

# Function without content: Evidence from Greek Subjunctive *na*

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## 1. Introduction

In this essay we are concerned with the make up of functional categories. We argue that functional categories exist independent of their feature content. More specifically, we argue for the need to dissociate the function of functional categories from their content. We develop the argument as follows.

In section 2, we review previous evidence for the dissociation of function and content. On the basis of language variation, Ritter & Wiltschko (2009), argue for a pre-Pollockian view of the functional category INFL. In particular, they argue that INFL universally serves as an *anchoring category* but that it is not universally associated with temporal content. Consequently, INFL cannot be equated with TENSE. Rather, TENSE is better understood as a language-specific instantiation of the universal category INFL.

In this paper, we introduce new evidence for this dissociation of function and content, namely evidence from *lexicalization patterns*. Our core proposal is that the subjunctive marker in Greek (*na*) spells out the function of INFL without its content. In section 3, we review the distribution of *na*. On standard assumptions, functional categories are intrinsically associated with content; consequently the exponents that spell out these functional categories would also be expected to be intrinsically associated with content. We show that on this assumption, the distribution of *na* cannot be easily understood. We develop a novel analysis couched within the theoretical assumptions of Ritter & Wiltschko (2009, 2011). In particular, we argue that *na* spells out INFL before it is associated with any kind of content. We show that this allows for a straightforward explanation of the seemingly erratic distribution of *na*. We further explore the consequences of this analysis.

In section 4, we discuss the implications of our analysis for the architecture of grammar. We argue that we need to recognize the possibility for early insertion of functional material (such as *na*).

In section 5, we discuss the use of *na* by individuals diagnosed with Down Syndrome (henceforth DS). It is often claimed that DS is characterized by the impairment of tense and agreement. We show that the use of *na* is not affected. Given that *na* is associated with INFL it follows that the syntax of INFL is not impaired in DS. Rather what appears to be affected is the association of INFL with content (such as tense).

Finally in section 6, we conclude

## 2. Dissociating function from content

The main goal of this essay is to establish that the function of a functional category exists independent of its feature content. If so, this would establish that functional categories

have a life of their own and are not dependent on merging syntactic features during the process of structure building. To formally implement this insight we adopt the framework developed in Ritter & Wiltschko (2011; henceforth R&W). They propose that INFL is a universal functional category, which serves to anchor the event denoted by the VP to some other event.<sup>1</sup> The anchoring function comes about through an unvalued feature associated with INFL. Following Demirdache & Uribe-Etxebarria (1997 and subsequent work) R&W assume this feature to be [coin(cidence)]. Moreover, it is assumed that at least in indicative root clauses, the situation relative to which the event situation is ordered is the utterance situation (see Enç 1987). We take the abstract utterance situation argument to be associated with the specifier position of INFL (cf. Demirdache & Uribe-Etxebarria 1997).<sup>2</sup> The universal structure for indicative root clauses is thus as in (1).

- (1) IP[Utt-sit I<sub>[ucoin]</sub>] VP[EV-sit V]] UNIVERSAL GRAMMAR

On this view, the anchoring function in the sense of Enç 1987 decomposes into the *coincidence* feature inherent to INFL and the abstract utterance argument in SpecIP. As we will see it is possible for the *coincidence* feature to occur without the utterance argument. In this case anchoring is not deictic but is instead relative to some other abstract argument (see section 2).

R&W further assume that unvalued features (such as [*u coin*]) have to be valued or the derivation will not be legible for the interface and thus crash. While the general idea behind this proposal is in line with much work within the minimalist program the details of implementation differ considerably. Consider for example English indicative root clauses in the R&W framework. Here the [*u coin*] feature associated with INFL is valued by tense morphology: past morphology values [*u coin*] as [-coin] while present morphology values [*u coin*] as [+coin]. This is illustrated in (2).

- (2) a. IP[Utt-sit I<sub>[+coin]</sub>] VP[EV-sit V<sub>{present}</sub>]] ENGLISH  
 b. IP[Utt-sit I<sub>[-coin]</sub>] VP[EV-sit V<sub>{past}</sub>]]

The assumption that unvalued features must be valued for the derivation to converge is in accordance with standard minimalist assumptions. However, the nature of the features differ. In particular, on minimalist assumptions the probe goal relation triggering AGREE is initiated by an unvalued feature [uF] which requires in its c-command domain a valued feature of the same type [+F] or [-F] respectively. This contrasts with the claim in R&W according to which the unvalued *coincidence* feature is valued by the semantic content of the valuing element. Thus, the feature which requires valuation is not of the same type as the valuing element (which may but need not be tense marking as we will see).<sup>3</sup>

<sup>1</sup> For the purpose of the discussion, we abstract away from the role of aspect.

<sup>2</sup> We assume the possibility for multiple specifiers to accommodate both the abstract situation argument as well as the subject to be associated with INFL (see Chomsky 1995 for the assumption that a single head can be associated with multiple specifiers).

