# The History of *Alive*: Toward a Realizational Approach to Grammaticalization*

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## 1. Introduction

In English, there is a class of predicative adjectives that begin with the prefix *a-*. Huddleston and Pullum (2002: 559) list the items in (1) as adjectives belonging to this class.

(1) ablaze, afloat, afoot, afraid, aghast, agleam, aglimmer, aglitter, aglow, agog, ajar, akin, alight, alike, alive, alone, amiss, askew, asleep, averse, awake, aware, awash, awry

According to the *OED*, the following items of those listed in (1) can be etymologically traced back to PPs in which the preposition *on* expressing location or state takes a bare nominal complement:[1]

(2) ablaze, afloat, afoot, agleam, aglimmer, aglitter, aglow, agog, ajar, akin, alive, amiss, askew, asleep, awash, awry

In the course of its diachronic change, *on* came to be spelled as *a* and finally became a prefix, as schematically illustrated in (3); consequently, the original PPs were recategorized as singleton adjectives.

(3) on life > a life > alive

Henceforth, I will refer to the adjectives formed in this manner as A-class adjectives.

What is especially intriguing is that the change from the preposition *on* to the prefix *a-* exhibits the typical characteristics of grammaticalization, that is, phonological attrition and semantic bleaching. This is a clear illustration of Hopper and Traugott's (2003: 7) "cline of grammaticalization" in (4), according to which a content item changes into a grammatical word, a clitic, and finally, an affix.

(4) content item > grammatical word > clitic > inflectional affix

Thus, the diachronic change of A-class adjectives in English can be regarded as an instance of grammaticalization.

This article aims to investigate the process of grammaticalization of A-class adjectives, with special reference to the history of *alive*. As will be shown below, *alive* is one of the most grammaticalized items of A-class adjectives; thus, it can be expected that describing its history would reveal the complete picture of grammaticalization of all the relevant adjectives. Another related reason for focusing on *alive* is that it has invariably been used with high frequency from Middle English (ME) up to Present-day English (PE); this makes it possible for us to accurately detect its change through historical corpora.

More specifically, this article addresses the issues in (5) and is organized around these questions.

(5) a. How can the peculiar syntactic behaviors of A-class adjectives in PE be accounted for?
b. How did the grammaticalization of *alive* proceed in the history of English?

c. What implication does the history of *alive* have for the theory of grammaticalization?

First, Section 2 considers the question in (5a). I will essentially follow Nakajima (2004) to assume that postnominal adjectives generally include some functional category, and I will analyze predicative and postnominal A-class adjectives as predicative phrases (PredP). It is also argued that *alive* additionally has AP constructions without PredP. Second, Section 3 examines the question in (5b) based on the investigation of historical corpora; I will describe the grammaticalization of *alive*, in which the PP *on life* is recategorized as PredP and finally as AP. Third, Section 4 deals with the theoretical question in (5c). After a brief introduction of my (2005, 2006) realizational approach to grammaticalization under the framework of Distributed Morphology (DM), it is demonstrated that the change from the preposition *on* to the prefix *a-* constitutes a counterexample to recent syntactic approach to grammaticalization including Roberts and Roussou 2003 and Van Gelderen 2004; it is also argued that this change can be easily accommodated under my realizational approach. Finally, Section 5 concludes my argument.

## 2. The Structures of A-class Adjectives in PE

This section establishes the structures of A-class adjectives in PE as the groundwork for the analysis of the grammaticalization of *alive* in Section 3. I will first review the basic properties of A-class adjectives in 2.1 and then proceed to offer a structural analysis by slightly modifying Nakajima's (2004) proposal on postnominal adjectives in 2.2.

### 2.1 Basic Properties

It is well known that A-class adjectives in PE primarily appear in predicative positions: they are employed as main clause predicates, as in (6a); small

clause predicates, as in (6b); and secondary depictive predicates, as in (6c).

(6) a. The baby was asleep. (main clause predicate)
b. They set the vehicle ablaze. (small clause predicate)
c. The criminal was burnt alive. (secondary depictive predicate)

What is peculiar about adjectives of this class is that although they can also be used as attributive adjectives that modify nouns, they cannot precede the noun they modify; rather, they must occur in the postnominal position, unlike other ordinary adjectives:

(7) a. the largest ship afloat
b. *the largest afloat ship

One may reasonably conjecture that A-class adjectives in the postnominal position are not genuine attributive adjuncts, as evidenced by the fact that (7a) can be paraphrased as 'the largest of ships that are afloat' without any significant change in interpretation. Indeed, Jespersen (1913) dubs postnominal adjectives as in (7a) as "semi-predicative."

Among A-class adjectives, *alive* and *asleep* are unique in that they occasionally behave more like ordinary adjectives. First, although the postnominal position is the norm for attributive *alive* and *asleep*, as is the case with other A-class adjectives, *alive* precedes the modified noun when it is interpreted as 'full of energy'; likewise, *asleep* can be used prenominally when it is modified by an adverbial:

(8) a. The hall was really alive. /a really alive hall
b. The child was fully asleep. /a fully asleep child

Second, while A-class adjectives do not generally have comparative and superlative forms, *alive* can cooccur with *more* or *most* when it assumes the

meaning mentioned above, as in (9a). The example in (9b) indicates that *asleep* can also exhibit a comparative form if it is embedded in an appropriate context.

(9) a. I felt more alive than I had for months.
b. And then we searched out the petits coins, a place described as "more asleep than the rest of the village." (Pillion riders/BNC)

Thus, the following generalization holds concerning the environments in which A-class adjectives occur and their ability for comparative declension:

(10) A-class adjectives can be used prenominally iff they have comparative and superlative forms.

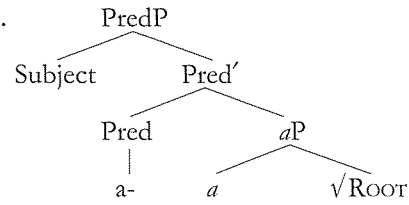
With these properties of A-class adjectives in mind, let us turn to a syntactic analysis of these adjectives in the next section.

## 2.2 Analysis

Let us begin our discussion with A-class adjectives in their predicative use. Here, I will follow Bowers 1993 and assume that there is a functional category Pred that serves to relate the subject in [Spec, Pred] and the predicate that it selects. I will then propose that predicative A-class adjectives are PredPs headed by the prefix *a-*, which undergoes morphological merger with the stem under linear adjacency at the phonological component; thus, the relevant part of the examples in (6) can be represented as in (11a-c). The common structure is illustrated in (11d).

(11) a. the baby$_i$ was [$_{PredP}$ $t_i$ a- [$_{AP}$ sleep] ]
b. they set [$_{PredP}$ the vehicle a- [$_{AP}$ blaze] ]
c. the criminal was burnt [$_{PredP}$ PRO a- [$_{AP}$ live] ]

d.




