

A Continuum of Deficiency for Basque Infinitivesⁱ

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Abstract

This paper makes two claims about non-finite constituents headed by the affixes *-tu/-i/-n/-Ø* in Basque. First the semantics of these elements in modal contexts indicates that the standard analysis of these constituents as aspectual phrases is incorrect. We argue that *-tu/-i/-n/-Ø* are merged as infinitival markers, which we take to be of category *n*. In perfective contexts the verb+*-tu/-i/-n/-Ø* raises to a null perfective modal. Second, we argue that differences in behaviour of *-tu/-i/-n/-Ø*-headed constituents across contexts are usefully expressed in terms of variation in the richness of nominal and verbal functional layers following Alexiadou et al (2009, 2010, 2011).

1 Introduction

Recent work on nominalizations has converged on the view that cross-linguistic and cross-contextual variation in the categorial properties of such “mixed categories” are determined by differences in the functional richness of nominal and verbal strata (Alexiadou and Schäfer 2009, Alexiadou et al 2011a,b, Alexiadou 2001, Borsley and Kornfilt 2000, Pires 2001). This approach is developed most fully, perhaps, by Alexiadou et al (2011), who argue that differences between more noun-like and more verb-like nominalizations in Germanic and Romance reflect differences in the internal structure of nominal and verbal functional sequences, as illustrated in (1).

- (1) a. [DP [Verbal FP ... [...]]]
b. [DP [Nominal FP ...[Verbal FP...[...]]]]

This paper focuses on some properties of Basque non-finite constituents headed by affixes *-tu/-i/-n/-Ø* and argues that some longstanding problems in the analysis of these constituents are usefully approached in terms of the decomposition illustrated in (1). In particular, we make two main claims regarding these elements. First, we argue that the affixes *-tu/-i/-n/-Ø* are best understood as infinitival markers akin to Romance *-r*, which in the spirit, though not the technology, of Raposo (1987), we analyze as a little-*n* head. On this approach, all Basque *-tu/-i/-n/-Ø* infinitives are therefore a type of nominalization. Second, we argue that some well-known differences in the behaviour of *-tu/-i/-n/-Ø* infinitives across contexts are usefully expressed in terms of variation in the verbal and nominal functional structure associated with these elements along lines advocated by Alexiadou et al (2009, 2010, 2011). Drawing on seminal work on nominalizations by Goenaga (1985) and Artiagoitia (1995) as well as a more recent analyses of *-tu/-i/-n/-Ø* infinitives as restructuring constituents by Balza (2010) and Etxepare and Uribe-Etxebarria (2010), we illustrate a scale of functional deficiency of *-tu/-i/-n/-Ø* infinitives across three different contexts.

The discussion will be organised as follows. In section 2 of this paper, we reconsider some often made claims about the nature of *-tu/-i/-n/-Ø*-headed constituents, i.e. that they are perfective and/or participial markers, and compare them instead to Romance *-r* infinitives.

In section 3, we discuss the verbal and nominal deficiency of *-tu/-i/-n/-Ø* infinitives in different contexts and propose a functional structure for three different contexts. Section 4 concludes the paper.

2 The dual identity of the affixes *-tu/-i/-n/-Ø*

In the Basque syntax literature, the affixes *-tu/-i/-n/-Ø*—which vary by verb class—are standardly described as perfective markers (Laka 1990, Ortiz de Urbina 1989, Zabala and Odriozola 1996) or participial affixes (Goenaga 1985, San Martin and Uriagereka 2002) in view of the fact that on main verb complements of auxiliaries they force a perfective reading as reflected in the translation in (2).

- (2) Opera-tu didate. perfective marker guise
 operate-TU AUX
 ‘They have operated on me.’

It has long been recognised, however, that some additional account is needed to explain the behaviour of *-tu/-i/-n/-Ø* in other non-finite environments. Crucially, on verbal complements of modals such as *nahi* ‘want’ in (2), and in other environments to be discussed below, the affixes *-tu/-i/-n/-Ø* need not induce a perfective interpretation (Artiagoitia 1995, chapter 3, Alcázar 2002).

- (3) Bazkal-**du** nahi dute. infinitival guise
 lunch-TU want AUX
 ‘They want to eat lunch.’

This section develops and extends a unified account of these two guises of *-tu/-i/-n/-Ø*, first proposed in Haddican (2007). Specifically, *-tu/-i/-n/-Ø* are argued to be merged always and everywhere as infinitival heads of category *n*; finite perfective clauses such as (1) involve raising of the verb+*-tu/-i/-n/-Ø* to a null perfective modal head.

Evidence in favour of this proposal comes from central dialects including Oiartzun Basque, in which a class of non-agentive predicates determines a morphologically overt perfective head rather than the null variant of other dialects. In such cases, the overt perfective marker attracts the verb root+infinitival marker in a way parallel to the null perfective head in other environments and in other dialects.

2.1 Aspects of infinitives

The principal motivation for the participial approach to *-tu/-i/-n/-Ø* comes from the fact that on main verb complements of auxiliaries, they necessarily co-occur with a perfective interpretation, as reflected in the paraphrase in (4).

- (4) Ines-ek ikus-i du.
 Ines-ERG see-I AUX
 ‘Ines has seen (it).’

In this environment, *-tu/-i/-n/-Ø* are in complementary distribution with the affix *-t(z)en*, as in (5), which may have several different kinds of imperfective interpretations, including continuous and habitual readings as in (6) and (7).

- (5) Ines-ek ikus-ten du.
Ines-ERG see-IMPERF AUX
'Ines sees (it).'
- (6) Zer irakur-tzen duzu hor?
what read- IMPERF AUX there
'What are you reading there?' (Oyharçabal 2003)
- (7) Egunero zazpitan jeiki-tzen naiz.
everyday seven-at get up-IMPERF AUX
'Every day I get up at seven.' (Oyharçabal 2003)

In view of this distribution, Goenaga (1985) and Laka (1990) propose that *-tu/-i/-n/-Ø* and imperfective *-t(z)en* are alternate values of a single aspectual head, Asp (cf. Zabala and Odriozola 1996). Nevertheless, the behavior of *-tu/-i/-n/-Ø* in other environments is problematic for an approach to these elements as perfective markers. One such environment is verb focus constructions involving the dummy verb *egin* as shown in (8).

