# Structure markers

## A subjacency duplex analysis

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In this paper we revisit the association of types of structure with modes of
meaning in systemic functional linguistics (SFL). Focusing mainly on
nominal group grammar, we argue that the association of experiential
structure with non-recursive systems realised by multivariate structures and
logical structure with recursive systems realised by univariate structures
needs to be relaxed – in recognition of dependency structures consisting of
two elements in a head/dependent relation. We refer to such structures as
subjacency duplexes and explore their potential for the analysis of what are
often dismissed in SFL as structure markers – adpositions, linkers and
binders in particular.

**Keywords:** subjacency duplex, types of structure, structure marker, logical
metafunction, recursion, nominal groups

## 1. Structure markers

In systemic functional linguistics (hereafter SFL) Halliday's description of English
grammar (1985 and subsequent editions) is generally taken as a bench mark,
proposing as it does rich functional descriptions of clauses, groups and phrases.
In the fourth edition (2014) a number of references are made to what are termed
"structure markers" – with reference to *of* in nominal groups, *to* in verbal groups
and conjunctive binders (e.g. *that, which, whether, if; when, because, if, although*)
and linkers (e.g. *and, or, but, so*). Of these, binders and linkers are treated as
structural Themes but otherwise analyses with distinct function labels for struc-
ture markers are not provided. A representative description from Halliday with

Matthiessen (2014) is provided as Figure 1 below.[1] Note that neither the experiential nor logical tier of analysis provides a specific function label for *of*.

| [there was snow on] | the | tops | of | the | hills |
|---|---|---|---|---|---|
| experiential | Facet | | | Deictic | Thing |
| | Deictic | Thing | | | |

| logical | (Modifier) | Head | Qualifier | | |
|---|---|---|---|---|---|
| | β | α | | (Modifier) | Head |
| | | | | β | α |

**Figure 1.** Nominal group with Facet expression (Halliday with Matthiessen 2014: 396)

As Fontaine (2017: 280) comments, "It is well known that *of*-expressions are problematic…". McDonald (2017: 263) similarly expresses concern about the need to account "for a structural marker that is not itself part of a structure, such as *of* in English, *de* in French, *zhi* in classical Chinese or *de* in modern Chinese, or *no* in Japanese". McDonald's concern reflects the expansion of SFL descriptions to include a wide range of languages and within these descriptions to include analyses at group/phrase rank. Mwinlaaru and Xuan (2016) ably review this ongoing enterprise and Martin et al. (2021) introduce four special issues of *Word* (67.3, 67.4, 68.1 and 68.2) dedicated to nominal group system and structure which are of special relevance to this paper (see also Caffarel et al. 2004; Martin and Doran 2015; Matthiessen 2015; Martin, Doran and Figueredo 2020; Quiroz et al. 2021). As SFL addresses an ever-wider range of languages and extends descriptions to include group/phrase and word rank systems and structures, sweeping structure markers under the carpet becomes less and less tenable. Thus in this paper we focus on these structure markers and suggest how to deal with them. In doing so we re-visit SFL's conception of types of structure and suggest a generalisable account of structure markers which makes room for their analysis in tables or trees.

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**1.** The experiential label Qualifier on the logical tier, where a Post-Modifier function might be expected, is surprising, as is the absence of a post-α β function below (for *of the hills*); however, these labelling issues are not directly relevant to the paper and so will be set aside here.

## 2. Experiential labelling

One of the main issues with these structure markers is that they do not neatly "fit" into the typical configurations of structure that SFL proposes. For example, one possibility for incorporating structure markers into the description of nominal groups is to assign them a function label, such as Focus Marker below. This treatment positions them as an additional element of experiential structure – i.e. as a constituent of the unit being analysed. This is in effect the strategy of what is often referred to as Cardiff grammar, which labels the Focus Marker in (1) as "v", standing for what Fawcett calls the "selector" element of nominal group structure (Fawcett 1980: 204; cf. Fontaine and Schönthal 2020). This treatment as a Focus Marker is outlined for Halliday and Matthiessen's Example (1) below, revising the terminology along the lines of that proposed in Martin et al. (2010: 170) (so Focus rather than Facet) and incorporating both class and function labels to clarify the embedded nominal group involved. Following SFL notation the embedded group is enclosed in square brackets.

(1) English

| *the* | *tops* | *of* | *the* | *hills* |
|---|---|---|---|---|
| nominal group | | | | |
| Focus | | | Deictic | Thing |
| [nominal group] | | | determiner | noun |
| Deictic | Thing | **Focus Marker** | | |
| determiner | noun | **clitic** | | |

This type of analysis is adopted for function marking post-positions in Korean nominal groups in Martin and Shin (2021) and Kim et al. (2023), as illustrated in (2). The adpositions in question (*i/ga, eul/reul, e, ege, hante* etc.) sort out the participant roles associated with experiential clause types and in Korean culminate almost every nominal group that plays a participant role in clause structure. The term proposed for these structure markers is Experiential Function Marking (EFM for short). In Example (2), following Kim et al.'s terminology, these markers position the woodcutter as Actor, the winged dress as Undergoer and the nymph as Recipient. In the analysis tables below p1, p2, p3 sort out the marking of participant roles. Following Leipzig glossing rules, the dependent clitics realising the Experiential Function Marking are prefaced "=". Throughout, we have given word glosses, rather than a full morphemic gloss as we are typically focusing on word and group ranks. This word-by-word gloss and the Leipzig notations used should not be read as a formal SFL analysis, but rather as a lingua franca gloss for understanding across theoretical frameworks.

(2) Korean

나무꾼이 선녀에게 날개옷을 주었다

| *namukkun* | *=i* | *seonnyeo* | *=ege* | *nalgae* | *os* | *=eul* | *ju-eot-da* |
|---|---|---|---|---|---|---|---|
| woodcutter | **NOM** | nymph | **to** | wing | dress | **ACC** | gave |
| clause | | | | | | | |
| Actor | | Recipient | | Undergoer | | | Process |
| nominal group | | nominal group | | nominal group | | | |
| Thing | **EFM** | Thing | **EFM** | Class | Thing | **EFM** | |
| noun | **p1** | noun | **p3** | noun | noun | **p2** | |

'(the) woodcutter gave (the) nymph (the) winged dress'

Martin and Cruz (2022) adopt a similar analysis for function marking prepositions in Tagalog. There the adpositions (*ang/si/sina, ng/ni/nina, sa/kay/kina*) occupy first rather than culminative position in almost every nominal group that plays a participant role in clause structure. And in conjunction with verb morphology these clitics sort out both participant roles and thematic prominence. Thus in (3), in relation to the affix *in-* in the Process *inaantay* 'was waiting', the pre-position *ni* positions Tonyo as Actor and *si* positions Ningning as Goal and Theme. In (3) "FM" abbreviates Function Marking, "ntp" abbreviates "non-theme participant" and "tp" abbreviates "theme participant".

(3) Tagalog

| *in-a~antay* | *ni=* | *Tonyo* | *si=* | *Ningning* |
|---|---|---|---|---|
| was.waiting.for | **NFOC** | Tonyo | **FOC** | Ningning |
| clause | | | | |
| Process | Actor | | Goal | |
| | nominal group | | nominal group | |
| | **FM** | Thing | **FM** | Thing |
| | **ntp clitic** | proper noun | **tp clitic** | proper noun |

'Tonyo was waiting for Ningning'

One problem with this analysis is that in both Korean and Tagalog a single post-position or pre-position can be used to specify the role of a nominal group complex. In (4) *choego ui gamdok* 'best director' and *tteooreuneun seuta* 'rising star' are complexed by the linker *gwa* 'and' as the Actor participant role – a joint role marked once by the Korean EFM *ga* (analysed below as culminating the second nominal group). The structure of this paratactic complex is notated as 1 +2 below.