[Spec, Pred] can be occupied by an A-trace, a lexical subject, or PRO. PredPs with these specifier elements are realized as main clause predicates, small clause predicates, and secondary predicates, respectively. In what follows, I will adopt the theoretical framework of DM, in which the categorial status of a given word is derivationally determined via light functional heads like *n* and *a* that select category-neutral roots represented as √Root (see Halle and Marantz 1993 and Harley and Noyer 1999, among others). Internal structures of *n*P and *a*P will be omitted when irrelevant for discussion, and notations such as NP and AP will be used to refer to the structures consisting of light categories and roots as a whole (as in (11a-c)).

At the descriptive level, the prefix *a-* is attached to noun stems. Given this, the structures in (11) in which *a-* selects AP complements might seem couterintuitive. It could be the case that the prefix *a-* selects the light functional head *a* that in turn selects light *n*. However, positing such a complex structure is not mandatory under the present framework. (Alternatively, it could be assumed that Pred directly selects *n*; however, such an analysis would render *alive* and *life* structurally indistinguishable in the predicative position.) The apparent selectional restriction on the prefix *a-* stems from its etymological origin as a preposition. It is important to note here that this does not necessarily imply that there is a derivational relation between, for example, the adjective *alive* and the noun *life* in the grammar of individual speakers of PE as well. Under DM, it can be reasonably assumed that *alive* and *life* follow independent derivational paths that share the common root √Life (see the discussion in Section 4.1). Then, the fact that A-class adjectives have corresponding nominal forms without the prefix *a-* would

simply be a consequence of their historical development.

In Section 3, I will provide a historical justification for locating the affix *a-* at Pred; however, it may be worth pointing out at this point that this hypothesis offers a straightforward structural account of the inability of A-class adjectives to inflect for forming comparatives and superlatives. That these adjectives are semantically ungradable is undoubtedly one reason for the absence of these forms; however, to the extent that the generalization in (10) holds, there must be some syntactic reason as well (also see the discussion in (15) and (16) below). Given that the inflectional affixes *-er* and *-est* and the degree words *more* and *most* are carried by the head of DegP immediately above AP (see Abney 1987), the comparative form of A-class adjectives can be delineated as follows:

(12) $^{*}[_{\text{PredP}}$ a- $[_{\text{DegP}}$ more/-er $[_{\text{AP}}$ live$]\,]\,]$

The morphological merger of the prefix *a-* and the stem is blocked by the intervening head; this results in the ungrammaticality.

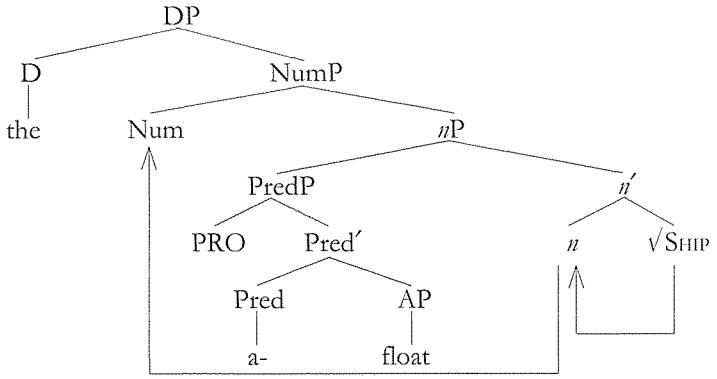
Next, let us consider A-class adjectives in the postnominal position. In this connection, Nakajima (2004) attempts to provide a unified analysis of postnominal adjectives in general. The gist of his analysis can be summarized as follows: (i) the underlying structure of attributive adjectives is invariably A-N; that is, not only prenominal but also postnominal adjectives are base-generated in a position higher than N; (ii) the N-A word order is derived when N moves to a higher functional head Num representing grammatical numbers; (iii) N-to-Num movement is triggered by the structural complexity of attributive adjectives. (iii) needs further elucidation. Nakajima argues that the structural complexity of modifiers is implicated by the presence of independent event structures, which itself can be diagnosed by testing whether the modifiers can cooccur with temporal adverbials. As shown below, A-class adjectives, as well as other postnominal adjectives with the suffix *-able*, can appear with temporal expressions:

(13) a. a river navigable {at present/for a while/during summer/since last year}
b. the star {frequently/often/sometimes} visible
c. The boat afloat {now/for a while} will go under the bridge.
d. The dog alive {at present/for a long time} is John's favorite.
(Nakajima 2004: 495)

Given that adverbials must be licensed by some functional head (see Bowers 1993 and Cinque 1999, among others), the grammaticality of the examples in (13) suggests that these adjectives include a functional category that licenses the adverbials.

Maintaining that Nakajima's analysis outlined in (i) – (iii) above is basically correct, I posit the structure of postnominal A-class adjectives in (14).

(14)




While Nakajima argues that the functional category that selects AP is Asp representing the grammatical aspect, I maintain that the relevant category is Pred. This analysis has the following advantages. First, it enables us to straightforwardly capture Jespersen's (1913) insight about the parallelism between predicative and postnominal A-class adjectives mentioned above by assigning them the same categorial status, PredP. Second, the PredP analysis

can provide a natural account of the N-to-Num movement. Nakajima claims that the reason why N raises to Num is that it must enter into an agreement relation with the adjective; he assumes that an adjective and the noun it modifies or it is predicated of must agree in the configuration where one of them asymmetrically c-commands the other. According to him, since neither N nor A c-commands the other in the base structure analogous to (14), N is forced to move to Num as the last resort and enters into agreement with A. However, whether N and A agree in PE, in which we have no morphological evidence for agreement, is a controversial issue. On the other hand, we can resort to another solution for the mechanism of movement under the PredP analysis. Recall that by definition PredP has a subject in its specifier position. Since postnominal A-class adjectives have no overt subject, it can be assumed that the subject is PRO. Crucially, in the base structure in (14), PRO has no appropriate controller; thus, we can reasonably suppose that the reason for N-to-Num movement is that N must act as a controller for PRO in [Spec, Pred] from the raised position.[2]

Finally, let us focus on the structures of *alive* and *asleep*. Since these items can be used prenominally like ordinary attributive adjectives, we are led to suppose that along with the PredP structure discussed above, they have a simple AP structure in which the prefix *a-* resides inside AP. Thus, the structure of (8a), repeated here as (15a), can be represented as in (15b).

(15) a. a really alive hall

b. $[_{DP}$ a $[_{NumP}$ Num $[_{aP}$ $[_{AP}$ really alive] *n* $\sqrt{\text{HALL}}$ ] ] ]

structure of (9a), repeated here as (16a), can be represented as in (16b).