- (8) a. Eror-i egi-n da etxea.
fall-I do-N AUX house
'The house has FALLEN.'
- b. Eror-i egi-ten da etxea.
fall-I do-IMPERF AUX house
'The house FALLS.'
- c. Eror-i egi-n-go da etxea.
fall-I do-N-FUT AUX house
'The house is going to FALL.'

In (8), *-i* appears on the focalized main verb, while aspectual markers such as the imperfective affix *-t(z)en* and future *-ko* are realized on the dummy verb, *egin*. Crucially, in sentences such as (8), the aspectual interpretation is invariably determined by the aspectual morpheme on the dummy verb, *egin*, as reflected in the glosses. Assuming Laka's AspP proposal and an analysis of *-tu/-i/-n/-Ø* as (always) perfective markers, then the data in (8) are perplexing since they seem to require the realization of different values of a single aspectual head on different items in a single clause. (See Haddican (2005) for evidence that these constructions are in fact monoclausal rather than biclausal.)

The behavior of *-tu/-i/-n/-Ø* on verbs under modals provides additional reason for skepticism toward the traditional analysis of these elements. In particular, verbs selected by the modals *ahal*, 'can,' *nahi*, 'want' and *behar*, 'need' obligatorily bear *-tu/-i/-n/-Ø* regardless of the perfectiveness of the action.

- (9) Egun hartan esan zidan, egunero etor(r)-i nahi zuela.
day that-on say AUX everyday come-I want AUX-COMP
'That day she told me she wanted to come every day.' (want>every)

Iterative/habitual readings of this kind are not possible in the past tense in the absence of a modal; instead, the imperfect affix *-t(z)en* is required.

- (10) Egunero (*etor(r)-i/etor-t(z)en) zen.
 Every day (come-I /come-T(Z)EN) AUX
 ‘She used to come every day.’

Similarly, stative verbs like *jakin* ‘to know (a fact)’ and *ezagutu* ‘to know (a person, place etc.)’ need not have an “ingressive” interpretation under modals, as reflected in the paraphrase in (11).

- (11) Nere kardiologoak oso ongi ezagu-tu behar du bihotzaren anatomia.
 My cardiologist-ERG very well know-TU need AUX heart-GEN anatomy
 ‘My cardiologist has to know the anatomy of the heart very well.’

A third kind of environment in which *-tu/-i/-n/-Ø* do not behave as perfective markers is in future forms. These constructions consist of a future marker, *-ko*,ⁱⁱ stacked onto the verb root+*-tu/-i/-n/-Ø* as in (12).ⁱⁱⁱ

- (12) Abes-tu-ko dut.
 sing-TU-FUT AUX
 ‘I will sing.’

Again, in these constructions, *-tu/-i/-n/-Ø* lack the aspectual properties of perfective heads discussed above. Stative *ezagutu*, ‘to know (a person, place etc.)’, for example, need not have an “ingressive” interpretation as shown in (13).

- (13) Nire kardiologoak oso ongi ezagu-tu-ko du bihotzaren anatomia.
 My cardiologist-ERG very well know-TU-FUT AUX heart.GEN anatomy
 ‘My cardiologist will know the anatomy of the heart very well.’

Similarly, future forms with *-tu/-i/-n/-Ø* allow iterative and habitual interpretations as in (14) and (15) respectively.

- (14) Maiz etorr-i-ko da.
 often come-I-FUT AUX
 ‘She’ll come often.’

- (15) Altua iza-n-go yaz, koxkortzen yaz-en-ean.
 tall be-I-FUT AUX-PRES get older AUX-COMP-in
 ‘You’ll be tall when you’re older.’

These facts, therefore show that, in certain environments at least, *-tu/-i/-n/-Ø* are not plausibly understood as perfective markers (Alcázar 2002, Artiagoitia 1995, chapter 3). Rather, several properties suggest an identity of these elements closer to infinitival markers cross-linguistically, including Romance *-r* infinitives as illustrated by the Spanish example in (16).

- (16) Quiero com-er.
 Want eat-INFIN
 ‘I want to eat.’

A first similarity between Romance *-r* and Basque verb+*-tu/-i/-n/-Ø* sequences is that both are the citation form for the verb. While infinitives are commonplace as citation forms, an aspectually marked verb as a citation form, is less expected. Second these constituents allow for short *wh*-movement, as in (17) (Ortiz de Urbina 1989).

- (17) Ez dakit zer abes-tu.
 not know what sing-TU
 ‘I don’t know what to sing.’

Third as noted by a reviewer, *-tu/-i/-n/-Ø* constituents share with Romance *-r* the fact that they can appear in adult root infinitives, as illustrated in (18) and (19) (Etxepare and Grohmann, 2002).^{iv}

- (18) Nik suxi ja-n?! Ezta pentsatu ere! Basque
 I-ERG sushi eat-N NEG think-TU even.
 ‘Me eat sushi? Don’t even think about it.’
- (19) Yo com-er sushi ?! Ni loco! Spanish
 I eat-INFIN sushi. Nor crazy.
 ‘Me eat sushi? Not even (if I were) crazy.’

Fourth and finally, *-tu/-i/-n/-Ø* constituents share with Romance *-r* infinitives certain nominal properties, which we discuss in the following section.

2.2 Nominal properties of *-tu/-i/-n/-Ø* constituents

Basque *-tu/-i/-n/-Ø*-headed constituents are noun-like in three main ways. First, *-tu/-i/-n/-Ø* constituents share with Romance *-r* infinitives the fact that these constituents are selected by certain prepositions and postpositions including *nahiz* ‘despite’ and *gabe* ‘without.’ (Other postpositions take a gerund complement headed by an affix *-t(z)en* homophonous with the imperfective affix discussed above.)

- (20) nahiz gaztea iza-n
 despite young be-N
 ‘despite being young.’
- (21) ikus-i gabe
 see-I without
 ‘without seeing.’

Romance infinitives, again, behave similarly as illustrated in the Spanish and French examples in (22).