<sup>3</sup> Whether this type of feature valuation should replace the standard minimalist Probe Goal mechanism triggering AGREE or whether it should be viewed as an additional mechanism is an interesting question which we cannot pursue in the context of this paper.

With this formalism in place, we are now in a position to review previous evidence for the dissociation of function from content. The evidence presented thus far is twofold. First, Ritter & Wiltschko (2009) argue that the content associated with a given functional category is subject to language variation. If the content of a functional category can vary, we have evidence that the content of a functional category is independent of the category itself. We discuss this type of evidence in section 2.1. Second, R&W argue that tenseless constructions such as infinitives and imperatives provide further evidence for the independence of content from function. We review this type of evidence in section 2.2.

### 2.1 Evidence from tenseless languages

If the content of a functional category is independent of its function, it is predicted that one and the same functional category may be associated with different content. Ritter & Wiltschko (2009) argue that this is indeed what we observe. As mentioned above, in English indicative root clauses, the content associated with INFL is temporal. This is reflected by the fact that all such clauses must be inflected for tense: present (3)a or past (3)b.<sup>4</sup> In the absence of tense inflection (3)c, [*u* coin] cannot be valued and the result is ungrammatical.

- (3) a. He **is** kicking.  
 b. He **was** kicking.  
 c. \*He **be** kicking.

According to this proposal, the inflectional character of tense morphology in English results from the fact that tense serves to value INFL. The obligatory binary opposition in tense is forced by the two possible values for [*u* coin]: past values [*u* coin] as [-coin] and thus asserts that the event time does not coincide with the utterance time; present values [*u* coin] as [+coin] and thus asserts that the event time coincides with the utterance time.

The essence of the Ritter & Wiltschko (2009) argument is that the anchoring function need not be substantiated by tense. Rather, other deictic categories, such as location and person may fulfill the same function. In particular, they argue that in Halkomelem Salish location serves to anchor the event situation to the utterance. As a consequence, the event situation is anchored via a spatial dimension: a distal marker values [*u* coin] as [-coin] and asserts that the event location does not coincide with the utterance location (4)a; a proximate marker values [*u* coin] as [+coin] and asserts that the event location coincides with the utterance location (4)b.

- (4) a. IP[Utt-sit I<sub>[-coin]</sub>] VP[EV-sit V<sub>{distal}</sub>]] HALKOMELEM  
 b. IP[Utt-sit I<sub>[+coin]</sub>] VP[EV-sit V<sub>{proximate}</sub>]]

<sup>4</sup> Following Enç 1986, Ritter & Wiltschko 2009 assume that future is a modal rather than tense. Thus, the use of future lies outside the scope of the present discussion. It should be noted however, that there may be languages where future functions as a tense. In this case one could imagine that it would value INFL as [-coin]. A detailed investigation of future in the framework of Ritter & Wiltschko 2011 has to await further research.

As a result, Halkomelem is a language which lacks contrastive tense marking but instead has contrastive location marking. That is, indicative root clauses are typically introduced by a locative auxiliary (Galloway 1993, Suttles 2004). This is illustrated in (5).

- (5) a. *li qw'eyilex tú-tl'ò* HALKOMELEM  
**dist** dance he  
 'He is/was dancing [there].'  
 b. *i qw'eyilex tú-tl'ò*  
**prox** dance he  
 'He is/was dancing [here].'

They further argue that in Blackfoot (Algonquian) person marking serves to anchor the event to the utterance. As a consequence the event situation is anchored via participants: non-local (i.e., 3<sup>rd</sup> person) marking values [*u* coin] as [-coin] and asserts that the event participant does not coincide with the utterance participant (5)a; in contrast, local (i.e., 1<sup>st</sup> or 2<sup>nd</sup> person) marking values [*u* coin] as [+coin] and asserts that the event participant coincides with the utterance participant (6)b.

- (6) a. IP[Utt-sit I<sub>[-coin]</sub>] VP[EV-sit V<sub>{other}</sub>]] BLACKFOOT  
 b. IP[Utt-sit I<sub>[+coin]</sub>] VP[EV-sit V<sub>{local}</sub>]]

As a result, Blackfoot is a language that lacks contrastive tense marking but instead, has contrastive participant marking. That is, indicative root clauses are typically marked with a suffix marking local person (which contrasts with a zero non-local marker). This is illustrated in (7).

- (7) a. Kitsinóóhpoaawa                      Kitsinóókihpoaawa    BLACKFOOT  
*kit-ino-o-**hp**-oaawa*                      *kit-ino-oki-**hp**-oaawa*  
*2-see-1:2-**local**-2PL*                      *2-see-2:1-**local**-2PL*  
 'I saw you (PL.)'                      'You (PL) saw me.'  
 b. Ana póokaawa inoyíwa ani imitáayi  
*an-(w)a*                      *pookaa-wa ino-yii-Ø-wa an-(y)i imitaa-yi*  
*DEM-PROX*                      *child-PROX see-DIR-3-PROX DEM-OBV dog-OBV*  
 'The child saw the dog.'