(4) Korean

최고의 감독과 떠오르는 스타가 만났습니다

| *choego* | *=ui* | *gamdok* | *=gwa* | *tteooreu-neun* | *seuta* | *=ga* | *manna-t-seumnida* |
|---|---|---|---|---|---|---|---|
| top | LK | director | LK | rising | star | NOM | met |
| clause | | | | | | | |
| Actor | | | | | | | Process |
| nominal group complex | | | | | | | |
| 1 | | | | +2 | | | |
| nominal group | | | | nominal group | | | |
| Orient | | Thing | Linking | Epithet | Thing | EFM | |
| [nominal group] | | noun | clitic | adjective | noun | p1 | |
| Thing | Linking | | | | | | |
| noun | clitic | | | | | | |

'(a) top director and (a) rising star met'

Similarly in (5) *Tonyo* and *Ningning* are complexed by the linker *at* as Goal – a joint role marked once by the Tagalog plural FM *sina*.

(5) Tagalog

| *sabay* | *i-p<in>anganak* | **sina=** | Tonyo | at= | Ningning |
|---|---|---|---|---|---|
| simultaneously | were.born | FOC | Tonyo | and | Ningning |
| clause | | | | | |
| Manner | Process | Goal | | | |
| | | nominal group complex[2] | | | |
| | | 1 | | +2 | |
| | | nominal group | | nominal group | |
| | | FM | Thing | Thing | |

'Tonyo and Ningning were born at the same time'

The analyses provided in both (4) and (5) treat the structure marker as an element of experiential nominal group structure. In doing so, it requires that we position the structure marker as a constituent of one of the two nominal groups in the complex – in Korean, the final nominal group and in Tagalog, the first nominal group. But this fails to show that it is not just the nominal group that includes the structure marker that is assigned a role in clause structure, but rather the nominal group complex as a whole. So labelling the structure marker as a constituent of one of the nominal groups is not adequate because the marker positions the *whole* complex.

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2. A nominal group complex rather than a word complex is recognised here because of the potential for nominal groups in such positions to be expanded (e.g. *Mang Tonyo* 'Mr Tonyo' or *Ginang Ningning Santos* 'Mrs Ningning Arroyo').

Another problem with an analysis of this kind is that it is not just nominal groups in Korean and Tagalog that are assigned a role in clause structure through adpositions; the same set of adpositions are used with embedded clauses. In (6), for example, the structure marker *reul* positions the embedded clause as Phenomenon in a mental clause. Following SFL notation the embedded clause is enclosed in double square brackets.

(6)  Korean
그 사람은 [[남한테 지기를]] 싫어한다

| *geu* | *saram* | *=eun* | *nam* | *=hante* | *ji-gi* | *=reul* | *sireoha-n-da* |
|---|---|---|---|---|---|---|---|
| that | person | TOP | others | =to | losing | **ACC** | dislikes |
| clause | | | | | | | |
| Senser | | | Phenomenon (act) | | | | Process |
| nominal group | | | [[clause]] | | | | |

'he dislikes losing to others.'

Using this analysis would suggest that we need to treat Korean post-positions as culminative elements of embedded clause structure *as well as* nominal group structure – and set up an embedded vs non-embedded clause system at clause rank to trigger realisations of the structure marker. This would entail a loss of generalisation as far as the role of function markers in groups and embedded clauses is concerned.

Alternatively we could argue that such embedded nominal groups are in fact embedded as a function in a nominal group realising the Phenomenon, as outlined in (7). This is a considerable complication of the analysis, for which additional argumentation would have to be provided. It is not clear for example which group function the embedded clause is realising (we somewhat arbitrarily chose Thing below). This analysis also misses the point that an embedded clause has in fact been chosen instead of a nominal group, not within a nominal group.

(7)  Korean
그 사람은 [[남한테 지기를]] 싫어한다

| *geu* | *saram* | *=eun* | *nam* | *=hante* | *ji-gi* | *=reul* | *sireoha-n-da* |
|---|---|---|---|---|---|---|---|
| that | person | TOP | others | TO | losing | ACC | dislike |
| clause | | | | | | | |
| Senser | | | Phenomenon (act) | | | | Process |
| | | | nominal group | | | | |
| | | | **Thing** | | | **EFM** | |
| | | | [[clause]] | | | **p2** | |

'that person dislikes losing to others'

The same issue arises in Tagalog. In (8) the embedded clause *dahan-dahang lumapit sa kanya* 'very slowly approached him' functions as Value (and Theme) in a relational identifying clause – as marked by *ang* (a relatively literal English translation would run along the lines of 'a weak flicker of light was what slowly approached him').

(8) Tagalog

| isa-ng | ma-hina-ng | pag-kislap | ng= | ilaw | **ang=** | dahan-dahang | l-um-apit | sa= | kanya |
|---|---|---|---|---|---|---|---|---|---|
| one | weak | flicker | GEN | light | **FOC** | slowly | approached | OBL | him |

| one<br>clause | | | | | | | | | |
|---|---|
| Token | Value |
| nominal group | [[clause]] |

'one weak flash of light very slowly approached him'

Aside from this structure marker there is nothing to indicate that this clause is embedded (contrast the nominalisation *pag-kislap* 'flicker' in the nominal group realising the Token, with its nominalising prefix *pag-*). The clause *dahan-dahang lumapit sa kanya* can in fact function perfectly well as a ranking clause enacting a negotiable move in an exchange. So once again we either have to suggest that Tagalog adpositions are elements of both embedded clause and nominal group structure – or alternatively insist that *dahan-dahang lumapit sa kanya* is embedded as Thing. Additional argumentation for the latter analysis would be very challenging to provide since there is nothing motivating the analysis of this clause as a nominal group other than the pre-preposition.

In this section two difficulties with an experiential analysis of structure marking adpositions have been reviewed – arising from the relation of these structure markers to nominal group complexes and embedded clauses. By way of working towards an alternative analysis working around these problems we need to step back and reconsider work on types of structure in SFL. In particular we need to focus on the complementarity of experiential and logical meaning, a complementarity passed over briefly above in relation to the tiers of experiential and logical structure proposed by Halliday with Matthiessen (2014) in Figure 1.

## 3. Types of structure

Halliday's original paper on types of structure was prepared in 1965 as a Working Paper for the O.S.T.I. Programme in the Linguistic Properties of Scientific English (and later published as Halliday 1981[1965]). In this paper he draws a basic distinction between multivariate structures involving "a specific set of variables

each occurring only once" (1981[1965]: 33) and univariate structures involving a single variable occurring an unlimited number of times. The contrast here is illustrated in (9) and (10). The structure of the clause in (9) is a canonical multivariate one – consisting experientially of one Carrier, one Process and one Attribute, with none of these functions repeatable. The structure of (10), by contrast, is a canonical univariate one – realised by an indefinitely extendable complex of words grading appreciation of the argument (featuring hypotactic dependency, notated as δ γ β α).