- (22) a. sin comerlo
 without eating-it.
 ‘without eating it.’
- b. sans le manger
 without it eating
 ‘without eating it’

A second nominal property of *-tu/-i/-n/-Ø*-constituents is the fact that, for some speakers, at least, they may trigger object agreement. Auxiliary verbs in Basque agree in person and number with ergative, absolutive and dative arguments of the main verb as illustrated in (23).

- (23) a. Ni joan na-iz (unaccusative)
 I-ABS go 1ABS-ROOT
 ‘I have gone.’
- b. Nik zu ikusi zait-u-t (monotransitive)
 I-ERG you- ABS see 2ABS -ROOT-1ERG
 ‘I have seen you.’
- c. Nik liburuak Joni eman (ditransitive)
 I-ERG books.ABS Jon-DAT give
 d-i-zki-o-t
 3ABS-ROOT-PL -ABS -3S.DAT-1S.ERG
 ‘I have given Jon the books.’

(24) is a VP focus construction where the focalized VP is a *-tu/-i/-n/-Ø*-headed constituent. In this example the embedded verb is intransitive, which indicates that the only element available to trigger transitive agreement on the auxiliary is the infinitive complement itself.^v The availability of this kind of agreement, then, is likewise expected if the focalized infinitive is nominal.

- (24) Jon-ek egi-ten du astero-astero bertara joa-n
 Jon-ERG do-IMP AUX-TR weekly-weekly [there go-N]
 ‘What Jon does is go there every week.’

Third and finally, *-tu/-i/-n/-Ø* constituents can take a definite article as illustrated in (25) and (26) (Goenaga 1985, Artiagoitia 1995, 2003).

- (25) Sentitzen dut [Miren berandu etorri iza-n-a.]
 regret AUX Miren late come have-INFIN-**the**
 ‘I regret Miren having come late.’ (Zabala and Odriozola 1996:239, fn. 3)

- (26) Damu dut [hori egin iza-n-a]
 regret AUX that do have-INFIN-**the**
 ‘I regret having done that.’ (Goenaga 1985: 498)

In several ways, these D-headed constructions behave like “verbal infinitives” in Spanish (Pérez Vázquez 2002, Alexiadou et al 2011). First, in both Spanish and Basque, the nominalization can be modified by adverbs, but not adjectives

- (27) a. Damu dut [hori poliki-poliki egin iza-n-a.] Basque
 regret AUX that slowly do have-INFIN-the
 ‘I regret having done that quickly.’
- b. *Damu dut [hori egin iza-n azkarr-a.]
 regret AUX that do have-INFIN fast-the
 ‘I regret the fast doing of that.’

- (28) a. El andar errabundamente Juan Spanish
 The go-about-INFIN aimlessly Juan.
 ‘Juan’s going about aimlessly.’ (Alexiadou et al 2011)
- b. *El andar errabundo Juan
 The go-about-INFIN aimless Juan.
 ‘Juan’s aimless going about.’ (Alexiadou et al 2011)

Second, in both Basque and Spanish, the nominalization co-occurs with the definite article but no other types of determiners.

- (29) *Damu dut [hori egin iza-n hau/hori/hura/bat.] Basque
 regret AUX that do have-INFIN this/that/yonder/one
 ‘I regret having done that.’
- (30) *este/ese/aquel/un lamenter desesperadamente de dos pastores. Spanish
 this/that/yonder/one lament desperately of two shepherds
 ‘This/that/yonder/a desperate lamenting of two shepherds.’
 (Alexiadou et al 2011)

Interestingly, the situation in French is somewhat different. While Old French was like Spanish and other Romance languages in allowing both nominal and verbal infinitives, Modern French does not have verbal infinitives and the use of nominal infinitives is restricted to a *scientific* style. According to Sleeman (2010) this difference is related to loss of OV word order and a change in the morphological analysis of the infinitive, which eventually resulted in nominalization targeting only V elements. Clearly, for our purposes, the special situation of French does not detract from the validity of the comparison of *-tu/-i/-n/-Ø*-headed constituents and *-r* infinitives in Romance.

Third, neither Basque *-tu/-i/-n/-Ø* constituents nor Spanish verbal infinitives pluralize (cf. Grimshaw 1990, Alexiadou et al 2009, 2010).

- (31) *los andares errabundamente Juan.
 The-PL go-around-PL aimlessly Juan.
 ‘Juan’s goings about aimlessly.’
- (32) *Damu dut hori egin izan-a-k
 regret AUX that do-INFIN-DEF-PL
 ‘I regret having done that.’

Similarly, conjoined *-tu/-i/-n/-Ø*-headed constituents in Basque never trigger plural object agreement on the auxiliary, unlike canonical conjunctions.

- (33) *Damu (dut/*ditut) hori egin iza-n-a eta berandu
 regret (AUX/AUX.PL) that do have-INFIN-the and late
 etorri izana
 come have-INFIN-the
 ‘I regret having done that and having come late.’

Finally, Basque *-tu/-i/-n/-Ø* constituents headed by a definite article share with true verbal infinitives in Spanish the ability to assign to external and internal arguments the case they receive in finite contexts, rather than genitive. (34) below shows that Basque perfective nominalizations license ergative case on the embedded subject ('child') and absolutive on the embedded object ('lie').

- (34) Espero dut haurrak gezurra esan ez iza-n-a.
 hope AUX child.ERG lie.ABS say not have.N.DET
 'I hope that the child has not said a lie.' (Artiagoitia 2003: 677)

Similarly, (35) shows that in Spanish verbal infinitive, nominative is assigned to the embedded subject and accusative to the embedded object.

- (35) El canta-r yo la Traviata.
 The sing-INF I the.ACC Traviata
 'My singing of the Traviata' (Alexiadou et al 2011)

In this way, these constructions contrast with e.g. *POSS-ing* constructions in English, whose subjects appear with genitive case.

- (36) John's singing la traviata.