(16) a. I felt more alive than I had for months.
b. [$_{TP}$ I T [$_{VP}$ felt [$_{PredP}$ PRO Pred [$_{DegP}$ more [$_{AP}$ alive] ] ] ] ]

In this case, the prefix *a-* is not a Pred element, so *alive* can cooccur with the comparative *more* without violating the adjacency requirement of the prefix and the stem. (Note, in passing, that PRO in (16b) is properly controlled by the matrix subject; thus, no N-to-Num movement is necessary.)

From (15) and (16), we can see that the possibility for A-class adjectives to be used prenominally and their ability to form comparatives and superlatives depend on the same factor — whether or not the prefix *a-* is part of A. Thus, we can naturally explain the generalization in (10) that A-class adjectives can be used prenominally if they have comparative and superlative forms and vice versa, in terms of the position of the prefix *a-*.

To recapitulate the discussion thus far, the categorial statuses of A-class adjectives and their distribution in PE can be summarized as follows:

Table 1
The categories and positions of A-class adjectives in PE

| Items | Positions | | |
|---|---|---|---|
| | Predicative | Postnominal | Prenominal |
| alive, asleep | PredP/AP | PredP | AP |
| Others | PredP | PredP | * |

A-class adjectives generally have the PredP structure, which occurs in the predicative and postnominal positions but is excluded from the prenominal position; this is because the attributive use of PredP inevitably triggers N-to-Num movement due to the presence of PRO, always resulting in the A-N order. On the other hand, *alive* and *asleep* additionally have the AP structure,

which can appear in the prenominal as well as predicative positions. As will be demonstrated below, AP is a more grammaticalized form than PredP. Thus, it can be stated that *alive* and *asleep* are the most grammaticalized items among A-class adjectives. This is certainly related to the fact that they are the most frequently used items in the relevant class, though we will not discuss the details here (see Bybee 2003, Hopper and Trougott 2003: 126–130 for the relevance of frequency to grammaticalization).

## 3. Grammaticalization of *Alive*

This section investigates how A-class adjectives, which were originally PPs where the preposition *on* was followed by bare nominals, obtained the categorial statuses and the distribution summarized in Table 1 in the history of English, particularly focusing on the process of grammaticalization of *alive*, which is one of the most frequently used and thus most grammaticalized items among A-class adjectives. After reviewing the result of my corpus investigation in Section 3.1, I will attempt to provide an explanation of its structural change in Section 3.2.

### 3.1 Data

The corpora I employed in this study are the Penn-Helsinki Parsed Corpus of Middle English, Phase II (PPCME2) and the Penn-Helsinki Parsed Corpus of Early Modern English (PPCEME). I examined the forms in which the preposition and the noun appear independently as free morphemes (*on life* and its variants) and those in which the prefix and the stem constitute a single adjective (*alive* and its variants).[3] Table 2 summarizes the number of their occurrences in each period, where P and A represent the predicative and attributive uses, respectively.[4] Throughout ME and early Modern English (ModE), *on life* and *alive* in their attributive use are all postnominal, and none of them appear in the prenominal position.

Table 2

The distribution of *on life* and *alive* in PPCME2 and PPCEME

| | M1 | | M2 | | M3 | | M4 | | E1 | | E2 | | E3 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P | A | P | A | P | A | P | A | P | A | P | A | P | A |
| on life | 20 | 3 | 0 | 0 | 5 | 2 | 8 | 3 | 6 | 0 | 0 | 0 | 0 | 0 |
| alive | 1 | 0 | 1 | 0 | 13 | 0 | 5 | 0 | 22 | 1 | 39 | 2 | 23 | 9 |

In early ME, *on life* is overwhelmingly dominant over *alive*, which is only sporadically observed until M3, though the paucity of examples in M2 may be due to the relatively small size of the subcorpus of this period.[5,6] M3, M4, and E1 are transitional periods where *on life* and *alive* coexist, with the number of the latter gradually increasing to replace the former. The change of the preposition *on* to the affix *a-* culminates in E2. From this period onward, *alive* is exclusively used, and there are no examples of *on life* found in the corpora.

Examples of *on life* and *alive* in their predicative and attributive uses are presented in (17)-(20). In (17) and (19), a, b, and c are examples of main clause predicates, small clause predicates, and secondary depictive predicates, respectively.

(17) Predicative *on life*

a. Alls iff he wære *o life*,
also if he were on life (CMORM, I, 284.2343; M1)

b. For when all þe dyscypull beleuedon and tolden hym, þat
for when all the disciples believed and told him that
Cryst was rysyn from dethe to lyue, and þay haden seen
Christ was risen from death to live and they had seen
hym *on lyue*,
him on life (CMMIRK, 18.527; M34)

c. but alle the kynges helde them togyders with her knyghtes
but all the kings held them together with their knights

that were lefte *on lyve*,
that were left on life (CMMALORY, 14.414; M4)

(18) Attributive *on life*

a. & þeo beoð to all men *o liue* iliche imeane.
and those are to all men on life alike in common
(CMHALI, 142.207; M1)

b. As anemptys obedience, hit is knowen þat Cristys
as regards obedience it is known that Christ's
obedience kept clene were sufficient to alle men here *on*
obedience kept clean were sufficient to all men here on
*lyue*.
life (CMWYCSER, I, 358.2340; M3)

c. for he slowe my brothir sir Carados at the Dolerous
for he killed my brother sir Carados at the Dolorous
Towre, that was one of the beste knyghtes *on lyve*;
Tower that was one of the best knights on life
(CMMALORY, 191.2819; M4)

(19) Predicative *alive*

a. Now this farre forth I saie for them that are yet *alyue*.
now this far forth I saw for them that are yet alive
(MROPER-E1-P2, 528.50)

b. And yf thys be not ynough to kepe a man *alyue* in good
and if this be not enough to keep a man alive in good
fayth I long not to lyue.
faith I long not to live (MORELET2-E1-P1, 553.132)

c. And they and all that pertayned vnto them, went doune
and they and all that pertained onto them went down
*alyue* vnto hell,
alive onto hell (TYNDOLD-E1-H, XVI, 20N.744)

(20) Attributive *alive*

a. And ther be men yet *alyve* that can shew the places and
and there be men yet alive that can show the places and
cemiteries wher yn the al stoode.
cemeteries wherein the all stood
(LELAND-E1-P2, 119.320)

b. for you must vnderstand, that the oldest man *aliue* neuer
for you must understand that the oldest man alive never
saw but the snow was on the top of diuers of those hills,
saw but the snow was on the top of diverse of those hills
both in Summer, as well as in Winter
both in summer as well as in winter
(JOTAYLOR-E2-H, 1, 135.C1.206)

c. My Brother is, first, the most constant Man *alive.*
my brother is first the most constant man alive
(FARQUHAR-E3-P1, 11.97)

We can see from these examples that *on life* and *alive* were used in much the same environments as in PE, except that they never appeared in the prenominal position.