In sum, we observe variation in the content of obligatory contrastive marking in indicative root clauses: its content is temporal in English, spatial in Halkomelem, and involves participants in Blackfoot. Furthermore, these three types of markers are in complementary distribution: Halkomelem and Blackfoot are tenseless; Halkomelem and English don't have obligatory participant marking<sup>5</sup>; and finally Blackfoot and English do not have obligatory location marking. Assuming the classical structuralist criterion according to which complementarity is the essence of identity we may conclude that tense, location, and person marking are three different instances of the same category,

<sup>5</sup> For arguments that agreement of the type familiar from Indo-European languages differs from participant marking in Blackfoot see Ritter & Wiltschko (2009). Only the latter but not the former serves to value [*u* coin] associated with INFL.



shown in (10)b. Accordingly, it is asserted that the embedded event coincides with the matrix event.

- (10) a. Mika started to dance.
- b. ... VP[ EV-sit V IP[ I<sub>[+coin]</sub> VP[ EV-sit V ]]
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In sum, in the absence of temporal content in INFL, we still observe the anchoring function via the abstract coincidence feature<sup>6</sup>. But in this case anchoring proceeds to the next available situation argument, which is the event situation associated with the matrix predicate. As a consequence, INFL no longer serves as a deictic anchor (because the embedded clause is not associated with an utterance situation; cf. Enç 1987) but instead it serves to sequence the embedded event relative to the matrix event.

This establishes that there are at least two types of valuation strategies available for INFL: it can either be valued via morphological marking directly associated with INFL. R&W refer to this as *m-valuation*. Secondly, in the case of infinitives, which lack morphological tense marking and consequently must lack m-valuation, they argue that the predicate serves to value INFL; this strategy is referred to as *predicate-valuation*<sup>7</sup>.

Finally, R&W discuss a third strategy for valuation, which is found in the context of another tenseless construction, namely imperatives. Like infinitives, imperatives are characterized by the obligatory absence of tense morphology, as shown in (11).<sup>8</sup> In the absence of tense morphology, the utterance is obligatorily interpreted as a command (11)a while in the presence of tense morphology the utterance is obligatorily interpreted as an assertion and cannot be interpreted as a command (11)b/c.

- (11) a. Everyone play!

<sup>6</sup> On some analyses, of these phenomena, INFL is still argued to be associated with tense features. In particular, a dependent INFL would be associated with a [-TENSE] feature while an INFL with independent tense is associated with a [+TENSE] feature (see for example Landau 2000, 2004; Wurmbrand 2001, Ambar 1992, 2010). See R&W 2011 for a detailed discussion of such proposals.

<sup>7</sup> This is another aspect in which the mechanics of valuation in the R&W framework differs from the more standard minimalist probe goal relation. In particular, while the unvalued feature requires a valuing feature in its c-command domain (scanning downwards) the R&W approach allows for valuation from a lower head (tense-marked verb) or from a higher head (embedding predicate or higher functional head). The possibility for upward probing is however also explored in more standard minimalist analyses (see for example Baker 2008, Rezac 2004, Putnam & van Koppen 2011, Henderson 2006, Bejar & Rezac 2009)

<sup>8</sup> An anonymous reviewer points out that in Hebrew, a language with dedicated future tense morphology, imperatives are not tenseless but are instead future marked. To understand this pattern within the R&W framework, we would have to investigate the properties of future marking in Hebrew more carefully. This has to await another occasion.



This is obvious from the fact that in this context past morphology is compatible with a present time adverbial as shown in (14).

- (14) a. If I had a car now, I would drive.  
 b. \* I had a car now.

On the R&W analysis, the fact that tense morphology in counterfactual conditional lacks temporal force (i.e., it is a *fake past*; Iatridou 2000) follows from the claim that it does not serve to value [*u coin*] associated with INFL. Instead of m-valuation, we get C-valuation.

### 2.3 Summary

This concludes the review of previous evidence for the claim that the content of functional categories is independent of their function: INFL serves as an anchoring category even in the absence of tense. It is the [*u coin*] feature requiring valuation, which is responsible for the anchoring function. Crucially, however, tense features are only one option to value [*u coin*] and therefore INFL cannot be equated with TENSE. On the one hand evidence from language variation shows that other types of morphological contrasts may serve to m-value INFL: location and participant marking. Moreover, m-valuation is only one possible strategy to value [*u coin*]: it may also be valued via predicate valuation or C-valuation. The latter two strategies are responsible for the existence of tenseless constructions even in languages that are otherwise tensed. It is precisely the existence of such tenseless constructions with provides crucial support for the claim that the content of a functional category does not define it.

The valuation strategies associated with INFL are summarized in table 1.<sup>9</sup>

Valuation strategy	INFL value	Valuation content		
		English	Halkomelem	Blackfoot
<b>M- Valuation</b>	[+coin]	[present]	[proximate]	[local part]
	[-coin]	[past]	[distal]	[other]
<b>Predicate valuation</b>	[+coin]	aspectual verbs		
	[-coin]	futurate verbs		
<b>C-valuation</b>	[+coin]	[directive]		

<sup>9</sup> For reasons of space we do not discuss the predicate- and C-valuation strategies found in Halkomelem and Blackfoot. See Ritter & Wiltchko 2011 for detailed discussion.