In several ways, then, Basque *-tu/-i/-n/-Ø* constituents headed by a definite article behave like Spanish verbal infinitives. The Basque construction, however, differs from its Spanish counterpart in that the former necessarily co-occurs with a perfective interpretation, as reflected in the above paraphrases. As illustrated in the examples in (28), (30) and (35), the Spanish constructions need not have this interpretation. We return to these aspectual facts shortly.^{vi}

2.3 *A unified account*

The facts presented in the previous two sections suggest that in some environments including modal complements and in future constructions, the verbal affixes *-tu/-i/-n/-Ø* are not plausibly understood as perfective markers, but rather seem to behave like infinitival markers, on a par with Romance *-r*. In other environments, however, including on main verb complements of auxiliaries, these affixes necessarily co-occur with a perfective interpretation in keeping with the traditional characterization of these elements as aspectual heads. The fact that *-tu/-i/-n/-Ø* in these two kinds of environments have disparate sets of properties suggests the possibility that these elements are in fact different morphemes and that their homophony is accidental. One consideration that makes this approach unattractive, however, is the allomorphy of these elements. That is, the same classes of verbs take the same affixes—*-tu*, *-i*, *-n* or *-Ø*—regardless of whether *-tu/-i/-n/-Ø* appear in their infinitival marker guise or in their perfective marker guise. The open class affix is *-tu* as shown in (37), and three smaller classes of (typically older) verbs take the affixes *-i*, *-n* and *-Ø* as shown in (38)-(40), respectively.

- (37) a. Opera-tu didate.
 operate-TU AUX-PRES
 'They have operated on me.'

- b. Opera-tu nahi didate
operate-TU want AUX-PRES
'They want to operate on me.'
- (38) a. Etor(r)-i da.
come-I AUX-PRES
'She has come.'
- b. Etor(r)-i nahi du
come-I want AUX-PRES
'She wants to come.'
- (39) a. Ema-n didate.
give-N AUX-PRES
'They have given it to me.'
- b. Ema-n nahi didate.
give-N want AUX-PRES
'They want to give it to me.'
- (40) a. Igo-Ø da.
go up-Ø AUX-PRES
'He/she has gone up.'
- b. Igo-Ø nahi du.
go up-Ø want AUX-PRES
'He/she wants to go up.'

This allomorphy is mysterious if perfective *-tu/-i/-n/-Ø* and infinitival *-tu/-i/-n/-Ø* are underlyingly separate morphemes. In view of these facts, we will pursue an analysis of *-tu/-i/-n/-Ø* in these two environments as underlyingly one and the same morpheme.

An immediate question for a unified approach to these two guises of *-tu/-i/-n/-Ø* is to determine which of these two guises corresponds to the underlying form and which is the derived form. The issue, in other words, is whether *-tu/-i/-n/-Ø* are merged as perfective morphemes which can behave as infinitival markers, or whether they are merged as infinitival markers which in certain environments take on properties of aspectual heads.

Superficially, certain similarities between the Basque facts presented here and the Frisian *participium pro infinitivo* (PPI) construction (den Dikken and Hoekstra 1997) seem to recommend the former approach, namely that *-tu/-i/-n/-Ø* are perfective markers which behave as infinitives in non-finite embeddings. In the Frisian example in (41), 'do' takes a participial affix despite the fact that it is the complement of the modal 'want' which normally takes an infinitival complement. As den Dikken and Hoekstra show, this participle is parasitic on the higher "true" participle, *wollen* 'liked.'

- (41) Hy soe it dien wollen ha.
he would it do.PTC want.PTC have.INF
'He would have liked to do it.' (den Dikken and Hoekstra 1997)

Given that Basque *-tu/-i/-n/-Ø* constituents participate in certain restructuring phenomena (Etxepare and Uribe-Etxebarria 2011), and given that PPI (as well as *infinitivum pro participio*, IPP) is characteristic of restructuring predicates, a PPI analysis is immediately attractive in that it suggests a unified account of these different restructuring phenomena in

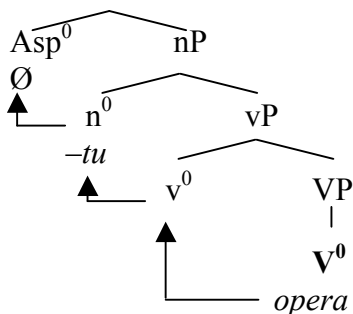
both Basque and Frisian (whatever this may be). Nevertheless, two aspects of the Basque facts outlined above disfavour a PPI approach. First, *-tu/-i/-n/-Ø* are not parasitic on a “true” perfective marker, unlike in Frisian. That is, *-tu/-i/-n/-Ø* appear in non-finite embeddings even when the higher modal is interpreted non-perfectively. Second, *-tu/-i/-n/-Ø* fail to behave semantically like perfective markers even outside of “restructuring” environments, such as with irrealis *-ko*.

Rather, parsimony seems to recommend the second approach, namely that *-tu/-i/-n/-Ø* are underlyingly infinitival markers that, in some environments, may raise to adjoin to a null perfective head, which we take to be an infinitive-selecting modal.^{vii} Specifically, on the assumption that *-tu/-i/-n/-Ø* are always merged as perfective heads, then some account is needed for why these elements can lose their perfective interpretation when they appear under modals etc. In contrast, assuming that these elements are infinitival heads that raise to adjoin to a null perfective modal head on complements of auxiliaries, then no such special account is needed.

We propose, therefore, that *-tu/-i/-n/-Ø* in sentences like (42) are merged as infinitival markers, which we take to be of category *n*, a nominalizing head merged above *vP* (Alexiadou 2001, Adger 2003). In perfective environments, the complex verbal head consisting of the verb root+*v*+*-tu/-i/-n/-Ø* raises to adjoin to a null aspectual head responsible for the perfective interpretation. This proposal is illustrated in (43), which derives the lower portion of (42).

- (42) Opera-tu didate.
 operate-TU AUX-PRES
 ‘They have operated on me.’

(43) AspP



A very similar derivation seems to be independently required for the overt irrealis/future affix *-ko*. As discussed above, future forms are constructed by stacking *-ko* onto the verb+*-tu/-i/-n/-Ø*, as shown in (12), repeated below. Again, *-tu/-i/-n/-Ø* in such constructions need not cooccur with a perfective interpretation.