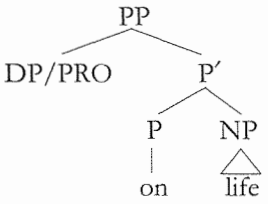
What is particularly interesting for our discussion is the way *alive* replaces *on life* in the course of its change. A close examination of the figures in Table 2 reveals that although the new form *alive* is observed as early as M1 and its examples are constantly found throughout the periods investigated, *alive* is solely used as a predicate during ME; that is, it is not until E1 that we find an instance of the attributive *alive.* This strongly suggests that the change from *on life* to *alive* began in the predicative position, whereupon the new form extended its distribution to the (postnominal) attributive position. Therefore, the question arises: Why did the grammaticalization of *alive* follow such a complex process?

## 3.2 Analysis

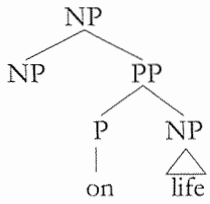
### 3.2.1 From PP to PredP

To provide an explicit answer to this question, we first need to establish the structure of the PP *on life*. Concerning the structural property of PPs, Hale and Keyser (2002: 8), based on their configurational approach to argument structures, state the following: "Prepositions are prototypically "birelational"; they specify a relation (spatial, temporal, or other) between two entities (or two events, circumstances, etc.). [. . .] It is at least intuitively appealing to think of the structure of a prepositional projection as involving a kind of predication." Drawing on their insight, I posit the structure of predicative *on life* in (21a), where the head *on* specifies a relationship between the subject, which is lexical or PRO, and the NP *life*. With respect to the postnominal attributive use, let us (somewhat tentatively) assume the structure in (21b), in which PP is adjoined to NP.

(21) a. predicative




b. postnominal

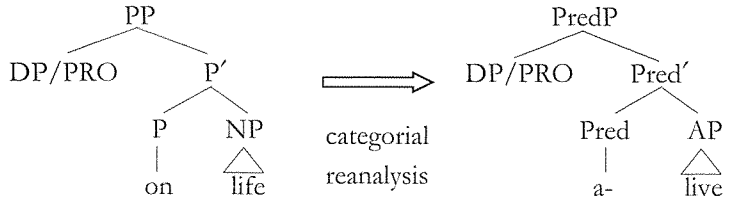



In the predicative use, *on life* combines with the subject DP/PRO via *set Merge* and the head P projects to form PP; in the postnominal use, on the other hand, *on life* as an adjunct is introduced into the structure via *late Merge* (see Chomsky 2004). It can be plausibly supposed that (21a) is qualified as the canonical relation for predication, in the sense that the two nominals related by P are both included in the projection of P.[7]

With the structures in (21) in mind, let us consider the first step of the change from *on life* to *alive*. One can notice that two familiar processes of grammaticalization are involved here, which functioned together to bring

about the prefix *a-*: the phonological attrition of the preposition *on* and the simultaneous semantic bleaching. Of particular interest for the present discussion is the latter process. The preposition *on* originally expresses a spatial relation in the real world; however, this connotation is already metaphorically abstracted in *on life*, and is completely bleached out in *alive*. Given that the prefix *a-* occupies the functional head Pred that expresses a genuine predicative relation devoid of spatial or temporal meaning, as discussed in Section 2.2, it appears rather reasonable to suppose that the change from *on life* to *alive* began at the environment of canonical predication in (21a). If this is the case, we can represent the relevant change as follows:

(22) *The change from PP to PredP in the predicative position*




Let us also assume that along with the reanalysis of P to Pred, the category of the complement also changed from NP to AP; that is, the light functional head *a* was replaced by light *n* (see the discussion in Section 2.2).

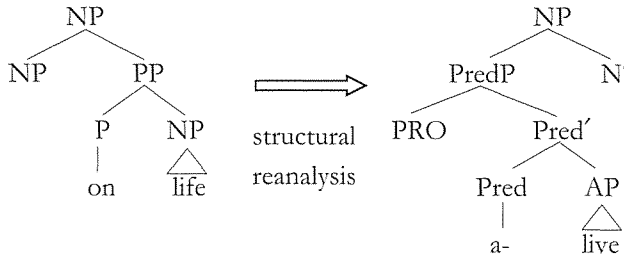
The key factor that facilitated the change in question is the functional parallelism between P and Pred, both of which are responsible for some kind of predication. As for the emergence of Pred in the history of English, Tanaka (2007) and Yokogoshi (2007), based on their analyses of structural properties of small clauses, independently argue that this functional category developed in late ME. The result of my investigation in Table 2 supports their claim as well, showing that the number of *alive* sharply increases in M3. To put it more precisely, the first step of the change from *on life* to *alive* can be summarized as involving the following (direct or indirect) triggers: (i) the rise of the functional category Pred, which laid the ground for the categorial

reanalysis; (ii) the fact that [$_{PP}$ DP/PRO on life] represented the canonical predicative relation; and (iii) that the spatio-temporal meaning of the preposition *on* and the referential meaning of the NP *life* were abstracted in the PP *on life*. Importantly, the requirements (ii) and (iii) are satisfied by all members of the A-class adjectives listed in (2) at the outset; therefore, the present analysis is expected to apply not only to the specific case of *alive* but also to the grammaticalization of the entire A-class adjectives.

### 3.2.2 The Spread of PredP

Next, let us proceed to the second step of the change. The data in Section 3.1 show that after its establishment in the predicative position, PredP extended its distribution to the postnominal position. The structural reanalysis therein can then be represented as follows:

(23) *The spread of PredP in the postnominal position*




In the old structure, the word order in which the modified noun precedes *on life* directly reflects the base structure of the PP-adjunction. (Here, I simply assume for expository purposes that a category adjoined to a maximal projection via late Merge can linearly follow the adjunction site, without elaborating on the precise mechanism for determining the linear order of adjunction structures.) However, once the PP was reanalyzed as PredP and came to be generated in [Spec, N], which is assumed to be the position reserved for attributive adjectives, the word order N-*alive* came to be derived

through N-to-Num raising as in PE.[8]

I would suggest two factors that enabled the change in (23). First, it might be that the postnominal PP *on life* could easily be confused with predicative adjectives due to its rhematic, semi-predicative nature, and the reanalysis of the PP *on life* into the PredP *alive* in the predicative position as discussed above promoted this confusion, resulting in the same kind of reanalysis in the postnominal position as well. Second, it should be noted that in late ME through early ModE where the change in (23) occurred, postnominal adjectives were more productive than in PE. Fischer (2006) mentions several internal and external environments that brought about the postposition of adjectives in ME, including the following: (i) when the adjective involves the prefixes *un-* and *in-*, and the suffixes *-ful* and *-less* and (ii) when there is a preposed quantifier. (i) suggests that the N-A word order was closely related to the structural complexity of modifiers, which was also the case with the PP *on life*. Furthermore, as indicated by the examples in (18a, b) above, repeated here as (24a, b), postnominal *on life* often cooccurred with preposed quantifiers. This is the same environment as that for the postnominal adjectives in (ii).