(9) English

| *it* | *was* | *a very much more impressive argument* |
|------|-------|----------------------------------------|
| clause | | |
| Carrier | Process | Attribute |
| nominal group | verbal group | nominal group |

(10) English

| *very* | *much* | *more* | *impressive* |
|--------|--------|--------|--------------|
| word complex | | | |
| δ | γ | β | α |
| adverb | adverb | adverb | adjective |

This complementarity means that there are two ways in which a given structure can be extended. For multivariate structure the relevant process is embedding – as an element of structure is realised by an element of the same or higher rank (a process originally referred to as rankshift). This kind of extension was exemplified by the embedded nominal group in (1) above and the embedded clauses in (6), (7) and (8). For univariate structure on the other hand the relevant process is iteration – as an element of structure is repeated an indefinite number of times.

This complementarity can be nicely illustrated by comparing two strategies for locating an entity in space in English. The embedding strategy moves from part to whole, with embedded prepositional phrases successively realising a Qualifier function in the preceding nominal group to specify the location of the object that is sought:

*in the box*
*in the box [on the shelf]*
*in the box [on the shelf [in the wardrobe]]*
*in the box [on the shelf [in the wardrobe [in the bedroom]]]*

The iteration strategy on the other hand moves from whole to parts, along a path moving progressively from one dependent prepositional phrase to another:

*in the bedroom*

*in the bedroom  in the wardrobe*
α                    β

*in the bedroom  in the wardrobe  on the shelf*
α                    β                    γ

*in the bedroom  in the wardrobe  on the shelf  in the box*
α                    β                    γ                    α

These distinctions are summarised in Table 1 (based on Halliday 1981[1965]: 41). The table includes Halliday's distinction between paratactic and hypotactic univariate structures – as illustrated in (4) and (5) for paratactic nominal group complexes (equal status) and (10) for a hypotactic word complex (unequal status).

**Table 1.** Halliday's 1981[1965] summary of types of structure[*]

| Types of structure | | | |
|---|---|---|---|
| multivariate | | univariate | |
| hierarchic (constituency) | involving rankshift | hypotactic | paratactic |
| non-recursive | cyclically recursive | lineally recursive | |

\* We are indebted to Szenes (in preparation) for Table 1 and Figures 2 and 3, which she reconfigured as pdfs from print materials.

In later work (e.g. Halliday 2002[1979]) Halliday associates these two types of structure with subcomponents of his ideational metafunction – proposing that experiential meaning is construed by multivariate structure and logical meaning by univariate structures. Ideally speaking, from a paradigmatic perspective, this means that experiential meaning involves non-recursive systems (realised by multivariate structure) and concomitantly that logical meaning involves recursive systems (realised by univariate structures). As Matthiessen (1995: 90) specifies,

> The logical metafunction provides generalised resources for creating complexes at any rank. We can view this as one basic resource for complexing consisting of three systems: The option of complexing unit (instead of a simple unit) and, if complexing, whether to go on and stop ... and whether to complex paratactically or hypotactically.

In his 2002[1979] paper Halliday also indicates that non-recursive systems may involve interpersonal meaning realised by prosodic structures and textual meaning realised by culminative ones. The overall picture for non-recursive systems and structures is summarised in Figure 2 (re-drawn from his Figure 11).
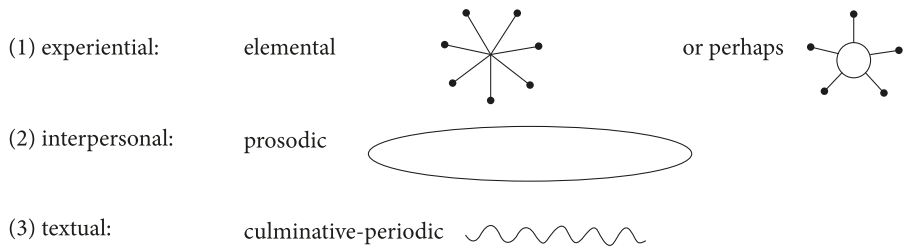
(1) experiential:      elemental                              or perhaps

(2) interpersonal:     prosodic

(3) textual:           culminative-periodic

**Figure 2.** Three types of structure (after Halliday 2002[1979]: 209)

Inspired by Halliday's paper[3] and by his own work on Tagalog grammar (e.g. 1995a) and English text structure, Martin (1988, 1995b, 1996a, 2000, 2004a, 2008, 2018) proposes the correlations between kinds of meaning and types of structure outlined in Figure 3. For particulate structure this means bringing nuclearity into the picture and re-interpreting multivariate structures as orbital (with satellites related to a single nucleus) and univariate structures as serial (i.e. multi-nuclear). This additional variable (i.e. nuclearity) allows for the recognition of "heads" in both experiential and logical structures. The canonical "head" in an orbital structure is exemplified by the Thing in nominal groups, the Event in verbal groups or the configuration of Process and Medium in clause structure; the canonical "head" in serial structure is the α variable in hypotactic complexes – e.g. the primary tense choice in an English or Spanish verbal group (Martin et al. 2023) or the projecting clause in a reporting clause complex across languages.

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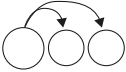**3.** In retrospect, the inspiration was perhaps more from the images in Halliday's paper than the verbiage.

| Types of structure | | Mode of meaning |
|---|---|---|
| particulate | | **ideational meaning** |
| – orbital<br>  [mono-nuclear] | | **– experiential** |
| – serial<br>  [multi-nuclear] | | **– logical** |
| prosodic | | **interpersonal meaning** |
| periodic | | **textual meaning** |

**Figure 3.** Martin's proposal for types of structure (after Martin 1996a: 62)

The notions of "head" and "dependent" have a long history in linguistics, ably reviewed by Pittman (1948) from the perspective of American structuralism. As Pittman comments, for certain constituents a linguist is likely to:

> assign a principal or "central" status; these he may label roots, stems, bases, themes, heads, nouns, verbs, main clauses, etc. To other constituents he is likely to assign a subordinate or "lateral" status; these he may call affixes, enclitics, formatives, attributes, modifiers, subordinate clauses etc. It would be possible to term the central constituents "nuclei"[4] and the lateral ones ' "satellites".
>
> (Pittman 1948: 288)

He goes on to propose ten "premises" which he identifies as constituting the basis for most of the decisions linguists make. His helpful survey is abbreviated below (289–291); in the examples provided, the arrow points from the dependent to its head.

Premise 1:   INDEPENDENCE. If one of the ICs occurs alone but the other does not, the former is usually considered to be central and its concomitant lateral. (*talk←ing*)

Premise 2:   CLASS SIZE. If one of the ICs belongs to a larger form-class (i.e. a class with more members) than the other, it is usually considered to be central and its concomitant lateral. (*go←away*)

Premise 3:   VERSATILITY. If one of the two ICs has a potential range of occurrence with more different classes of concomitants than the other, it is usually considered central and its concomitant lateral. (*come←down*)

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**4.**   Pittman's footnote 7: "Pike appears to have been among the first to use the term 'nucleus' in this sense. See his analysis of a Mixteco text (Pike 1944)."

Premise 4: ENDOCENTRICITY. If a constitute belongs to the same class as one of its immediate constituents, that constituent is usually interpreted as a nucleus and its concomitant as a satellite. (*big←dog*)

Premise 5: CLASS FREQUENCY. If one of two classes of IC occurs oftener than the other, it is likely to be considered central and its concomitant lateral. [No example, but mentions noun vs adjective and the fact that this Premise follows from 1 and 3]

Premise 6: INDIVIDUAL FREQUENCY. In seeming contradiction to the premise of class frequency, it may be possible to state that an individual constituent which occurs more often than its concomitant is likely to be considered lateral and its concomitant central. (e.g. affixes more common than stems)

Premise 7: PROSODY. In some languages, factors of syllable length, stress, pitch, or intonation may influence determinations of rank. (e.g. stress on stem vs enclitic)

Premise 8: LENGTH. If nothing is known about ICs except their length (i.e. the number of phonemes contained in them) it is very likely that the longer will be classified as nuclear and the shorter as a satellite.