- (12) Abes-tu-ko dut.
 sing-TU-FUT AUX
 ‘I will sing.’

By contrast, the overt imperfective marker *-t(z)en* does not attract the verb root+*-tu/-i/-n/-Ø*, but rather the bare *V*. A derivation in which the imperfective marker attracted the verb root+*-tu/-i/-n/-Ø* would produce the morpheme sequence in (43), which is unattested in most varieties.^{viii}

- (44) *Abes-tu-tzen dut.
 sing-TU-IMPERF AUX
 ‘I sing.’

One approach to these facts from the perspective of the present proposal is as a selectional difference: future/irrealis *-ko* and perfective *-Ø* are tense/aspect modals which select for infinitival complements while imperfective *-t(z)en* selects for the verb root.

2.4. *-tu* in central dialects

The behavior the affix *-tu* in a set of central Basque dialects provides additional support for the above analysis of *-tu/-i/-n/-Ø*. In particular, on a class of state and activity verbs including *izan* (copula), *egon* (locative and existential copula), *jakin* ‘know,’ *ibili* ‘walk,’ (also a semi-auxiliary) and *bizi* ‘live’ that standardly take only the affixes *-n* or *-i* in perfective environments, the affix *-tu* may also appear, stacked onto *-n/-i*. This dialectal contrast is illustrated in (45) and (46).

- (45) Ez nuen arazorik iza-**n**. Standard Basque
 NEG AUX problem have-N
 ‘I didn’t have problems.’
- (46) Ez nuen arazorik iza-**n-du**. Oiartzun Basque
 NEG AUX problem have-N-TU
 ‘I didn’t have problems.’

In sentences like (46), then, the “participial marker” seems to double in these dialects, with a restricted set of verbs. However, this extra *-tu* affix is unavailable in non-perfective environments in which *-tu* is normally available. In particular, *-tu* in this guise may not appear in future forms, as in (47) or under modals as in (48).

- (47) Iza-n(*-du)-ko da.
 be-N-TU-FUT AUX-PRES
 ‘It will be.’
- (48) Iza-n(*-du) behar du-PRES
 be-INFIN-TU need AUX
 ‘She needs to have it.’

Similarly, an additional *-tu* stacked onto *-i/-n* is excluded in imperatives, as in (49) and with prepositions as in (50).

- (49) Ego-n(*-du) lasai.
 be-INFIN-TU calm
 ‘Relax./Take it easy.’
- (50) nahiz gaztea iza-n(*-du)
 despite young be-INFIN-TU

‘despite being young’

The generalization, then, is that stacking of *-tu* onto *-n/-i* with this class of verbs is unavailable in precisely the same environments in which *-tu/-i/-n/-Ø* do not force a perfective interpretation. From the perspective of the present proposal, then, these data suggest that in central dialects, a *-tu* affix homophonous with the infinitival marker *-tu* is available as a true perfective head. That is, in Oiartzun Basque, this class of state and activity verbs requires an overt *-tu* perfective marker rather than the null variant determined by other verbs.

Crucially, the infinitival markers *-n* and *-i* (in the case of *ibilittu*, ‘walk’ in other dialects) are preserved in these forms. If this account of *-tu* doubling is correct, then, these data suggest a case in which a verb root+infinitival marker raises to a morphologically overt perfective head. This, in turn, lends credence to the above proposal that, in other perfective environments in Oiartzun Basque and in all perfective environments in other dialects, the verb root+infinitival marker raises to adjoin to a null perfective head, as illustrated in (43).

This analysis of *-tu* “doubling” crucially depends on the assumption that the affix *-n* is an infinitival affix and not part of the verbal root. In fact, *-n* has received different treatments in the literature in this regard. The principal evidence for treating *-n* as part of the verb root—unlike *-tu* and *-i*—concerns the behavior of *-n* with imperative and modal auxiliaries in eastern dialects. In these dialects, imperative and modal auxiliaries take the root form of verbs that in other environments take *-tu* and *-i*, as shown in (51).

- (51) Gerta(-*tu) daiteke. Eastern dialects
 happen AUX
 ‘It can happen.’

Crucially, in these dialects (and others), these same modals take verbs+*n*.

- (52) Ego-n daiteke. All dialects
 be-N AUX
 ‘He/she/it can be there.’

By contrast, in western varieties (including the central dialects discussed here), these modals take the verb root+*-tu/-i*.

- (53) Western dialects
 Gerta-tu daiteke.
 happen-TU AUX
 ‘It can happen.’

Nevertheless, evidence that *-n* is not part of the verb root but rather an affix of some kind comes from the fact that, like *-tu* and *-i*, it is absent (across dialects) in synthetic forms such as (54) (Laka 1990).

- (54) z-e-go-en
 EPTH11-CM-be-PAST
 ‘he/she/it was (there).’

In addition, like *-tu* and *-i*, *-n* is in complementary distribution with *-t(z)en*.

(55) ego-ten All dialects
LOC.COP-IMPERF

(56) *ego-n-t(z)en All dialects
LOC.COP-N-IMPERF

These facts concerning synthetic verb formation and imperfective forms suggests that, in all dialects, $-n$ cannot be part of the verb root, unless some rule of $-n$ deletion applies in these environments. Moreover, given that $-n$ in central and western dialects (unlike in Eastern dialects) is identical in distribution to the affixes $-i$ and $-tu$ (abstracting away from verb class restrictions), we will assume that, in these dialects at least, $-n$ is a true infinitival marker on a par with $-i$ and $-tu$. From this standpoint, then, $-tu$ in central dialects suggests additional evidence in favour of the derivation of perfective constructions proposed above.^{ix}

To summarize the proposal so far, we have argued that the $-tu/-i/-n/-\emptyset$ are infinitival heads, which we take to be of category $-n$. The participial behaviour of $-tu/-i/-n/-\emptyset$ constituents in other contexts is produced by raising the verb+ $-tu/-i/-n/-\emptyset$ to a perfective head which is null in most environments, but overt in a few Central dialects including that of Oiartzun.