(24) a. & þeo beoð to all men *o liue* iliche imeane.
(CMHALI, 142.207; M1)

b. As anemptys obedience, hit is knowen þat Cristys obedience kept clene were sufficient to alle men here *on lyue*.
(CMWYCSER, I, 358.2340; M3)

A detailed analysis of postnominal adjectives in early English falls outside the scope of this article; however, the null hypothesis would be that they were derived through N-to-Num movement, as in PE.[9] Accordingly, we are naturally led to suppose that since the postnominal PP *on life* satisfied the condition for postnominal adjectives in (i) and (ii), the word order in which N was followed by *on life* was misanalyzed as the postposition of adjectives

(with the functional category Pred); consequently, *on life* underwent structural reanalysis from an adjunct to the specifier, that is, from the element introduced by late Merge to that introduced by set Merge.

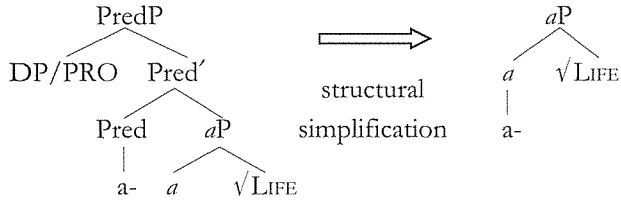
### 3.2.3 From PredP to AP

The final step of the historical change of *alive* involves the emergence of the meaning 'full of energy' and the concomitant development of prenominal modification. As is evident from my corpus investigation sketched out in Section 3.1, no examples of this usage are observed throughout ME and early ModE. The first citation in the *OED* is the following from late ModE:

(25) She was not so much alive the whole day, if she slept more than six hours. (1748 Richardson *Clarissa* (J.)/*OED*)

Note that *alive* in this example is accompanied by the degree expression *so much*. If the analysis in Section 2.2 is correct, this can be taken to suggest that the affix *a-* no longer occupies the functional head Pred and is included within AP. In line with the standard phrase structure under DM — in which A is decomposed into the adjectivizer *a* and the stem — let us assume that the affix *a-* is located at the adjectivizer *a*. Therefore, the relevant change can be represented as in (26).

(26) *The change of* alive *from PredP to AP*




As a result of this process, *alive* came to be realized by a simpler structure than before while reserving its phonological form. Moreover, in the case of the

attributive use, the change of the entire structure from PredP to AP canceled the necessity for the head of the modified NP to raise to Num to control PRO; consequently, N came to stay in situ, yielding a linear order wherein *alive* precedes the modified noun in the same way as other ordinary adjectives.

### 3.3 Summary

From the discussion thus far, the historical change from *on life* to *alive* can be summarized as follows with respect to the categorial statuses and the environments in which each category could occur:

Table 3

The history of *alive*

| | Stage I (M1, M2) | Stage II (M3, M4) | Stage III (E1, E2, E3) | Stage IV (1784-) |
|---|---|---|---|---|
| Predicative | PP | PredP | PredP | PredP/AP |
| Postnominal | PP | PP | PredP | PredP |
| Prenominal | * | * | * | AP |

The table above presents the overall picture of how the new categories emerged and extended their distributions in the course of the change. The relevant stages are divided along with the periods in Table 2 above for the sake of reference (though there are in fact overlaps of stages in each period). In Stage II, the PP *on life* in the predicative position was reanalyzed as the PredP *alive* through phonological attrition and semantic bleaching. The next step, Stage III, resulted from the spread of the new form into the postnominal position. Finally in Stage IV, the prefix *a-* shifted from Pred to the adjectivizer *a*, which caused the development of genuine adjectival uses of *alive*, including prenominal modification.

The structural changes between the stages are reproduced in (27). In each case, a certain phonological or interpretive identity promoted the

changes in question.

(27) a. From Stage I to Stage II:
Categorial reanalysis under functional identity
$[_{PP}$ DP/PRO on $[_{NP}$ life$]]$ → $[_{PredP}$ DP/PRO a- $[_{AP}$ life$]]$

b. From Stage II to Stage III:
Structural reanalysis under word order identity
$[_{NP}$ NP $[_{PP}$ on life$]]$ → $[_{NP}$ $[_{PredP}$ DP/PRO a- $[_{AP}$ life$]]$ N′ ]

c. From Stage III to Stage IV:
Structural simplification under phonological identity
$[_{PredP}$ DP/PRO a- $[_{AP}$ life$]]$ → $[_{aP}$ a- √LIFE]

From Stage I to Stage II, PP came to represent the predicative relation, and hence the reanalysis into the functional projection PredP. From Stage II to Stage III, the base-generated position of PredP changed from an adjunct to the specifier while the word order N *on life*/*alive* was preserved. From Stage III to Stage IV, structural simplification occurred under the phonological identity of *alive*.

## 4. Theoretical Implications

Having described the history of *alive*, let us finally consider its implication for the theory of grammaticalization. Section 4.1 briefly reviews the realizational approach to grammaticalization based on DM developed in Nawata 2005, 2006 and shows that the change of *alive* can be adequately explained by this approach. Section 4.2 critically evaluates the theoretical analyses of grammaticalization in Roberts and Roussou 2003 and Van Gelderen 2004, by examining the direction of grammaticalization within phrase structures.

### 4.1 A Realizational Approach to Grammaticalization

The most salient difference between DM and the standard Minimalist model in Chomsky 2000, 2001, 2004 is that in the former, the components that deal with lexical information are literally distributed within the grammar: the *Lexicon*, the *Vocabulary*, and the *Encyclopedia*. The Lexicon functions as the input for syntactic computation, which includes only morpho-syntactic and possibly semantic features but not any phonological features. The Vocabulary is the list of rules that specify correspondences between morpho-syntactic features and phonological expressions. In accordance with these rules, *Vocabulary insertion* is applied to the output of the syntactic component at the PF side of the branching after Spell-Out. Thus, unlike the standard Minimalist model, lexical insertion realizes syntactic terminal nodes (called *morphemes*) post-syntactically. Finally, the Encyclopedia is the locus of idiosyncratic and extralinguistic information. In line with Nawata 2005, I assume here that in addition to the correspondence rules in the Vocabulary, Encyclopedic information is also referred to for the purpose of Vocabulary insertion when necessary (for a full exposition of the overall grammatical model of DM, see Harley and Noyer 1999).