Premise 9: MEANING. Substantival and verbal concepts are very strongly associated in the minds of most of us with linguistic nuclei.

Premise 10: PATTERN. Unfamiliar elements are interpreted on the basis of those which are familiar. (e.g. *cran→berry* because *black→berry*).

Zwicky (1985), without reference to Pittman, rehearses some of these variables in relation to the concerns of then current formal models. Hudson (1987) reviews Zwicky's position with respect to eight variables, summarised below:

A. The SEMANTIC ARGUMENT – the status of "argument" and "functor"
B. The DETERMINANT OF CONCORD – for agreement
C. The MORPHOSYNTACTIC LOCUS – for inflection
D. The SUBCATEGORIZAND – the constituent subcategorised with respect to its potential "sisters"
E. The GOVERNOR – for government
F. The DISTRIBUTIONALLY EQUIVALENT constituent
G. The OBLIGATORY constituent
H. The ruler of DEPENDENCY theory – the word on which other words depend

Hudson goes on to discuss these parameters in relation to his then "word grammar" (Hudson 1984). This move is critical to the review we are undertaking here. It underlines the fact that any use that is made of general categories which might be characterised as head and dependent is theory specific, drawing in theory specific ways on the parameters reviewed above (and/or others). In Halliday (1985)

(and subsequent editions) for example, the notion of head is a dimension of logical meaning – involving iterative structures realising recursive systems (as notated α β γ etc. in examples above). This perspective on head and dependent is not canvassed by either Pittman or Zwicky; it is specific to SFL. To be clear then, in this paper any reference made to head and dependent relations is specific to the SFL model of language being extended here. There is no theory-neutral definition or characterisation of head and dependent relations governing the discussion. That said, we are of course attempting to be as explicit as possible about why we are proposing the subjacency duplex structures we are.

## 4. Recursion revisited

At this point let's look a little more critically at Halliday's (2002 [1979]) proposal that multivariate structures realise non-recursive experiential systems and that univariate structures realise recursive logical systems. We'll address the multivariate structure/non-recursive systems association first, by focusing on structures involving Epithets and Things in nominal group structure. Recall that in a canonical multivariate structure of this kind each variable is distinct and occurs once. As far as the Epithet function is concerned this works fine for Korean (Martin and Shin 2021). Each nominal group is limited to just one Epithet.

(11) Korean

혁신적인 자동차

| *hyeoksinjeogi-n* | *jadongcha* |
|---|---|
| innovative | car |
| nominal group | |
| **Epithet** | Thing |
| adjective | noun |

'(an) innovative car'

The only way to introduce additional description into the picture is via a paratactic word complex realising the Epithet. For example in (12) we have three adjectives forming a word complex realising just one Epithet. Note that the final adjective in the Epithet necessarily takes the suffix *-n*, linking it to the Thing – as shown in both (11) and (12). In order to add more adjectives Korean deploys the paratactic linker *-go*, since expanding the number of adjectives involves building a paratactic word complex realising the Epithet. We cannot add additional Epithets to the structure. Thus *빠른 아름다운 혁신적인 자동차 (**ppareu-n areumdau-n hyeoksinjeogi-n jadongcha*), where the adjectives have the linking suffix *-n* rather than parataxis marking *-go*, is ungrammatical.

(12) Korean

빠르고 아름답고 혁신적인 자동차

| *ppareu-go* | *areumdap-go* | *hyeoksinjeogi-n* | *jadongcha* |
|---|---|---|---|
| fast | beautiful | innovative | car |
| nominal group | | | |
| Epithet | | | Thing |
| adjective complex | | | noun |
| 1 | +2 | +3 | |
| adjective | adjective | adjective | |

'(a) fast, beautiful and innovative car'

This restriction contrasts with English, where alongside the adjective complexing in (13), there can be an indefinite number of Epithets as in (14).[5]

(13) English

| *fast* | *and* | *beautiful* | *and* | *innovative* | *cars* |
|---|---|---|---|---|---|
| Epithet | | | | | Thing |
| word complex | | | | | |
| 1 | +2 | | +3 | | |
| adjective | conjunction | adjective | conjunction | adjective | noun |

(14) English

| *fast* | *beautiful* | *innovative* | *cars* |
|---|---|---|---|
| Epithet | Epithet | Epithet | Thing |
| adjective | adjective | adjective | noun |

The fact that functions such as Epithets can be repeated calls into question a strict interpretation of multivariate structures as comprising elements of structure that only occur once.[6]

The same kind of pattern arises for both Korean and English as far as Qualifiers are concerned – multiple Qualifiers are possible, each modifying the Thing function independently of one another (and thus can be moved around with respect to one another without affecting the construal of experiential meaning). Korean examples are provided in (15) and (16) below, with the same two Qualifiers, but in reverse sequence (Martin and Shin 2021). The English translations for

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**5.** Ghesquiere (2014: 53) notes that Dixon (1982: 25) refers to such structures as involving "independent modification". Breban (2010: 37–38) distinguishes "classifying adjectives", which enter into recursive modifications of their head from "descriptive adjectives" which independently modify theirs. Tucker (1998) and Vandelanotte (2002) make a similar distinction between "coordinated adjectives" and "non-coordinated" (or "modifier-sequence") adjectives.

**6.** From the perspective of orbital structure we can have an unlimited number of Epithets, each modifying a nuclear Thing function.

these examples display the same pattern, but with the Qualifiers following rather than preceding the Thing.

(15) Korean

| 작년 | 에 | 나온 | 아이들 | 이 | 좋아하는 | 아이스크림 |
|---|---|---|---|---|---|---|
| *jangnyeon* | *=e* | *nao-n* | *ai-deur* | *=i* | *joaha-neun* | *aiseukeurim* |

| last year | =LOC | appear-PST | child-PL | =NOM | like | ice.cream |
|---|---|---|---|---|---|---|
| nominal group | | | | | | |
| Qualifier | | | Qualifier | | | Thing |
| [[clause]] | | | [[clause]] | | | c. noun |

'ice cream that appeared last year that children love'

(16) Korean

| 아이들 | 이 | 좋아하는 | 작년 | 에 | 나온 | 아이스크림 |
|---|---|---|---|---|---|---|
| *ai-deur* | *=i* | *joaha-neun* | *jangnyeon* | *=e* | *nao-n* | *aiseukeurim* |

| children | =NOM | like | last year | =LOC | appeared | ice.cream |
|---|---|---|---|---|---|---|
| nominal group | | | | | | |
| Qualifier | | | Qualifier | | | Thing |
| [[clause]] | | | [[clause]] | | | c. noun |

'ice cream that children love that appeared last year'

The possibility of multiple Epithets (English) and Qualifiers (Korean and English) indicates that too strict an association of non-recursive systems with experiential structure is not tenable. Recursive systems clearly underlie both the English Epithets and Korean Epithets and Qualifiers exemplified above.[7]

To this point we have established that what have been traditionally viewed as nominal group multivariate structures in fact involve both non-recursive systems (responsible for English Deictic, Numerative and Thing functions for example) and recursive systems (as exemplified by English Epithets and Qualifiers above). What about the link between "logical" systems and iterative structures?