3 A continuum of deficiency for Basque infinitives

In the remaining discussion, we consider variation in the behaviour of $-tu/-i/-n/-\emptyset$ infinitives across different contexts. We argue, following Alexiadou et al (2011), that cross-contextual differences in nominal and verbal properties of $-tu/-i/-n/-\emptyset$ infinitives in Basque are usefully expressed in terms of differences in the functional richness of nominal and verbal sequences as in (1) repeated here.

- (1) a. [DP [Verbal FP ... [...]]]
b. [DP [Nominal FP ...[Verbal FP...[...]]]]

We focus on three environments: infinitive-modal constructions, modal-infinitive constructions; and, D-headed “verbal infinitives”; drawing especially on work on the former two contexts by Balza (2010) and Etxepare and Uribe-Etxebarria (2010). We choose these constructions because they usefully illustrate the range of functional richness available for these constituents. We will set aside other environments in which $-tu/-i/-n/-\emptyset$ constituents appear including as complements of prepositions and in VP focalization contexts (see above).

3.1 Infinitive – modal orders

In the preceding discussion, we noted that modals in Basque including *nahi* (‘want’), *behar* (‘need’) take infinitives with the affixes $-tu/-i/-n/-\emptyset$. Modulo prosodic constraints, there is optionality in the placement of the infinitival phrase relative to the modal. That is, the infinitive can appear to the left of the modal+auxiliary sequence as in (57a) or to the right, as in (57b).

- (57) a. [Horr-ela-ko-a-k maiz-ago ikus-i] nahi nituzke
that-like-GEN-DEF-PL frequent-more see-INFIN want AUX

- ‘I’d like to see things like that more often.’
- b. Nahi nituzke [horr-ela-ko-a-k maiz-ago ikus-i]
 want AUX that-LIKE-GEN-DEF-PL frequent-more see-INFIN
 ‘I’d like to see things like that more often.’ (Etxepare & Uribe-Etxebarria 2010)

Balza (2010) and Etxepare and Uribe-Etxebarria (2010) note several differences in the behaviour of infinitives in the two orders shown in (57), suggesting different internal structures. In particular, Balza (2010) and Etxepare and Uribe-Etxebarria (2010) observe that infinitival constituents in the former position, to the left of the modal, have several properties suggesting that the infinitive is no larger than a bare vP. First, infinitives to the left of the modal can never contain sentential negation, which is vP-external in Basque (Laka 1990). As illustrated in (58), when the infinitive to the left of the modal contains the negative morpheme, the result is poor.

- (58) *[Ez eros-i] nahi/behar nuke
 NEG buy-INFIN want/need AUX
 ‘I want need not to buy it.’ (Etxepare and Uribe-Etxebarria 2010)

In addition, two kinds of evidence suggest that the infinitival constituent cannot contain a tense head. One kind of fact that supports this is the non-availability of non-finite auxiliaries inside the infinitive, as illustrated in (59). On the standard assumption that the auxiliary is in T, then the unavailability of structures such as (59) suggests that the infinitive in infinitive-modal constructions, does not contain a TP.

- (59) *[Hori eros-i iza-n] nahi nuke
 that buy-INFIN AUX-INFIN want AUX
 ‘I would like to have bought that.’

A second fact supporting this comes from temporal modification. In the infinitive-modal order, the infinitive cannot host a modifier forcing a tense interpretation of the infinitival event that is different from that of the modal, as illustrated in (60). Balza (2010) and Etxepare and Uribe-Etxebarria (2010), plausibly take this as further evidence that in infinitive-modal orders, the infinitive can contain a TP.

- (60) *Jonek (gaur) atzo egon behar zuen (gaur) etxean
 Jon-ERG today yesterday be-INFIN need AUX today house-DEF-in
 ‘Yesterday Jon needed to be home today.’ (Etxepare and Uribe-Etxebarria 2010)

We therefore follow Balza (2010) and Etxepare and Uribe-Etxebarria (2010) in assuming that the infinitive in modal-auxiliary orders contains a constituent no bigger than vP. We assume in particular that the nominalizing little-n head merges with vP as illustrated in (61).

- (61) [Modal [n [v [V]]]]

This pattern, then, instantiates the maximally deficient end of the nominalization continuum, where the nominalizing little-n head merges with a very small verbal constituent, vP, and has no other nominal structure.

3.2 Modal-infinitive orders

Infinitives appearing to the right of the auxiliary behave differently from infinitive-modal orders on the diagnostics just discussed. We follow Balza (2010) and Etxepare and Uribe-Etxebarria (2010) in taking these facts to indicate a larger infinitival constituent for these environments, namely TP. First, unlike in infinitive-modal orders, post-modal infinitives can host sentential negation.

- (62) Nahi/behar nuke [ez eros-i]
want/need AUX NEG buy-INFIN
'I want need not to buy it.' (Etxepare and Uribe-Etxebarria 2010)

As Etxepare and Uribe-Etxebarria (2010) note, this negation is not plausibly constituent negation since constituent negation does not license a higher, clausemate negative polarity item (NPI). Example (63a), illustrating constituent negation in a non-modal context, shows that the higher NPI 'nobody' is not licensed, unlike a true constituent negation context such as (63b).

- (63) a. *Inork (ere) du ez eros-i
Nobody (at all) AUX NEG buy-INFIN
'Nobody at all bought it.'
b. Inork (ere) ez du eros-i
Nobody (at all) NEG AUX buy-INFIN
'Nobody at all bought it.'

(64) shows that *ez* in modal-infinitive contexts behaves like sentential negation in licensing the higher NPI, 'nothing'

- (64) Nahi nuke deus (ere) ez eros-i.
Want/need AUX nothing at all NEG buy-INFIN
'I'd like to not buy anything (at all).'

Balza (2010) and Etxepare and Uribe-Etxebarria (2010) take these facts to indicate that the infinitives in these environments can contain a vP-external NegP.

A second kind of evidence that post-modal infinitives can contain a structure larger than vP comes from the fact that, for many speakers at least, these constituents may contain a non-finite auxiliary as in (65). These constructions therefore differ from infinitives in infinitive-modal orders, as shown in (59), which cannot contain a finite auxiliary. In such constructions, the infinitive has a perfective reading as reflected in the translation.