Morphemes are classified into *f-morphemes* and *l-morphemes*, according to whether or not they need Encyclopedic information for Vocabulary insertion; whereas phonological forms of the former are uniquely determined by referring to the information in the Vocabulary, the latter additionally requires Encyclopedic information as illustrated below, where LP stands for "lexical phrase":

(28) a. /the/ ⟷ D[+definite]
b. /dog/ ⟷ [$_{nP}$ *n* [$_{LP}$ ____ ]] + "a four-legged animal that is often kept by people as a pet or to hunt or to guard"

F-morphemes and l-morphemes virtually correspond to functional and lexical

categories in the traditional sense. Phonological expressions like /the/ and /dog/ in (28) are called *Vocabulary items*.

Under the framework of DM sketched above, I argued in Nawata 2005, 2006 that grammaticalization is essentially a morpho-phonological change at PF, not a syntactic phenomenon per se, and gave the following definition:

(29) *Gramaticalization under DM*
Grammaticalization is a process in which a correspondence rule between morpho-syntactic features and their phonological expression (called Vocabulary item) changes due to the shift of information in the Vocabulary and/or the Encyclopedia.
(Nawata 2006: 93)

Furthermore, I proposed the following economy condition on Vocabulary insertion as a trigger of grammaticalization:

(30) *Economy of Vocabulary insertion* (*EVI*)
Minimize the cost of Vocabulary insertion, where the cost is calculated in terms of the amount of information necessary.
(*ibid.*)

According to the EVI, l-morphemes are always less economical than f-morphemes in that they need to refer to the Encyclopedia in addition to the Vocabulary to determine their phonological shape. Thus, the EVI can naturally account for the general tendency of grammaticalization to proceed from lexical categories to functional ones.

In light of these factors, let us return to the history of *alive*. The relevant Vocabulary items and their correspondence rules in each stage of the change can be illustrated in (31).

(31) a. /on/ $\longleftrightarrow$ [$_{pP}$ *p* [$_{LP}$ ____ ] ] + LOCATION

b. /a-/ ⟷ Pred/[$_{aP}$ *a* [$_{LP}$ √LIFE ] ]
c. /a-/ ⟷ *a*/[$_{LP}$ √LIFE ]

(31a) is the correspondence rule for the preposition *on* in *on life*. Let us assume that prepositions are l-morphemes and their lexical conceptual meanings are stored in the Encyclopedia (see the discussion immediately below). Here, the relevant information is expressed as LOCATION. (31b, c) are correspondence rules for the affix *a-* as Pred and the adjectivizer *a*, respectively. It is important to note that the Vocabulary item /a-/ does not always correspond to Pred or *a*; rather, it realizes these functional heads only when these heads are followed by certain specific stems. Thus, the correspondence rules include contextual specifications ([$_{aP}$ *a* [$_{LP}$ √LIFE ] ] in (31b) and [$_{LP}$ √LIFE ] in (31c)), in addition to the syntactic terminals into which the Vocabulary item is inserted.

The following points are important for the present discussion. First, whereas the choice of the Vocabulary item /on/ depends on the conceptual meaning in the Encyclopedia, such information is unnecessary in the case of /a-/. Second, comparing the contextual specifications in (31b, c), we can immediately notice that the stem √LIFE and the position to be filled with /a-/ are adjacent in (31c), while they are separated by the intervening head in (31b); thus, the size of the syntactic chunk that has to be searched for Vocabulary insertion is smaller in (31c) than in (31b). It can be concluded from these observations that as a whole, the amount of information necessary for Vocabulary insertion decreases as grammaticalization proceeds. This indicates that the diachronic change of *alive* can be properly described in terms of the EVI, which in turn suggests the validity of the present realizational approach to grammaticalization based on DM.

The above discussion crucially depends on the assumption that the preposition *on* realizes a lexical category, which is, however, far from obvious (for the argument that P is a functional category, see Baker 2003 among others). If P is really functional, my analysis of the grammaticalization of *alive*

does not hold. In this case, to complete the present discussion, it is necessary to present evidence in support of P as a lexical rather than a functional category, like N, V, and A.

Déchaine (2005) convincingly argues that P is indeed lexical, by examining its syntactic behavior in light of Abney's (1987) five diagnoses for distinguishing lexical and functional categories: (i) while lexical categories form an open class, functional categories form a closed class; (ii) while lexical categories are morpho-phonologically independent, functional categories are not; (iii) functional categories select exactly one complement, which must be of a particular category, whereas lexical categories do not have such a fixed valency; (iv) while lexical categories can be stranded, functional categories cannot; (v) unlike lexical categories, functional categories lack descriptive semantic contents. The summary of the tests made by Déchaine is given in Table 4.

Table 4

Abney's criteria for functional categories

| Domain | Criteria | D, T, C | P |
|---|---|---|---|
| (i) class size | · closed class? | yes | relatively open |
| (ii) morpho-phonology | · dependent? | yes | not always |
| (iii) internal syntax | · only 1 complement? | yes | no |
| | · selects category? | yes | no |
| (iv) external syntax | · stranding? | no | yes |
| (v) semantics | · descriptive content? | no | yes |

(Déchaine 2005: 9)

This clearly indicates that P contrasts with the canonical functional categories D, T, and C, suggesting that it is a lexical category.

Due to space limitations, I refrain from reviewing all the points in Table 4, only mentioning one lexical behavior of P. As illustrated in (32),

prepositions, like other ordinary lexical categories, can function as the input and output of lexical conversion.

(32) a. to *up* the ante (P→V)
b. the *up*-s and *down*-s of life (P→N)
c. to be very *up* ('happy') (P→A)
d. *concerning* Lucy (V→P)
e. *chez* Lucie (N→P)
f. *near* the door (A→P)
(*ibid.*: 12)

The familiar notions of "input" and "output" of conversion may be misleading, because it is possible under DM to suppose that they are actually derived from a common root, and that there is no direct derivational relationship between them. Thus, the P and V in (32a) can be assumed to share the correspondence rule in (33).

(33) /up/ ←→ [ $_{LP}$ ____ ] + LOCATION

The Vocabulary item /up/ is inserted into the designated root position by referring to the common lexical conceptual meaning LOCATION, which is assumed in this study to be stored in the Encyclopedia. Its syntactic category is derivationally determined by whether it is further selected by *p* or *v*. (Déchaine herself offers a somewhat different analysis, but this does not matter for the present discussion; the point is that P is a lexical, not a functional, category.)