	[-coin]	[counterfactual]
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Table 1: Valuation strategies for INFL (adapted from R&W)

In sum, the core of R&W's analysis is the claim that the functional category TENSE is decomposable. It has a universal core function, namely anchoring. This anchoring function may be substantiated by temporal content, which gives rise to the category we typically refer to as TENSE.

$$(15) \quad \text{TENSE} = \text{anchoring (INFL)} + \text{tense marking: \{present, past\}}$$

The reason that – at least in Indo-European languages – INFL is often equated with TENSE, is that it is tense marking which is spelled out in the form of tense morphology on the verb. At least in English, there are no immediately obvious candidates for forms that would spell out the anchoring function of INFL itself: in tenseless constructions INFL does not seem to be spelled out at all. Everything else being equal, we would however predict this to be the case: we should find instances where the anchoring function itself is spelled out. In the remainder of this paper we show that this prediction is indeed borne out. In particular, we provide an analysis of the Greek subjunctive marker *na* according to which it spells out the unvalued [*u coin*] feature associated with INFL.

### 3. Greek subjunctive *na* spells out the anchoring function of INFL

In this section, we argue that the so-called subjunctive marker in Greek (*na*) can be analyzed as the spell out of the anchoring function of INFL. We proceed as follows. In section 3.1, we explore the distribution of *na*. We show that it can be captured straightforwardly under the R&W analysis introduced above. In particular, we show that *na* is used in contexts of predicate valuation and C-valuation. In section 3.2 we argue that the simplest analysis for the distribution of *na* is to analyze it as the spell out of the unvalued coincidence feature [*u coin*].

#### 3.1 *The distribution of na*

For the purpose of this discussion we assume that *na* is associated with INFL (see Philippaki-Warbuton & Veloudis (1984), Philippaki-Warbuton (1987), Rivero (1994) Malagardi (1994), Kyriakaki (2006)).<sup>10</sup> If so, the distribution of *na* can be characterized as in (16).

$$(16) \quad \text{Na spells out INFL in the absence of m-valuation}$$

<sup>10</sup> The assumption that *na* is associated with INFL is not uncontroversial. In particular, Agouraki (1991), Dobrovie-Sorin (1994) and Tsoulas (1995) argue that it occupies C. For the purpose of this paper, we simply assume that *na* is associated with INFL. We note that empirical evidence which suggests that it is associated with C may be reconciled with our view on the assumption that I moves to C (see Pesetsky & Torrego 2004).

This captures the fact that *na* is used when INFL is either valued via predicate valuation, or via C-valuation. This is summarized in table 2 below, where the shaded cells indicate that *na* is used in this context.

Valuation strategy	INFL value	Valuation content
<b>M- Valuation</b>	[+coin]	[present]
	[-coin]	[past]
<b>Predicate valuation</b>	[+coin]	aspectual verbs
	[-coin]	futurate verbs
<b>C-valuation</b>	[+coin]	[directive]
	[-coin]	[counterfactual]

Table 2: Distribution of *na*

We start by illustrating the use of *na* in the context of predicate valuation. Aspectual verbs, such as *arxis-* (‘start’) and *katafer-* (‘manage’) embed complement clauses introduced by *na*.

- (17) a. O Kostas arxis-e **na** pez-i kithara  
*DET Costas start.PRF-PAST.3.SG SUBJ play.IMPV-PRES.3.SG guitar*  
 ‘Costa has started playing the guitar.’  
 b. Katafer -a **na** parados-o ti diatrivi mu.  
*manage.PRF-PST.1.SG SUBJ submit.PRF-DEP.1.SG DET dissertation 1SG.GEN*  
 ‘I managed to submit my dissertation.’

The *na* clause is interpreted like a simultaneous infinitive in English: the embedded event is interpreted as occurring simultaneously to the matrix event. This is consistent with the analysis according to which the matrix predicate serves to value INFL as [+coin] asserting that the embedded event coincides with the matrix event.

Similarly, future-oriented verbs like *thel-* also embed complement clauses introduced by *na*.

- (18) a. thel-is **na** par-ume liga frut -a?  
*want.IMPV-PRES.2.SG SUBJ take.PRF-DEP.1.PL little fruit-NEU.PL.ACC*  
 ‘Would you like us to get some fruit?’  
 b. i-thel-a **na** pernus-ame ap’ ti vivliothiki.  
*PAST-want.IMPV-PAST.1.SG SUBJ pass.IMPV-PAST.1.PL from DET library*  
 ‘I wanted us to pass by the library.’

In the examples in (18), the *na* clause is interpreted like a future irrealis infinitive in English. This is consistent with the analysis according to which the matrix predicate

serves to value INFL as [-coin] asserting that the embedded event does not coincide with the matrix event.