Rose (2001, 2021) presents overviews of logical resources in Western Desert (Pitjantjatjara), taking into account the possibility of what he calls simplexes, duplexes and series – with the choice of series leading to a recursive system realised by iterative structure. For nominal group choices, he notes that the series option is not available for grading within Epithets. So an adjective can be graded once, but we do not find series such as *very much more difficult*. An example of a grading duplex is presented in (17), adapted from Rose (2021: 70).

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7. At first blush Halliday's (1985) analysis of English Classifiers would appear to exemplify a comparable pattern. But English Classifiers do not each independently modify the Thing (the structure is serial not orbital). In fact structures of this kind would be better modelled as hypotactic word complexes recursively taxonomising the entity construed by the Thing function (see Martin et al. 2021 for discussion).

(17) Pitjantjatjara

| *kuka* | *tjula* | *wiru* | *mulapa* |
|--------|---------|--------|----------|
| meat | soft | good | truly |
| nominal group | | | |
| Thing | Epithet | **Epithet** | |
| | | $\alpha$ | $\beta\#$ |
| noun | adjective | adjective | adverb |

'really nice soft meat'

Rose (2021) further reports that paratactic series are possible for Pitjantjatjara groups and words in general, but that hypotactic relations at these ranks (and certain choices at clause rank) are restricted to duplexes – in orbital terms a head and just one dependent satellite. His work thus documents the possibility of logical systems realised by non-iterative structures.

The discussion in this section indicates that we need to loosen up the association of experiential and logical meaning with specific types of system and structure – as outlined in Table 2 (setting aside paratactic complexing to simplify the discussion here). For experiential meaning the table draws on the contrast in English between a Deictic Numerative Thing structure for which non-recursive systems insert each function once and Epithet Thing Qualifier structures for which recursive systems allow for multiple Epithets and Qualifiers independently modifying the Thing (notated with an "n" superscript below). For logical meaning the table contrasts duplexes deriving from non-recursive systems with series deriving from recursive ones (e.g. the contrast between Pitjantjatjara and English, for example, as far as grading is concerned). The notation allows for both progressive and regressive duplexes and series (i.e. "left-headed" $\alpha$ $\beta$... vs "right-headed" $\beta$ $\alpha$ dependency structures). And duplexes are distinguished from series by marking their culminative dependent $\beta$ element with "#".

**Table 2.** Modes of meaning in relation to types of structure

| | Non-recursive system/ non-iterative structure | Recursive system/ iterative structure |
|---|---|---|
| experiential structure | Deictic Numerative Thing | Epithet$^n$ Thing Qualifier$^n$ |
| logical structure | $\alpha$ $\beta\#$ or $\#\beta$ $\alpha$ | $\alpha$ $\beta$ $\gamma$... or ...$\gamma$ $\beta$ $\alpha$ |

By way of illustrating this logical notation, we can compare the $\alpha$ $\beta\#$ of the Pitjantjatjara subjacent duplex Example (17) above, with the serial hypotactic grading in English in (18):

(18) English

| *the* | *very* | *much* | *more* | *difficult* | *choice* |
|---|---|---|---|---|---|
| nominal group | | | | | |
| Deictic | **Epithet** | | | | Thing |
| determiner | **word complex** | | | | noun |
| | **δ** | **γ** | **β** | **α** | |
| | **adverb** | **adverb** | **adverb** | **adjective** | |

The α β#/#β α notation for duplexes has been selected to (i) capture the dependency relation involved (resonating with hypotaxis notation in SFL description) and (ii) to reflect the use of # to mark the beginning and end of elements of structure (in SFL realisation statements). Although it has a different meaning in formal linguistics (Chomsky 1973), the term subjacency nicely captures the sense in which duplexes involve adjacent elements with one element dependent on the other. To avoid confusion these structures (referred to as subjacency structures in Martin et al. 2021) can be termed 'subjacency duplexes' in SFL (following Rose 2021; Stosic 2021; Hao and Wang 2022; Doran and Bangga 2022).

## 5. Adpositions

Recognition of subjacency duplexes opens up the possibility of a logical alternative to the experiential analysis of adpositions discussed in Section 2. Examples (2) and (3) are re-worked as (19) and (20) below. Here participants in clause structure are analysed as being realised by subjacency duplexes, with progressive (α β#) or regressive (#β α) structures as appropriate; their α is realised by a nominal group and their β by the relevant clitic.

(19) Korean

나무꾼이 선녀에게 날개옷을 주었다

| *namukkun* | *=i* | *seonnyeo* | *=ege* | *nalgae* | *os* | *=eul* | *ju-eot-da* |
|---|---|---|---|---|---|---|---|
| woodcutter | NOM | nymph | to | wing | dress | ACC | gave |
| clause | | | | | | | |
| Actor | | Recipient | | Undergoer | | | Process |
| **subjacency duplex** | | **subjacency duplex** | | **subjacency duplex** | | | |
| α | β# | α | β# | α | | β# | |
| nominal group | p1 | nominal group | p3 | nominal group | | p2 | |

'(the) woodcutter gave (the) nymph (the) winged dress'

(20) Tagalog

| *in-a~antay* | *ni=* | *Tonyo* | *si=* | *Ningning* |
|---|---|---|---|---|
| was.waiting.for | NFOC | Tonyo | FOC | Ningning |
| clause | | | | |
| Process | Actor | | Goal | |
| | **subjacency duplex** | | **subjacency duplex** | |
| | #β | α | #β | α |
| | ntp clitic | nominal group | tp clitic | nominal group |

'Tonyo was waiting for Ningning'

Examples (4) and (5) above presented the problem of group complexes sharing the same adposition. The relevant parts of these are reworked as (21) and (22) below. The analysis below the subjacency duplex makes it clear that both elements of the nominal group complex play the same role in clause structure.

(21) Korean

최고의 감독과 떠오르는 스타가...

| *choego* | *=ui* | *gamdok* | *=gwa* | *tteooreu-neun* | *seuta* | *=ga* |
|---|---|---|---|---|---|---|
| top | LK | director | LK | rising | star | NOM |
| Actor | | | | | | |
| **subjacency duplex** | | | | | | |
| α | | | | | | β# |
| nominal group complex | | | | | | clitic |
| 1 | | | | +2 | | |
| nominal group | | | | nominal group | | |

'(a) top director and (a) rising star...'

(22) Tagalog

| *sabay* | *i-p<in>anganak* | *sina=* | *Tonyo* | *at=* | *Ningning* |
|---|---|---|---|---|---|
| simultaneously | were.born | FOC | Tonyo | and | Ningning |
| clause | | | | | |
| Manner | Process | Goal | | | |
| | | **subjacency duplex** | | | |
| | | #β | α | | |
| | | tp | nominal group complex | | |
| | | | 1 | | +2 |
| | | | nominal group | | nominal group |

'Tonyo and Ningning were born at the same time'

Examples (7) and (8) above presented the problem of embedded clauses whose role in clause structure is signalled by the same structure markers that position nominal groups. The relevant parts of these are reworked as (23) and (24) below with a subjacency duplex realising the relevant clause function. This obviates the

need to suggest, rather spuriously, that these embedded clauses are in fact a special kind of nominal group.

(23) Korean

그 사람은 [[남한테 지기를]] 싫어한다

| geu | saram | =eun | [[nam | =hante | ji-gi]] | =reul | sireoha-n-da |
|-----|-------|------|--------|--------|---------|-------|--------------|
| the | person | TOP | others | to | losing | ACC | dislike |
| clause | | | | | | | |
| Senser | | | Phenomenon | | | | Process |
| | | | **subjacency duplex** | | | | |
| | | | α | | | β# | |
| | | | [[clause]] | | | clitic | |

'he dislikes losing to others.'