On these grounds, it can safely be concluded that P is a lexical category with its Encyclopedic meanings in the same way as are N, V, and A. This in turn supports the validity of the explanation for the diachronic change of *alive* based on the EVI.

### 4.2 Direction of Grammaticalization: Upward or Downward?

This section evaluates recent proposals on the mechanism of

grammaticalization made within the Minimalist framework and argues that the structural change of *alive* constitutes counterevidence to them.

It is widely assumed that grammaticalization is subject to economy conditions of some sort. My approach is not unique in this respect. For example, Roberts and Roussou (2003) employ the simplicity metric in (34) proposed by Longobardi (2001).

(34) A structural representation R for a substring of input text S is simpler than an alternative representation R′ iff R contains fewer formal feature syncretisms than R′.

(Roberts and Roussou 2003: 201)

Feature syncretism is defined as the presence of more than one formal feature in a given structural position. Given that a syntactic category bears at least one formal feature, the movement of a category Y that targets another category X will necessarily result in a feature syncretism at the position where the complex category consisting of X and Y occurs. Based on this reasoning, Roberts and Roussou (2003) delineate the general pattern of grammaticalization as in (35).

(35) $[_{XP}\ Y+X\ [_{YP}\ t_Y]\ ] > [_{XP}\ Y=X\ [_{YP}\ Y]\ ]$ (*ibid.*: 207)

This illustrates the process in which Y, which has realized the head X via *Move*, is reanalyzed as the expression directly inserted into X via *Merge*, and a new expression emerges at the position originally realized by Y. The whole process is claimed to be driven by the force that avoids the feature syncretism. Roberts and Roussou then conclude that grammaticalization is essentially an upward process, which brings about a novel expression for a higher functional head.

They attempt to explain numerous instances of grammaticalization in terms of the simplicity metric in (34) and the general structural format in

(35), one of which is the development of English modals. The change can be schematically represented as follows:

(36) [$_{TP}$ hit mæi [$_{VP}$ $t_{mæi}$ [$_{TP}$ T [$_{VP}$ ilimpen] ] ] ]
>[$_{TP}$ it may [$_{VP}$ happen] ]

The premodal *mæi* on the left side is base-generated in V in much the same way as main verbs and raises to T; that is, it realizes T via Move. Note also that the premodal selects TP as its complement, and thus, the whole sentence has a biclausal structure. In contrast, in the new structure on the right, the modal *may* is directly inserted into T via Merge and the sentence has been reanalyzed as a monoclausal structure. Crucially, the process as a whole can be described as an upward shift of the (pre)modal from V to T.

Another study that analyzes grammaticalization by invoking the notion of economy is by Van Gelderen (2004). One of the economy conditions that she bases her analysis on is the one proposed by Chomsky (1995): Merge is preferred over Move in the syntactic computation.[10] From this, Van Gelderen derives the Late Merge Principle in (37) on the grounds that it is more economical to directly merge an element at its final position than to merge it elsewhere and then move it to the target.

(37) Late Merge Principle: Merge as late as possible.
(Van Gelderen 2004: 12)

She applies this principle to diachronic changes, claiming that grammaticalization is a process wherein an element that is originally merged as a lexical category and undergoes movement to a higher functional head comes to be directly merged within the functional domain in accordance with the Late Merge Principle. Note that this approach can also accommodate the emergence of English modals mentioned above. Thus, for Van Gelderen as well, grammaticalization is an upward change.

However, the thesis defended in Roberts and Roussou 2003 and Van Gelderen 2004 that grammaticalization by definition has an upward direction excludes a considerable number of phenomena generally grouped under the rubric of grammaticalization, which can broadly be classified into the following three cases: (i) a lexical category shifts into a functional category in a given phrase structure; (ii) a lexical category undergoes a categorial reanalysis and changes into a new functional category; and (iii) a functional category shifts or changes into another functional category. Of these, the change in (i) is essentially an upward process, since functional categories are placed above lexical categories in phrase structures. The development of modals is the case in point. An example of (ii) is the reanalysis of the PP *on life* to the PredP *alive* (see (22) above). In this case, we cannot ask the direction of grammaticalization because the preposition and the affix occupy the same hierarchical position before and after the change. With respect to (iii), the possibility is that grammaticalization may be upward or downward in a stacked configuration of functional categories. To take our example again, in the change of *alive* from PredP to AP, the prefix shifts its position from Pred to the adjectivizer *a*, which is clearly an instance of a downward shift. Thus, the "upward thesis" can only deal with cases in (i); in particular, it cannot provide an adequate analysis of the history of *alive*.

On the other hand, the EVI, repeated here as (38), can include all cases in (i)–(iii) in its scope.

(38) Minimize the cost of Vocabulary insertion, where the cost is calculated in terms of the amount of information necessary.

As explicated in 4.1, l-morphemes are less economical than f-morphemes in that they need extra information in the Encyclopedia for Vocabulary insertion. Thus, the EVI can accommodate cases in (i) and (ii) without exceptions (see Nawata 2005 for an analysis of the grammaticalization of English modals along this line). Moreover, with respect to the cases in (iii), it should

be emphasized that the EVI does not prohibit the downward shift of Vocabulary items. Recall that in the change of *alive* from PredP to AP, the new structure needs less contextual information (the amount of syntactic chunk to be searched) for the insertion of the Vocabulary item /a-/. Thus, the change also accords with the EVI.

All in all, it is clear that the EVI is superior to the "upward thesis" in empirical coverage. The history of *alive* — and possibly that of A-class adjectives in general — is an instance of grammaticalization that exhibits a pattern correctly predicted only by the EVI.

## 5. Concluding Remarks

In this article, I attempted to offer a principled explanation for the syntactic behaviors of A-class adjectives and their morphological and distributional changes in the history of English, particularly focusing on the grammaticalization of *alive*. First, with respect to A-class adjectives in PE, I drew on the insight of Nakajima (2004) and attributed their peculiar properties to their clausal status as PredP. Then, through PPCME2 and PPCEME, I investigated how the PP *on life* changed into the PredP/AP *alive* extending its distribution; I also considered the causes of the series of changes. Finally, I examined the result of the investigation in light of recent proposals on the theory of grammaticalization and argued that although the history of *alive* constitutes counterevidence to the "upward thesis," it can be adequately handled by the realizational approach to grammaticalization based on DM.

I will conclude this article by mentioning a possible application of the analysis presented here. A-class adjectives are not the sole example of grammaticalization in which a preposition changes into an affix in the history of English. Another instance that immediately comes to mind is the "He is on hunting" construction, which is supposed to have contributed to the establishment of the progressive form in English. In this case, the

preposition *on* accompanied by a gerund originally appeared as predicative PP but later *on* changed into the affix *a-* and finally disappeared; as a result, *hunting* became undistinguishable from a present participle. This construction underwent the same process of change as A-class adjectives in that the head of a predicative PP was subject to phonological attrition. Thus, applying the present analysis, we may possibly argue that the PP *on hunting* changed into PredP and finally into a lexical projection (in this case VP). However, this idea is only speculative at present and awaits further investigation.