This establishes that *na* is used in the context of predicate valuation, irrespective of whether INFL is valued as [+coin] or [-coin].

We now illustrate the use of *na* in the context of C-valuation. First, consider imperatives.

- (19)        **na**    mas        grap-s-ete.  
               SUBJ    1.PL.GEN   write-PRF-DEP.2.PL  
               ‘(do) write to us!’

On the R&W analysis, imperatives are analyzed as instantiating the valuation of [*u* coin] via C. If so, the use of *na* in imperatives is covered under the generalization that it spells out INFL in the absence of m-valuation.

As with predicate valuation, C-valuation comes in two guises. While in imperatives INFL is valued as [+coin], R&W argue that in counterfactuals INFL is valued by C as [-coin]. Given the generalization in (16), we would therefore expect that *na* is used in counterfactuals. This is indeed the case as shown in (20).

- (20)        An kerdiz-es            to laxio **na**    anakeniz -es            to spiti  
               if    win.IMPF-PST.2.SG DET lottery SUBJ renovate.IMPF-PST.2.SG DET house  
               ‘If you had won the lottery, you would have been able to renovate the house.’

Note in passing, that just like in English, we find past morphology in the counterfactual. Again, this is an instance of *fake past* (James 1982, Iatridou 2000) as evidenced by the fact that it is compatible with a present time adverbial, as shown in (21). In the context of a counterfactual clause (introduced by *na*) past marking is compatible with a present time adverbial ((21)a); in the context of an indicative clause, past morphology is incompatible with a present time adverbial (21)b.

- (21) a. Na    ‘x-ame                    ena    pagoto            tora.  
               SUBJ    have.IMPF-PAST.1.PL    one    ice.cream        now  
               ‘If only we had an ice-cream now.’  
       b. \*Ix-ame                    ena    pagoto            tora.  
               have.IMPF-PAST.1.PL    one    ice.cream        now  
               \*‘We had an ice-cream now.’

The fact that past morphology is not associated with temporal force indicates that past does not serve to value INFL. Consequently, the use of *na* in counterfactuals also falls under the generalization in (16): *na* is used in the absence of m-valuation. And just as with predicate valuation, *na* can be used when C values INFL as [+coin], as in imperatives, and when C values INFL as [-coin], as in counterfactuals.

Finally, if INFL is valued via m-valuation (i.e, by means of tense morphology), then *na* cannot be used. This is shown in (22)-(24).

- (22)        a. O        Petr-os    kolimb-ai                    kaθe proi.

- DET Petr-NOM swim.IMPF-PRES.3.SG every morning*  
 ‘Peter swims every morning.’
- b. O    Petros    kolimb-ai                    tora.  
*DET Petr-NOM swim.IMPF-PRES.3.SG now*  
 ‘Peter is swimming right now.’
- (23) a. O    Petr-os    kolimb-use                    kaθe proi.  
*DET Petr-NOM swim.IMPF-PAST.3.SG every morning*  
 ‘Peter was swimming/used to swim every morning.’
- b. O    Petr-os    kolimb-is-e                    xθes    to    proi.  
*DET Petr-NOM swim-PRF-PRES.3.SG yesterday DET morning*  
 ‘Peter swam yesterday morning.’
- (24) a. \*O    Petr-os            na    kolimb-ai                    tora.<sup>11</sup>  
*DET Petros-NOM SUBJ swim.IMPF-PRES.3.SG now*
- \*/??O Petr-os            na    kolimb-is-i                    tora.  
*DET Petros-NOM SUBJ swim-PRF-DEP.3.SG now*  
 ‘Peter should swim right now.’

We have now established that *na* is used in four different contexts: embedded under aspectual verbs and under future-oriented verbs. These are the contexts where the interpretation of the embedded predicate depends on the semantics of the matrix predicate. They are known as intensional subjunctives and are characterized as being selected by the matrix predicate (Stowell 1993). In addition, *na* is also used in the context of imperatives and counterfactuals. These fall under the classification of subjunctives that are licensed by an operator (i.e., polarity subjunctive, Stowell 1993). This is summarized in table 3.

Valuation strategy	INFL value	Valuation content	Result
M- Valuation	[+coin]	[present]	present tense
	[-coin]	[past]	past tense
Predicate valuation	[+coin]	aspectual verbs	simultaneous
	[-coin]	futurate verbs	future irrealis
C-valuation	[+coin]	[directive]	command

<sup>11</sup> The example in (24) is grammatical when the main focus of the utterance falls on the subject *o Petr-os*. However, in this case the sentence receives a modal interpretation, such that “Petros should (be the one to) swim now”, or an Imperative reading where Petros is indirectly instructed to swim. Therefore, we suggest that in such cases it is the modal force which values the [*u*coin] feature of INFL.