- (65) %Nahi nuke [hori eros-i iza-n.]
Want AUX that buy-INFIN AUX-INFIN
'I would like to have bought that.'

On the standard assumption that the auxiliary in such contexts is a T element, then the availability of such constructions aligns with Balza's (2010) and Etxepare and Uribe-Etxebarria's (2010) suggestion that infinitival phrases in the modal-infinitive order can contain a TP.

A second kind of evidence that *-tu/-i/-n/-Ø* infinitives contains a TP comes from the fact that the temporal interpretation of the event in the *-tu/-i/-n/-Ø* infinitive can differ from that of the modal, as illustrated in (66). In this respect, modal-infinitive orders again behave differently from infinitive-modal orders, as shown in (60).

- (66) Jon-ek atzo behar zuen gaur etxe-a-n ego-n
 Jon-ERG yesterday need AUX today house-DEF-in be-INFIN
 ‘Yesterday Jon needed to be home today.’ (Etxepare and Uribe-Etxebarria 2011)

The above facts therefore suggest that, in modal-infinitive contexts, the infinitive must be at least as big as TP, as suggested by Etxepare and Uribe-Etxebarria (2010) and Balza (2010). Moreover, at least two considerations suggest that infinitives in this context are probably no bigger than TP. One kind of evidence to this effect comes from the unavailability of the evidential particle *omen* in central dialects as shown in (67).

- (67) *Nahi nuke [hori eros-i omen iza-n.] Central dialects
 Want AUX that buy-INFIN EVID AUX-INFIN
 ‘I would like to allegedly have bought that.’

Word order and scope taking of *omen* in central dialects suggest that, in these dialects, it is an epistemic modal head merged outside of TP in the low left periphery (Etxepare 2009a,b). The fact that *omen* is unavailable in sentences like (67) is therefore explained on Etxepare and Uribe-Etxebarria’s (2010) approach to infinitives in modal-infinitive orders as TPs.

A second kind of evidence to this effect is that, unlike in the case of D-headed infinitives discussed above, the hypothesized infinitival tense head in modal-infinitive orders never licenses an overt external argument of the lower verb. We illustrate this in (68) where an overt subject inside the infinitival phrase is poor.

- (68) *Nahi nuke Jon-ek hori eros-i.
 Want AUX Jon-ERG that buy-INFIN
 ‘I’d like Jon to buy that’

This situation regarding the status of T is expected given an understanding of the case assigning properties of T suggested by Chomsky (2008). In particular, Chomsky (2008) proposes that the heads traditionally assumed to be the loci of structural case—V and T—are never merged from the lexical array together with their phi-probes, but rather inherit these from the phase heads selecting them—*v* and C respectively. Specifically, as Chomsky observes, T has particular Case/Agreement properties when it is selected by C. In the case at hand, T is not directly selected by C, but rather by *n*. As a result, T is not in the appropriate local relation with C for feature inheritance and its defectiveness follows.

One might suggest here that in parallel with *v* and C, the *n* should also be considered a phase head. Nothing in our analysis hinges upon *n* not being a phase head; if *n* is indeed a phase head feature inheritance would follow according to Chomsky’s proposal, but one would not, in any event, expect this element to have case features.

The emerging proposal, then, is that infinitive-modal constructions differ from modal-infinitive orders in that, in the latter case, the nominalizing head *n* merges with TP, while in the former case it merges with *v*P. We summarize this proposal with the sequence of functional heads given in (69).^x

(69) [Modal [n [T ([NegP] [Asp [v [V]]]]]]]

3.1 D-headed infinitives

Among the infinitival constructions discussed above, the verbal infinitives in (23) (repeated here) are unique in taking a definite article. We take this fact to indicate that the nominal layer of these infinitives is richer than those in modal contexts in having a DP layer.

(23) Damu dut [hori egin iza-n-a]
 regret AUX that do have-INFIN-**the**
 ‘I regret having done that.’ (Goenaga 1985: 498)

In terms of their verbal functional structure, D-headed infinitives as in (23) behave in many ways like the modal-infinitive contexts just discussed. First, the fact that these constituents necessarily co-occur with a perfective interpretation suggests the presence of an aspectual head, as in the case of modal-infinitive orders. Second, the availability of a negative morpheme inside the infinitival phrase as in (26) repeated here, suggests that D-headed infinitives like infinitives in modal-infinitive environments can contain a NegP.

(26) Espero dut [haurrak gezurra esan ez iza-n-a.]
 hope AUX child.ERG lie.ABS say not have-N-DET
 ‘I hope that the child has not told a lie.’ (Artiagoitia 2003: 677)

Finally, the fact that these infinitivals may (or for many speakers must) occur with an overt auxiliary, as in (26), suggests that the constituent that *n* merges with is at least as big as TP as in the case of modal-infinitive orders.

D-headed infinitives nevertheless differ from modal-infinitive contexts in that the infinitival T can assign absolutive/ergative case to an external argument of the infinitival verb. Example (26) illustrates a nominalization in this context in which the subject of the infinitival, ‘the child’ receives ergative case. The fact that the null matrix subject is 1sg. indicates that this argument has received case from some source other than the matrix T—plausibly the lower auxiliary. Following, again, Chomsky’s (2008) feature inheritance proposal, we take the fact that T assigns ergative/absolutive case, unlike infinitives in modal contexts, to indicate that the infinitival T in the former case is sufficiently close to a C head from which it can inherit the relevant phi-features. Independent evidence for a richer left periphery in the case of verbal infinitives comes from the availability of the evidential particle *omen* in such constituents in central dialects, as illustrated in (70).^{xi}

(70) Epaileak zigorra ezarri ahal iza-teko, ez da nahikoa delitu bat
 Judge sentence apply can AUX-to NEG AUX enough crime one
 egin **omen** iza-n-a. (Atxilotuak delitu hori benetan egin duela
 do EVID AUX-INFIN-DEF suspect crime that really do AUX-COMP
 frogatu behar-ko da.)
 prove need-FUT AUX
 ‘For a judge to be able to hand down a sentence, it is not enough to for (the
 suspect) to have allegedly committed a crime. (It must be proved that the suspect
 really did that crime.)’