(24) Tagalog

| ang= | dahan-dahang | l-um-apit | sa= | kanya |
|------|--------------|-----------|-----|-------|
| FOC | slowly | approached | to | him |
| Value | | | | |
| **subjacency duplex** | | | | |
| #β | α | | | |
| tp | [[clause]] | | | |

'very slowly approached him'

Generalisation of subjacency structure for adpositions of all kinds opens up a host of possibilities. In (25) for example the Focus structure in (1) is reinterpreted along these lines, which obviates the need for an experiential Focus Marker function realised by *of*. This analysis more readily acknowledges that the *of* is not in fact a constituent of the embedded nominal group, but rather "modifies" it. It also opens the way for acknowledging that the *of* does not have the possibility for internal constituency itself (a regular feature of subjacency markers), unlike many of the other words within the group – that is, it acknowledges that the *of* is not in fact part of the experiential constituency hierarchy that underpins SFL's notion of rank.

(25) English

| *the* | *tops* | *of* | *the* | *hills* |
|-------|--------|------|-------|---------|
| nominal group | | | | |
| Focus | | | Deictic | Thing |
| **subjacency duplex** | | | determiner | noun |
| α | | β# | | |
| [nominal group] | | clitic | | |
| Deictic | Thing | | | |
| determiner | noun | | | |

Subjacency duplex analysis of this kind could in fact be generalised to all instances of structure marking English *of* – e.g. marking possession (*a book of John's*), realising a semantic participant in nominal groups construing grammatical metaphors (*the return of the Jedi*) or specifying time (*the time of mourning*). The latter "imperfective" example contrasts with the "perfective" *the time to mourn* – inviting a further generalisation of subjacency analysis to the structure marker *to* in verbal groups and verbal group complexes (e.g. *to err, tried to correct*). This raises the possibility of generalising subjacency analysis to what we might think of as linking structure markers of various kinds (e.g. the English binders and linkers mentioned in Section 1). We propose a generalisation of this kind in the following section.

## 6. Linkers

Linkers are of course commonplace as structure markers in paratactic and hypotactic complexes across ranks. Group rank complexes were illustrated in (4), (5), (21) and (22) above, though we did not apply subjacency analysis to the structure markers signalling paratactic group complexes in (21) and (22). We extend relevant parts of their analysis as (26) and (27) below to address the linkers *gwa* and *at* respectively.

(26) Korean

최고의 감독과 떠오르는 스타가 ...

| *choego* | *=ui* | *gamdok* | *=gwa* | *tteooreuneun* | *seuta* | *=ga* |
|---|---|---|---|---|---|---|
| top | LK | director | LK | rising | star | NOM |
| Actor | | | | | | |
| subjacency duplex | | | | | | |
| α | | | | | | β# |
| nominal group complex | | | | | | p1 |
| 1 | | | | +2 | | |
| **subjacency duplex** | | | | nominal group | | |
| α | | | β# | | | |
| nominal group | | | linker | | | |

'(a) top director and (a) rising star...'

(27)  Tagalog

| *sina=* | *Tonyo* | *at=* | *Ningning* |
|---|---|---|---|
| FOC | Tonyo | and | Ningning |
| Goal | | | |
| subjacency duplex | | | |
| #β | α | | |
| tp | nominal group complex | | |
| | 1 | +2 | |
| | nominal group | **subjacency duplex** | |
| | | #β | α |
| | | linker | nominal group |

'…Tonyo and Ningning'

Comparable analyses could be proposed for binders and linkers across ranks.

What we will attend to here is the use of linkers inside nominal groups – such as the *ui* connecting Orient and Thing functions in Korean in (4), (21) and (26). The relevant nominal group is further analysed as (28) below.

(28)  Korean

최고의 감독

| *choego* | *=ui* | *gamdok* |
|---|---|---|
| top | LK | director |
| Orient[*] | | Thing |
| **subjacency duplex** | | noun |
| α | β# | |
| [nominal group] | linker | |
| Thing | | |
| noun | | |

'top director'

[*] In Korean the Orient function is realised by embedded nominal groups linked to the rest of the nominal group by the clitic 의 *ui* (Martin and Shin 2021; Kim et al. 2023); 최고 choego 'top' is a noun in Korean, and so is not gradable (though the embedded nominal group could be expanded, as for example 헐리우드 최고 *heoliudeu choego* 'Hollywood top').

Comparable linkers are found across languages. In Spanish Classifiers realised by nouns following the Thing function are most commonly prefaced by *de* (Quiroz and Martin 2021).[8]

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**8.** A possible alternative analysis treating *de ruedas* in (29) as a prepositional phrase is not tenable since (i) *de* is a structure marker, not a preposition (i.e. there are no "circumstantial" meanings implicated) and (ii) *ruedas* 'wheels' cannot be expanded as a nominal group (Martin et al. 2023). It should be noted that Quiroz, Martin's mentor as far as Spanish grammar is concerned, does not subscribe to this subjacency analysis (as reflected in Quiroz and Martin 2021).

(29) Spanish

| *silla* | *de=* | *rueda-s* |
|---|---|---|
| chair | LK | wheels |
| nominal group | | |
| Thing | Classifier | |
| noun | **subjacency duplex** | |
| | #β | α |
| | linker | noun |

'wheelchair'

In Chinese, the structure marker *de* (noted in McDonald 2017) which commonly links Epithets to following elements in nominal group structure can be analysed along similar lines (Wang 2020; Hao and Wang 2022).

(30) Chinese

著名的栈桥

| *zhùmíng* | *de* | *zhànqiáo* |
|---|---|---|
| famous | LK | pier |
| nominal group | | |
| Epithet | | Thing |
| **subjacency duplex** | | noun |
| α | β# | |
| adjective | linker | |

'famous pier'

Tagalog's ubiquitous linker *na* (Martin 1995a) is another obvious candidate for subjacency analysis. Linking for Numerative and Epithet is exemplified in (31) and for Qualifier in (32).

(31) Tagalog

| *um-alis* | *ang* | *apat* | *=na* | *ma-talik* | *=na* | *kaibigan* |
|---|---|---|---|---|---|---|
| left | FOC | four | LK | close | LK | friend |
| Process | Actor | | | | | |
| | #β | α | | | | |
| | | nominal group | | | | |
| | | Numerative | | Epithet | | Thing |
| | | **subjacency duplex** | | **subjacency duplex** | | |
| | | α | β# | α | β# | |
| | | numeral | linker | adjective | linker | |

'four close friends left'

(32)   Tagalog

| ma-ganda | ang | bahay | =na | b<in>ili | niya |
|---|---|---|---|---|---|
| beautiful | FOC | house | LK | bought | she |
| Attribute | Carrier | | | | |
| | subjacency duplex | | | | |
| | #β | α | | | |
| | | nominal group | | | |
| | | Thing | Qualifier | | |
| | | | **subjacency duplex** | | |
| | | | #β | α | |
| | | | linker | [[clause]] | |

'the house she bought was beautiful'

As we can see, subjacency duplex analysis adds layers of structure to tables (or trees). This is inevitable if we strictly follow the principle that classes are realised by grammatical functions (such as α β# or #β α) and functions in turn by classes – as we move from higher ranks to lower ones (shifting perspective back and forth between syntagm and structure as we go). This does present a problem, however, if we want to use our tables (or trees) to reflect grammatical complexity (Halliday 2008). Unlike serial complexing (the resource expanding the meaning potential of spoken language) or embedding (the resource expanding the meaning potential of written language), layers of subjacency structure do not reflect systemic choices of their own – they are part of the realisation of choices in other implicating systems. Put another way, they don't add an extra layer of meaning to the structures with which they are involved. This is possibly why they are passed over in many functional grammar descriptions, especially where the goal is text analysis (following, for example, Halliday 1985 and its subsequent 1994 edition) rather than a comprehensive description.

