      b. *This will convince even a skeptical.

However, the construction places no constraints on its Specifier (the SPR value is required to be non-empty, but that is all). Thus it is predicted that any such determiner is possible, and we allow examples like (58) (= (33)):

(58) Most of [Asia's newly rich] are simply the first winners in a rush to own markets.

The mother nominal is specified as plural, hence the contrast in (59):[19]

---

[19] As with the lexical entry for the phonologically empty noun in (47), this specification is expressed both in the AGR value, and in the INDEX. Whether both need to be specified depends on how the association between these values is expressed. If it is expressed as a type constraint on phrases, then one or the other can be omitted here. However, if it is a lexical constraint, then both would be necessary.

(59) [The merely skeptical] are/*is easier to convince.

Since the AP is specified as having an unsaturated sᴜʙᴊ, predicative adjectives are permitted, allowing (60) (and other examples from (30) above), and *only* predicative adjectives are permitted, excluding attributive only adjectives (process oriented, modal and emotive adjectives, as in (61):

(60) None but [the content] are truly happy.

(61) a. *[The alleged] have no opportunities here.
      b. *[The frigging] need our help.

Notice that the daughter AP in (56) is specified as having an empty wʜ, as a result, while it will be able to include normal degree words, it will not be able to include expressions with non-empty wʜ values, such as *how* or *however*, thus accounting for the contrast in (62):[20]
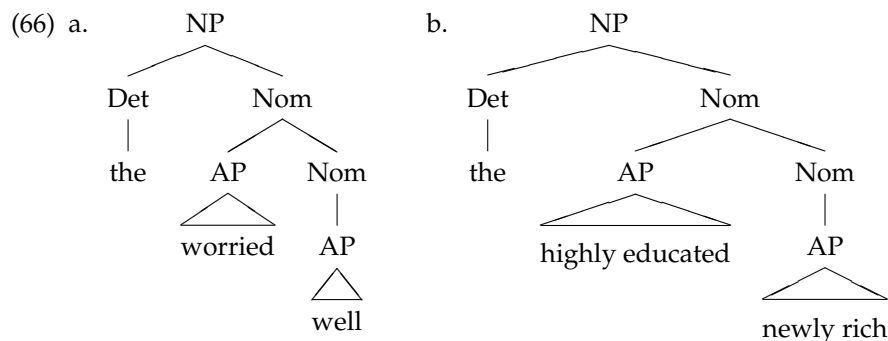
(62) a. the very/obscenely/newly rich
      b. *the how rich
      c. *the however rich

Other than the predicative wʜ restrictions, and the semantic constraint that it must be possible to use the adjective in relation to 'people$_{gen}$', there are no other restrictions on the adjectival expression. Thus, it can contain an adjective that normally appears pre-nominally or post-nominally, when used attributively, that can have complements, and be pre-modified:

(63) the barely awake   (=(21))
(64) the compulsively addicted to chocolate   (=(22))
(65) the extremely poor, the merely available, etc.

Adverbial modifiers appear within the AP, but since the construction produces a Nom, rather than an NP, there is no problem with adjectival modification — examples like *the worried well*, *the highly educated newly rich* will receive a representation along the lines of (66).

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[20]As noted above, in the framework of G&S, wʜ-amalgamation and the Generalized Head Feature Principle ensure a phrase has a non-empty wʜ set if any of its constituents do. An empty wʜ value thus requires all sub-constituents to be similarly empty. *How* is a normal interrogative *wh*-word, so the non-empty wʜ specification is uncontroversial. *However* appears in 'exhaustive conditionals' like *However rich she becomes (I will not marry her)*, which are also interrogative (see e.g. Arnold and Borsley (2014) and references there), so it too should have a non-empty wʜ value.

(66) a.

```
            NP
          /    \
        Det    Nom
         |    /    \
        the  AP   Nom
            /\     |
         worried  AP
                  /\
                well
```

b.

```
            NP
          /    \
        Det    Nom
         |    /    \
        the  AP    Nom
           /    \    |
    highly educated AP
                   /  \
               newly rich
```

This analysis thus avoids the empirical problems we have discussed in relation to the approaches which involve an empty noun, and existing constructional analyses.

4 Conclusion

The theoretical contribution of this paper has been to show that, contrary to what one might expect, it is possible to find clear empirical evidence that bears on the choice between a constructional analysis and one involving phonologically empty elements. In this case, the evidence favours a constructional account. In demonstrating this, we have given a detailed description of the characteristics of the ANH construction, a critique of some existing proposals, and provided explicit formalisations of both constructional and null-head analyses. Our constructional analysis in particular is empirically superior to existing accounts.

But of course, this is just one, rather idiosyncratic, construction in one language. It is the beginning, rather than the end, of the interesting questions.

The most immediate question it raises is where the *nominal-adj-phrase* specified in (56) fits into a general typology of non-headed constructions, in particular, the other English constructions mentioned in the Introduction. Equally interesting is the question of how this relates to similar constructions in other languages, where the facts are different – e.g. many languages allow *nominal-adj-phrase*-like constructions to be indefinite and singular, see *inter alia* Spencer (2002), Borer and Roy (2010).

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