The presence of *omen* in contexts such as (70) therefore provides additional evidence of TP-external material in verbal infinitive contexts. We summarize this proposal with the sequence of heads given in (71), where we take *omen* to be merged as a head below C. This proposal will therefore require that the evidential particle does not block transmission of the evidential particle from C to T.

(71) [D [n [C ([Evid) [T ([NegP) [Asp [n [v [V]]]]]]]]]]]

D-headed infinitives therefore instantiate the maximally rich end of the structural continuum in the mini-typology of infinitival forms presented here. Together, the three kinds of infinitives discussed in this section, illustrate a scale of deficiency across contexts similar to that proposed by Alexiadou et al (2011) based on a comparison between Germanic and Romance languages. In particular, our results align with Alexiadou et al's findings in suggesting that nominalizing heads can merge with infinitival constituents of different sizes.

4 Conclusion

This paper has two goals. First, this paper argues for a unified account of two different guises of the affixes *-tu/-i/-n/-Ø*. These elements are often treated as perfective markers in view of the fact that, on main verb complements of auxiliaries, these elements necessarily cooccur with a perfective interpretation. In other environments, however, these elements do not force a perfective reading and behave instead as infinitival markers. In this paper, we have argued that in both environments, the affixes *-tu/-i/-n/-Ø* are merged as infinitival heads, which we take to be of category n. In perfective environments, these heads raise to a null perfective modal head, which takes nP as its sister. This approach therefore takes all *-tu/-i/-n/-Ø* infinitives to be “nominalizations”.

Second, in the spirit of Alexiadou et al's (2011) recent work on differences between Germanic and Romance nominalizations, we argue that some well-known differences in the behaviour of *-tu/-i/-n/-Ø* infinitives across contexts are usefully expressed in terms of a scale of functional deficiency of these constituents. Drawing on seminal work on nominalizations by Goenaga (1985) and Artiagoitia (1995) as well as a more recent analyses of *-tu/-i/-n/-Ø* infinitives as restructuring constituents by Etxepare and Uribe-Etxebarria (2010) and Balza (2010), we show that a nominalizing n head can merge with verbal constituents of different sizes.

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- ⁱ We are grateful to Txomin Arratibel, Xabier Artiagoitia, Arantzazu Elordieta, Urtzi Etxeberria, Ricardo Etxepare, Richard Kayne, Bernadette Plunkett, Hidekazu Tanaka, Norman Yeo and two very insightful reviewers for judgements and/or comments on this material. This work is supported by a grant from the Spanish "Ministerio de Ciencia e Innovación" (B. Fernández, PI) (FFI2008-00240/FILO). All errors are our own.
- ⁱⁱ In northern and eastern dialects, this affix is *-en*.
- ⁱⁱⁱ In this regard, the behavior of Basque *-tu/-i/-n/-Ø* is similar to infinitival markers in certain Romance varieties in which future forms are derived (diachronically, at least) by stacking a future morpheme on top of a verb root plus an infinitival marker as in (i).
- (i) cant(a)-r-é Spanish
sing-Infinitive-Future.1sg.
'I will sing.'
- ^{iv} We are grateful to a reviewer for suggesting these examples.
- ^v In other dialects, however, the non-finite clause boundary is transparent to agreement marking. We will set aside the problem of how to account for this variation.
- ^{vi} For many speakers, these constructions are most acceptable with an overt non-finite auxiliary, as in the above examples, however some speakers also accept these with no overt auxiliary, as in (i). In such cases, the DP-final article attaches to the verb+*-tu/-i/-n/-Ø*.
- (i) Damu dut [hori egin-a]
regret AUX that do-INFIN-**the**
'I regret having done that.' (Goenaga 1985: 498)
- ^{vii} We owe this suggestion to Richard Kayne.

viii This description holds for standard usage. In *bertsolaritza* (improvisational sung verse) and in informal styles in certain dialects *-tu/-i/-n/-Ø +t(z)en* is attested as in (i). We are grateful to Ricardo Etxepare for bringing this fact to our attention.

- (i) Ikus-i-tzen dut.
see-*i-t(z)en* AUX-PRES
'I see it.'

ix A possible problem for the foregoing analysis is the availability for some speakers of Oiartzun Basque of a "doubled" *-tu* below a non-finite auxiliary *izandu*, as in (i) (cf. Fraile and Fraile 1996, Zuazo 1997).

- (i) Gaztetz[ea] ond, e(g)on-**du** izan-**du** da [...].
youth.center (be) be-PERF have-PERF AUX.PRES
'There (has been/used to be) a youth center [...].'

Egon and *izan* may also (more commonly) appear without *-tu*, in this environment as in (ii).

- (ii) Oso politta egon-Ø izan-**du** dituk.
very nice be-Ø have-PERF AUX.PRES
'It used to be very nice.'

From the perspective of the present account of *egondu* and *izandu* in Oiartzun Basque and neighboring dialects, examples such as (i) seem truly akin the *participium pro infinitivo* (PPI) construction in Frisian, described by den Dikken and Hoekstra (1997), and discussed above. An example of this phenomenon is repeated in (iii).

- (iii) Hy soe it dien wollen ha.
he would it do.PTC want.PTC have.INF
'He would have liked to do it.' (den Dikken and Hoekstra 1997)

In (iii), the participle *dien*, 'done' is parasitic on the higher "true" participle, *wollen* 'liked.' For the moment, and in the absence of better data on the Basque data, we will assume that the lower of the two *-tu*'s in (i) is parasitic as in the case of Frisian participles.

x A possible difficulty for the assumption that the infinitive in modal-infinitive orders is no bigger than TP is Balza's (2010) observation that such constituents can contain focused constituents as in (i).

- (i) Um-e-ek behar dute [etxe-ra-ko lan-a-k BERAIEK bukatu]
Children-ERG-PL need AUX home-to-of work-DEF-PL themselves finish
'The children have to finish the homework *themselves*.'

It is unclear whether this focus position is one traditionally associated with the left periphery in Basque (Ortiz de Urbina 1999) or is rather one lower in the structure (Etxepare 1997, Belletti 2004).

xi This example was provided by a discussant in an online forum.