	[-coin]	[irrealis]	counterfactual
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Table 3: The distribution of *na* and valuation

From a semantic point of view, it is not clear that these contexts constitute a natural class. From a syntactic point of view, however, they do. They are precisely those contexts where INFL is not associated with temporal content. In terms of the R&W analysis these are the contexts that are not characterized by m-valuation.<sup>12</sup>

### 3.2 *na* spells out [*u* coin]

While the generalization regarding the distribution of *na* is fairly easy to state in terms of absence of m-valuation, there is still a non-trivial question remaining. What would a lexical entry for *na* look like? That is, what would the feature specification associated with it look like so that it occurs only in contexts of predicate- and C-valuation? We cannot simply say that *na* spells out [+coin] or [-coin], because that would include m-valuation. So the exclusion of m-valued INFL is not a straightforward task. In this section, we propose that *na* spells out the function of INFL without its content. To formalize this insight we propose (25).

(25) *na* spells out [*u* coin] in INFL

What does it mean to spell out an unvalued feature? It simply means that in these cases INFL (which is intrinsically associated with [*u* coin]) is spelled out **before** it is valued. The only context in which this is possible is when the valuating head is higher than INFL (as it is in predicate- and C-valuation). Crucially, however, *na* does not serve to value INFL. Note that the claim that an unvalued feature can be spelled out runs counter standard assumptions about the architecture of language. We briefly address this issue in section 4. In the remainder of this section we wish to point out a number of advantages of the analysis in (25).

Accounting for the distribution of *na* with a unified lexical entry has proven difficult, precisely because of the fact that the semantics of the contexts where it is used is so different. What several researchers have pointed out however, is that *na* (and the subjunctive more generally) signals a *dependency* (as opposed to the indicative which is said to be independent; see Giannakidou (2009) for a recent discussion of this point). On our analysis, this is in fact all it does, but in a roundabout way. In particular, according to our analysis, *na* is not inherently anaphoric, nor does it directly stipulate a dependency anywhere in its lexical entry. Rather, it signals a dependency as a byproduct of spelling out an unvalued feature. Since, per UG, unvalued features must be valued, the presence of *na* signals that INFL still needs to be valued. Thus, it signals that INFL is dependent on a higher head that can serve to value INFL: either the embedding predicate or a higher functional head (C).

<sup>12</sup> An anonymous reviewer asks whether the infinitival marker *to* in English would be amenable to a similar analysis. We don't believe this to be the case: English *to* is only used in a subset of the environments where Greek *na* is used. At this point, we don't have anything to say about the proper analysis of *to* within the R&W framework.

According to R&W, in the context of predicate- and C-valuation there is no utterance situation associated with SpecIP, and henceforth the event situation is ordered relative to some other argument. As a consequence, these events are not deictically anchored. Since *na* is used precisely in those contexts of predicate- and C-valuation it is expected that *na* clauses lack an utterance situation and therefore that there is no deictic anchoring. This is reminiscent of Giorgi's (2009) analysis, according to which subjunctive clauses lack a speaker coordinate.

Finally, our analysis captures the fact that in *na* clauses morphological tense marking is either absent or fake. That is, if *na* occupies INFL it indicates the absence of m-valuation. Therefore, even if there are tense markers, we expect that they do not play their usual role. This captures the generalization that subjunctive is associated with *defective* tense (cf. Picallo 1985).

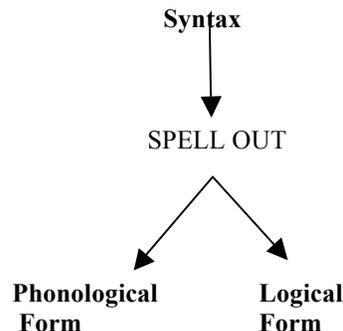
If our analysis of *na* is on the right track, we have further support for the dissociation of the function of a functional category from its content. If function and content were intrinsically related, we would not expect there to be exponents of functional categories that lack content.

#### 4. The timing of spell out

The assumption that *na* spells out an unvalued feature (i.e., [*u* coin]) captures its distribution. However, it does not conform to standard assumptions regarding the architecture of the grammar. Consider for example the quote below from Epstein & Seelye 2002: 70.

*“spell out before valuation is problematic. As DBP (Derivation by Phase) notes, this is “too early” since unvalued features are in fact PF-uninterpretable (as well as LF-uninterpretable) and thus spelling out an expression containing such unvalued features will fail to converge.”*

There is however a simple solution to this problem, as we now show. To consider in more detail how the problem arises, let us look at the architecture of grammar commonly assumed within the generative framework. It is assumed that syntax manipulates abstract features only. Their exponents (sound-meaning correspondences) are added after syntactic computation. As indicated in Figure 1, the syntactic computation branches off to PF and LF respectively. This is known as *spell out*.