One way to simplify tables (or trees) incorporating subjacency duplex structure would be to relax the 'function realised by class' requirement and allow duplex structures to directly realise grammatical functions.[9] Example (32) is revised along these lines as (33) below. This is a more economical analysis for publication purposes, but would need to be seen as a simplification.

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**9.** SFL's expanded realisation statement operator (Matthiessen and Halliday 2009: 98) sets a precedent in this regard, although managing a completely different type of phenomenon (e.g. expansion of the English Mood function as Subject and Finite).

(33) Tagalog

| ma-ganda | ang | bahay | =na | b<in>ili | niya |
|---|---|---|---|---|---|
| beautiful | FOC | house | LK | bought | she |
| Attribute | **Carrier** | | | | |
| #β | α | | | | |
| tp clitic | nominal group | | | | |
| | Thing | **Qualifier** | | | |
| | #β | α | | | |
| | linker | [[clause]] | | | |
| | | Process | Actor | | |

'the house she bought was beautiful'


## 7. Types of system

To this point in our discussion we have focused on structure, without looking carefully at the systems from which our structures derive. One systemic implication arising has to do with the need to distinguish two different types of recursive system – namely recursive systems giving rise to serial logical structures (whether paratactic or hypotactic) as opposed to recursive systems giving rise to iterating elements of experiential structure. For English EPITHESIS for example we need to distinguish between systems underpinning indefinitely extendable regressive grading complexes (*a **not much more glorious** history*) and systems underpinning multiple Epithets (*their **long glorious well-documented** history*). One possibility would be to retain standard SFL recursive system notation for paratactic and hypotactic series (e.g. the grading system in Figure 4 to generate *not much more glorious history*) and use an "ⁿ" superscript on the relevant feature for experiential iteration (e.g. the [described$^n$] option in Figure 4 to generate *long glorious well-documented history*). Formulated along these lines Figure 4 thus includes one non-recursive DEIXIS system (from which a single Deictic function can be derived), one recursive EPITHESIS system (from which multiple Epithets can be derived) and one recursive GRADING system (from which a hypotactic series can be derived).

Formulating distinctive structure-building realisation statements for these different types of system remains a challenge – an endeavour we won't pursue here. We simply note in passing, in relation to the discussion of layering in Section 6, that systemic options such as those in Figure 4 are neutral as far as the

EPITHESIS → described$^n$

GRADING → graded

DEIXIS → determined
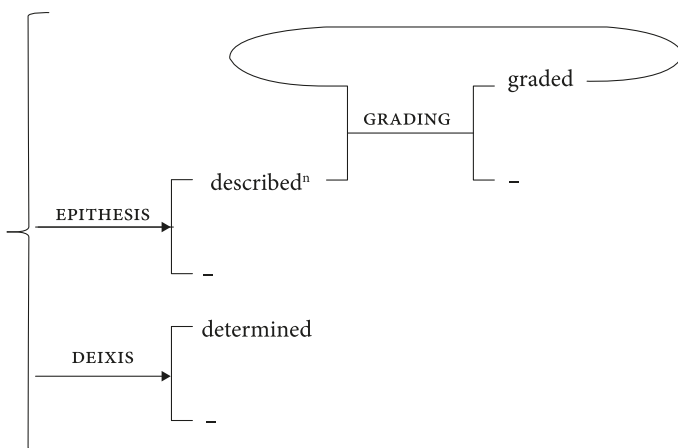
**Figure 4.** Recursive and non-recursive English EPITHESIS and DEIXIS systems

need for generating subjacency duplexes is concerned.[10] In English, for example, subjacency duplexes are not involved in the realisation of the Deictic function deriving from the feature [determined], the Epithet function deriving from the feature [described] or the γ β α hypotaxis functions deriving from the feature [graded]. In Chinese on the other hand a subjacency duplex (culminating in *de*) is commonly used to realise Epithets; and in Tagalog, hypotactic series regularly involve subjacency duplexes (culminating in *na*).[11] The differences are the responsibility of realisation statements, not the valeur of the systems themselves. It is in this sense that we argued above that subjacency duplexes do not add a layer of meaning to the structures in which they are involved.

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**10.** This raises additional questions about the association of subjacency duplexes with different ranks depending on how a language codes, say, relationships among Process, Participants and Circumstances – some relying on clause sequence, some on group/phrase adpositions and others on morphology (cf. the analytic vs synthetic opposition in traditional language typology). We set aside this discussion here, pending applications of subjaency duplex analysis to SFL analyses of morphology (cf. Matthiessen 2015 who proposes an affine rhetorical structure theory (RST) perspective).

**11.** Tagalog linking is in fact alternatively realised at word rank, via the suffix *-ng* (as morphophonemically conditioned by the presence of a preceding glottal stop, glottal fricative or nasal consonant).

## 8.   Subjacency duplex structure

In this paper we have proposed a generalised analysis for explicitly modelling structure markers in functional grammar – namely subjacency duplex structure. In these structures the culminative β element (#β or β#) is realised by closed class items for which further systemic distinctions and concomitant structural expansion are not available. They are dependent on other items and cannot occur on their own. And except for some borderline cases discussed below, they cannot themselves be combined into complexes (although as Rose 2001, 2021 has proposed, there may be layering involved, with the α on which a subjacent β depends itself realised by a subjacency duplex). In these SFL specific respects subjacency duplexes would certainly be characterised as involving head and dependent relations relatable to those canvassed by Pittman, Zwicky and Hudson as introduced above. And subjacency duplexes can be usefully related to discussions of the 'head initial' vs 'head final' parameters in typology studies inspired by Greenberg (1963) – since α β# or #β α patterns tend to be fractal across a language (e.g. generally α β# for Korean vs generally #β α for Tagalog) and tend to predict whether a language negotiates speech function early (e.g. Tagalog: Martin and Cruz 2018) or late (e.g. Korean: Shin 2018) in the clause (Greenberg's VOS vs SOV opposition).

Our analysis raises issues about how far to extend subjacency duplex modelling in our descriptions. For adpositions this brings us in effect to the fuzzy boundary between participants and circumstances and the line drawn between structure markers on the one hand and prepositions or co-verbs on the other. The following excerpts from Halliday with Matthiessen (2014) flag the distinction as follows:

> There is also one class of expressions with *of*, one of the few places where *of* functions as a full preposition (i.e. representing a minor process) as distinct from being merely a structure marker; for example, *die of starvation*. The corresponding WH- forms are *why*? or *how*?                    (2014: 321)

> The Medium is also the only element that is never introduced into the clause by means of a preposition (again with the same exception of medio-receptives); it is treated as something that always participates directly in the process. (Note that the structure *the cooking of the rice*, where the Medium follows *of*, is not an exception; *of* is functioning here, as it typically does, not as preposition but as structure marker – cf. genitive *'s* in *the rice's cooking*.)                    (ibid. 341)

What appears to be taken as criterial here is whether or not *of* is simply positioning participants in transitivity structure or is specifying some kind of "circumstantial" meaning (e.g. "cause" in *die of starvation*; cf. *die from starvation*). For many languages the challenge here lies in drawing a line between peripheral

participants (e.g. roles akin to English Recipients and Receivers) and Circumstances of Location – and their marking by the same adposition (e.g., English *to,* Tagalog *sa,* Korean *e*). In terms of this paper we are exploring how to draw a line between a subjacency duplex analysis (restricted perhaps to Recipients and Receivers in English) and a prepositional phrase analysis (restricted perhaps to Circumstances of Location in English).