## Notes

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1 Among the lexical items in (1), *afraid, aghast, alight,* and *awake* stem from the past participle forms of their corresponding verbs. The affix *a-* in *alike* and *aware* is traced back to OE *ge-*. *Averse* is a loanword from Latin and *alone* is originally a contracted form of *all one*. These items fall outside the scope of this article. We also do not deal with adverbs with the prefix *a-* such as *aside*.

2 As an anonymous reviewer points out, this movement might seem peculiar in that it is not motivated by the necessity of feature checking either on the part of the moved element or of the target; in other words, this is a kind of "Move-$\alpha$" type operation, which can freely be applied in the derivation, resulting in a representation that may (or may not) be properly interpreted at the interface. I refrain from a full exposition of the mechanism of movement in the syntactic computation, which falls outside the scope of this article, but only mention that Chomsky recently suggests the revival of simplified transformation of grammar (Move-$\alpha$ and its variants), stating that it is "a kind of conceptual necessity, given the undeniable existence of the displacement phenomena" (Chomsky 2004: 125).

3 *On life* and *alive* include the following variants: *on life* (*a lyue, o life, a lyve, o liue, on liue, on lyue, on lyve*) and *alive* (*alif, a-lif, alife, aliue, alyf, oliue, alyue, alyve, o-lyue*).

4 The time periods in PPCME2 and PPCEME are divided as follows: M1

(1150–1250), M2 (1250–1350), M3 (1350–1420), M4 (1420–1500), E1 (1500–1569), E2 (1570–1639), and E3 (1640–1710). In the present investigation, texts whose composition date and manuscript date belong to different periods are included in the period of their manuscript date.

[5] The sizes of the subcorpora are 200 to 400 thousand words in M1, M3, and M4, and 500 to 700 thousand words in E1, E2, and E3; only the subcorpus of M2 is smaller than 100 thousand words (93, 999 words).

[6] The accidental occurrences of *alive* in M1 and M2 does not pose a serious problem for the present discussion. This is because the prefix *a-* was already available to produce other A-class adjectives such as *afloat* and *asleep* in these periods; thus, their occurrence is not totally unexpected.

[7] Incidentally, Chomsky (2004) observes that the interpretation of attributive modifiers such as that in (21b) is obtained through predicate composition, a post-syntactic operation.

[8] Two anonymous reviewers commented that the change in (23) seems too abrupt. It might be the case that the structure at the left side of (23) was first reanalyzed into an interim stage in which PredP is adjoined to NP, which later changed into the structure at right side of (23). I am grateful to a reviewer for suggesting this possibility.

[9] I also put aside here the question what triggers N-to-Num movement in postnominal adjective constructions in ME. Perhaps the head Num was optionally strong in ME, or the movement might be freely applied to license the modifier. See also Note 2.

[10] The other economy condition that she assumes is that of Head Preference, according to which a head is more economical than a phrase in the specifier position. The grammaticalization phenomena attributed to this principle include, for example, pronouns changing into agreement inflections and negative words into negative clitics.

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## Corpora

The British National Corpus [BNC]

The Penn-Helsinki Parsed Corpus of Middle English, Phase II [PPCME2]

The Penn-Helsinki Parsed Corpus of Early Modern English [PPCEME]

## Dictionary

*The Oxford English Dictionary*, second edition [OED]

## Synopsis

### The History of *Alive*: Toward a Realizational Approach to Grammaticalization

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In English, there is a class of adjectives that begin with the prefix *a-* (referred to as A-class adjectives in this article). They are employed primarily as predicates, and in cases where they are used attributively, they must follow the nouns they modify, unlike ordinary adjectives. From the historical perspective, A-class adjectives were originally PPs where the preposition *on* was followed by bare nominals. This article addresses the following issues with special reference to the history of *alive*: (i) how the peculiar syntactic behaviors of A-class adjectives in PE can be accounted for; (ii) how the grammaticalization of *alive* proceeded in the history of English; and (iii) what implication the history of *alive* has for the theory of grammaticalization.

With respect to (i), I draw upon the insight of Nakajima (2004) and propose that A-class adjectives are structurally complex, including the functional category Pred, and that the affix *a-* is a phonological realization of this category. PredP occurs either as the complement of *be* or as [Spec, N], which correspond to the predicative and attributive uses, respectively. The word order wherein an A-class adjective precedes the modified noun in the attributive use results from the movement of the noun to a higher functional head Num, which is independently motivated by the necessity of N to function as the controller of the PRO subject in PredP. However, *alive* and *asleep* are exceptions to this rule in that they precede the modified noun under certain interpretations. It is argued that they are the most grammaticalized items among A-class adjectives because they have an AP structure like ordinary adjectives (and unlike other A-class adjectives) in addition to the PredP structure.

The issue in (ii) is discussed based on my corpus investigation. The

distribution of *on life* and *alive* in PPCME2 and PPCEME indicates that the shift from the former to the latter began in the predicative position and then spread to the environment of the attributive use. Furthermore, there are no examples of prenominal *alive* in these corpora and the first instance in the *OED* is found in late ModE. In light of these facts, I present an analysis of the grammaticalization of *alive* as follows: (a) first, the PP *on life* was reanalyzed as the PredP *alive* in the predicative position; (b) then, PredP spread to the postnominal attributive use, replacing the old structure where PP was adjoined to NP; and (c) finally, the structural simplification from PredP to AP occurred. The main factor that promoted the change in (a) is the functional parallelism between PP and PredP in that they both represent some kind of predication. The change in (b) was facilitated by the presence of other postnominal adjectives, which were more productive in ME than in PE. The change in (c) resulted from the shift of the prefix *a-* from Pred to the adjectivizer *a*.

With respect to the issue in (iii), I argue that the process of grammaticalization of *alive* serves as a counterexample to the analyses in Roberts and Roussou 2003 and Van Gelderen 2004. They define grammaticalization as an essentially upward change within a given phrase structure. However, the change in (c) in which the prefix *a-* shifted from Pred to the adjectivizer *a* is clearly downward; thus, their analyses miss an important part of the phenomenon. On the other hand, under my approach, which considers grammaticalization as a change in correspondence rules at PF, downward shifts are not prohibited in principle; instead, grammaticalization is governed by the economy condition stating that lexical insertion favors less information. It is argued that the history of *alive* proceeded consistently with this economy condition, thus suggesting the validity of my approach.