The existence of a morpheme that spells out an unvalued feature is not expected on these assumptions. If *na* is inserted after spell out, then its spelling out an unvalued feature would mean that there is an unvalued feature which made it past *spell out*. If so, this unvalued feature would also reach LF where we would expect it to be illegible and consequently result in ungrammaticality. Thus, if *na* does indeed spell out an unvalued feature [*u* coin], then it cannot be inserted after spell out. Instead it must be the case that it is inserted prior to spell out. In particular, if *na* is inserted before spell out then *na* may simply be inserted prior to valuation. Consider the derivation in (26). At the point in the derivation where INFL is merged, INFL is unvalued (26)a. We propose that it is precisely at this point that *na* is inserted (26)b.

- (26) a. ... IP[ [I: *u* coin]<sub>I</sub> VP[ EV-sit V ] ]  
 b. ... IP[ [*na*]<sub>I: *u* coin</sub> VP[ EV-sit V ] ]

At the point in the derivation when C is merged, it can value INFL. Assuming that CP but not IP acts as a phase (Chomsky 2000), INFL is still valued before spell out. As a consequence of being inserted before valuation, *na* appears to be associated with an INFL that is valued as [+coin] (27)a or as [-coin] (27)d.

- (27) a. ... CP[ Plan-set C IP[ [ [*na*]<sub>I: + coin</sub> VP[ EV-sit V ] ] ]  
 b. ... CP[ EV-sit C IP[ [ [*na*]<sub>I: - coin</sub> VP[ EV-sit V ] ] ]

The same holds for predicate valuation. Assuming that embedded complements introduced by *na* lack a CP layer it would follow that there is no phase boundary between the valuing matrix predicate and INFL. Consequently, when the matrix V is merged, it values INFL before SPELL OUT. Again, *na* appears to be associated with an INFL that is valued as [+coin] (28)a or as [-coin] (28)b.

- (28) a. ... VP[ EV-sit V IP[ [ [*na*]<sub>I: + coin</sub> VP[ EV-sit V ] ] ]  
 d. ... VP[ EV-sit V IP[ [ [*na*]<sub>I: - coin</sub> VP[ EV-sit V ] ] ]

In sum, the generalization that *na* is used in contexts where INFL is not associated with temporal content (i.e., in the absence of m-valuation) straightforwardly captures its distribution. In this section, we have seen that the most economic way to capture this is to say that *na* spells out the unvalued coincidence feature associated with INFL. If this is the

case however, it must be the case that *na* is inserted prior to spell out. As such, our analysis has significant implications for the architecture of grammar. We must recognize the possibility for inserting functional elements prior to spell out: there are at least some functors that appear to undergo *early insertion* (see also Wiltschko 2009 for this conclusion, based on patterns of alliterative agreement).

## 5. Evidence from the use of *na* by individuals diagnosed with Down Syndrome

In this section, we turn to the use of *na* by individuals diagnosed with Down Syndrome (henceforth DS). This is relevant in the present context because the language of DS is often described as being characterized by an impairment that affects TENSE (Ring and Clahsen 2005). If TENSE does indeed decompose into an abstract functional category responsible for anchoring (i.e., INFL) and temporal content that serves to substantiate INFL then the question arises as to the exact nature of the TENSE impairment. On the present view, there are at least two cases to consider: either INFL is impaired, or else the association of temporal content with INFL is impaired. In what follows, we show that there is evidence for the latter. In particular, we show that the use of *na* is not affected in DS.

We start by considering in more detail, previous claims about the use of tense in DS. Research on English DS has argued that there is a significant problem with TENSE. This was evidenced by a poor performance in the use of past tense marking, present 3<sup>rd</sup> person singular, *-s*, as well as modals and auxiliaries (Eadie *et al.* 2002 and Laws & Bishop, 2003). The same was also observed with Dutch individuals diagnosed with Down Syndrome, where problems with past tense and auxiliary omission are reported (Bol & Kuiken, 1990).

According to Ring and Clahsen (2005), the observed pattern can be accounted for by the Extended Optional Infinitive hypothesis (Rice, Wexler & Redmond, 1999). In particular, according to Wexler (1994) during a certain stage of language acquisition (the so called Optional Infinitive Stage), typically developing children use tense marking only optionally. Instead of inflecting the verb for tense, they sometimes use an infinitive form. The same was also observed for children diagnosed with Specific Language Impairment at an older age (Rice and Wexler 1996, and subsequent work). Since a similar pattern is observed in DS, it is sometimes claimed that DS can be characterized as using a language that is not fully developed.

That this cannot quite be the right story is indicated by the fact that individuals diagnosed with DS which speak other languages, do not support this pattern. In particular, for German and Greek individuals diagnosed with DS tense is not found to be impaired. Specifically, Schaner-Wolles (2004) reports that German DS shows correct use of finite verbs in the context of verb second (98.4%). While there are cases where a bare stem or infinitive is used in the context of verb second, this is not restricted to DS. Instead we find this with typically developing controls as well (Poeppel and Wexler, 1993). As for Greek DS, Tsakiridou (2005) reports only one tense error with her participants. Similarly, Christodoulou (2011) shows that the accuracy of tense use in DS reaches above 95% in Cypriot Greek DS. However, Christodoulou also observes that there *is* a large number of auxiliary and copula omissions.