The same kind of problem arises in Tagalog and Korean. In Tagalog for example Receiver and Recipient participants are marked with *sa.* The projecting clause in *"Nasaan kaya si Ningning?" sabi niya sa sarili.* '"Where might Ningning be?" he said to himself.' is analysed in (34) below – treating *sa sarili* 'to himself' as a subjacency duplex.

(34)

| *sabi* | *niya* | *sa* | *sarili* | |
|---|---|---|---|---|
| say | he | to | himself | |
| clause | | | | |
| Process | Sayer | Receiver | | |
| | | **subjacency duplex** | | |
| | | #β | α | |
| | | oblique | nominal group | |

'he said to himself'

As introduced in (8) above, Tagalog uses the same pre-position *sa* to mark Direction. Outside of the semantics of the Processes involved (*sabi* 'say' vs *lapit* 'approach') there is nothing to distinguish the *sa sarili* 'to himself' and *sa kanya* 'to him' phrases. Accordingly a subjacency duplex analysis is proposed in (35).

(35) Tagalog

| *ang=* | *dahan-dahang* | *l-um-apit* | *sa=* | *kanya* |
|---|---|---|---|---|
| FOC | slowly | approached | to | him |
| Value | | | | |
| subjacency duplex | | | | |
| #β | α | | | |
| tp | [[clause]] | | | |
| | Manner | Process | Direction | |
| | | | **subjacency duplex** | |
| | | | β | α |
| | | | obl | nominal group |

'very slowly approached him'

The more general issue arising here is that in Tagalog there is arguably no need to recognise a distinction between nominal groups and prepositional phrases. Virtually all participants and circumstances are realised by subjacency duplexes with

a #β clitic marking the role of an α nominal group in clause structure (Martin 1996b, 2004b).

For Korean, subjacency duplex analysis can be comparably extended to a wide range of circumstantial relations. Accompaniment is illustrated in (36) below (marked by *gwa*).

(36) Korean
부부가 부모님과 휴가를 지냈다

| *bubu* | *=ga* | *bumo-nim* | *=gwa* | *hyuga* | *=reul* | *jinae-t-da* |
|---|---|---|---|---|---|---|
| couple | NOM | parents | **with** | holiday | ACC | spent |
| clause | | | | | | |
| Actor | | Accompaniment | | Range | | Process |
| subjacency duplex | | **subjacency duplex** | | subjacency duplex | | verbal group |
| α | β# | α | β# | α | β# | |
| nominal group | p1 | nominal group | cir | nominal group | p2 | |

'(the) couple spent (the) holiday with (their) parents'

As in Tagalog there is no need to distinguish nominal groups from prepositional phrases for circumstances and in the following instance of this kind. For some circumstances however Korean deploys a co-verbal phrase, which is clearly structurally distinct from the subjacency duplexes in (36). Purpose is illustrated in (37) below (realised by a co-verbal phrase *joguk eul wihae* 'for mother country'). Following Kim et al. (2023) the co-verbal phrase is analysed as comprising an Incumbent ^ Role experiential structure, with the circumstantial role of the nominal group realising the Incumbent specified by Korean grammarians refer to as a 'bound verb' (i.e. a verb with a very limited conjugation potential). In this regard Korean offers grounds for distinguishing between subjacency duplexes and co-verbal phrases as far as circumstantial relations are concerned.

(37) Korean
저 소년이 조국을 위해 싸우고 있었다

| *jeo* | *sonyeon* | *=i* | *joguk* | *=eul* | *wihae* | *ssau-go* | *iss-eot-da* |
|---|---|---|---|---|---|---|---|
| that | boy | NOM | mother country | | **for** | fight | was |
| Actor | | | Cause | | | Process | |
| subjacency duplex | | | **co-verbal phrase** | | | verbal group | |
| α | | β# | Incumbent | | **Purpose** | | |
| nominal group | | p1 | subjacency duplex | | **bound verb** | | |
| | | | α | β# | | | |
| | | | nom. gp. | p2 | | | |

'that boy was fighting for (his) mother country'

Turning to conjunctive relations, Halliday with Matthiessen (2014) make a distinction in English between 'cohesive' conjunctions (*therefore, consequently* etc.)

and structure markers (their binders and linkers as introduced in Section 1). They oppose non-structural conjunctions to structural ones as follows:

> The logico-semantic relation is marked by a conjunction... – either by a non-structural one that is used only in this way, i.e. only cohesively, such as *for example, furthermore, consequently*; or by a structural one whose prototypical function is to mark the continuing clause in a paratactic clause nexus (see Chapter 7, Section 7.3). The former serve as conjunctive Adjuncts (Chapter 4, Section 4.3.3) and are very commonly thematic; the latter are simply analysed as structure markers and are obligatorily thematic as structural Theme.
>
> (Halliday with Matthiessen 2014: 611)

This offers a relatively clear English language criterion for limiting subjacency duplex analysis to the binders and linkers that necessarily come first in a clause, group/phrase or word as opposed to the more mobile cohesive conjunctions which can be realised in various positions in clause structure and so are not necessarily adjacent, let alone subjacent, to the elements they are connecting to another. We won't pursue the extent to which conjunctive relations can be accommodated by subjacency duplex analysis in other languages here.

By way of summarising our discussion we extend Table 1 above as Table 3 below, including English examples and filling out our paradigm for ideational structure. The two central columns in Table 3 oppose non-recursive systems realised by non-iterative structures to recursive systems realised by iterative structures. This opposition is cross-classified by experiential as opposed to logical structure; logical structure is further classified as paratactic vs hypotactic, and within hypotactic structures are subclassified as progressive or regressive. The only structure type in the table not introduced above is non-iterative parataxis – for which we suggest English correlative structures such as *both... and, either...or, neither...nor* (including perhaps the somewhat archaic *the harder they come the harder they fall)*.

Structure markers make important contributions to the realisation of systemic options in many languages, though in some (such as those with adpositions at group rank) more than others (such as those where inflectional morphology carries a heavy load). And there are many cases, some reviewed above (e.g. nominal group complexes and embedded clauses in Korean and Tagalog), where structure markers make explicit what goes with what and cannot be ignored. Our goal here has been to suggest a way forward for grammarians disposed towards granting these structural orphans a home.

**Table 3.** Types of structure (ideational)

| | Non-recursive system/ non-iterative structure | Recursive system/ iterative structure | |
|---|---|---|---|
| **experiential structure** | Deictic Thing<br>*their history* | Epithet$^{n}$ (Thing)<br>*long glorious* (*history*) | |
| **logical structure:** | 1 2#<br>*both long and glorious (history)* | 1 2…<br>*long and glorious* (history) | **paratactic** |
| **progressive** | α β#<br>*kinds of* (history) | α β γ…<br>(history) *he wrote I like…* | **hypotactic** |
| **regressive** | #β α<br>(tried) *to write* | γ β α<br>*such very glorious* (history) | |

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