What is interesting in the present context, however, is the use of *na* in DS. Based

on a large corpus of data, Christodoulou 2011 observes that *na* is generally used correctly by Cypriot Greek individuals diagnosed with DS. As shown below, they are able to use *na* accurately with matrix clauses, (26), aspectual verbs (27), modal verbs (28), directives (29), in both control and free elicitation experiments.

- (29) k' istera  $\emptyset$  **na** skola -s-ume.  
*and later* *SUBJ get.off-PRF-DEP.1.PL*  
 'And then we'll get off school/work.'
- (30) o Nik -os vlep-i ti Dora...  
*DET Nick-NOM see-IMPF-PRES.3.SG DET Dora*  
 ...**na** krat-a vivli- $\emptyset$ .  
*SUBJ hold-IMPF-PRES.3.SG book*  
 'Nick is seeing Dora holding a book.'
- (31) E-prep-e **na** e-vlep-e $\emptyset$  i ikon -e $\emptyset$ .  
*PAST-must-PAST.1.SG SUBJ PAST-see-IMPF-PAST.3.SG DET picture-FEM.PL*  
 'S/he should have seen the pictures.'
- (32) To[l]a na to kli-s-i $\emptyset$  to panathir -i.  
*now SUBJ 3.NEU.SG close-PRF-DEP.2.SG DET window -NEU.SG.ACC*  
 'Now close the window.'

Examples (29) through (32) show that both the INFL system and anchoring function are intact. Specifically, example (29) is a case of C-valuation, while (30) is an instance of predicate valuation, where INFL is valued by the matrix verb *vlep-i* 's/he is seeing'. Similarly, in (31) the [ucoin] feature is valued by the modal verb *e-prep-e* 'should/must' of the matrix clause and in (32) the directive force in C values the unvalued coincidence feature under INFL. The construction in (32) serves as an alternative to the imperative, which expresses a less forceful command. Hence, individuals diagnosed with DS use *na* in exactly those contexts where we expect *na* to also appear in typically developed language. The data suggests that DS have no problem with INFL, since they use *na* to encode a dependency.

This is further supported by the fact that DS sometimes even correctly add *na* in contexts where it is optional and therefore sometimes absent in the input. Consider the following examples. (33) shows the target stimulus in the experiment while (34) shows the DS production. Crucially, *na* is added in the embedded clause in the DS production while it is missing in the target.

- (33) Target Stimulus  
 e **na** sas šereti-s-o pri fi-o.  
*AUX SUBJ 2.PL.ACC say.goodbye-PRF -DEP.1.SG before leave-PRF-DEP.1.SG*
- (34) DS Production  
 $\emptyset$  **na**  $\emptyset$  šereti-s-o pri **na** fi-o.  
*SUBJ say.goodbye-PRF-DEP.1.SG before SUBJ leave-PRF-DEP.1.SG*

‘I am going to say goodbye before I leave.’

This pattern was found in 13 out of 16 DS participants.<sup>13</sup> That is, while a subjunctive marker **is** possible and frequently used in such environments in typically developed speech, it was not present in this particular stimulus. Note that the use of *na* in this context is fully consistent with the fact that dependent tense marking is found on the verb.

In conclusion, examples (29) through (34) cast doubt on the claim that the DS INFL system is impaired. What our data indicates is that it is not INFL which is impaired (i.e. the function) but rather the association of INFL with its content. This may result in either the omission of the morphological marking of tense (omission of an inflectional affix, copula or auxiliary), or the use of the default tense value (i.e. infinitive for English or German and present for Greek). For a more detailed analysis see Christodoulou 2011.

Thus, the use of *na* in CGDS provides further evidence for our main claim according to which the function of a functional category is dissociated from its content. If the analysis of *na* developed in this paper is on the right track, this suggests that INFL (and thus the anchoring system) is not affected at all by DS. What seems to be affected instead is the association of INFL with substantive content.

## 6. Conclusion

The purpose of this essay was to argue that the function of functional categories is independent of their content. We have reviewed evidence to this effect put forth in Ritter and Wiltschko (2009, 2011). Moreover, we have argued that the distribution of Greek *na* is best analyzed as lexicalizing the function of INFL without its content. If this analysis is on the right track, it provides further evidence for the proposed dissociation of function and content. In addition, we have argued that the simplest analysis of *na* requires the assumption that functional elements can be inserted prior to spell out, contrary to standard assumptions.

If we take the analysis at face value, then we can draw two conclusions about the nature of universal grammar. First, it appears that functional categories exist independently of the features that associate with them. The functional category we have investigated here (INFL) is associated with an anchoring function, which can manifest itself in two different ways: it may be responsible for deictic anchoring via tense marking in indicative root clauses, or else it may be responsible for encoding a dependency. It is the latter function that *na* spells out. Secondly, it appears that a given sound meaning correspondence (*na*) may associate with syntactic structure before SPELL OUT.

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<sup>13</sup> This was also observed with a small number of the typically developed participants.

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