

Sabrina Bendjaballah and Martin Haiden

The representational anomalies of floating markers: light prepositions in Taqbaylit of Chemini

An important background assumption in generative grammar is the modularist hypothesis that the syntax cannot access the phonological features of lexical items. We raise a problem for this hypothesis: in a Berber language (Taqbaylit of Chemini) the distribution of certain prepositions is conditioned in part by their phonological weight. In particular, we observe that light prepositions can apparently be stranded in the left clausal periphery under further extraction of their DP complement. We defend the modularist hypothesis of a phonology-free syntax, claiming that the problematic data should receive a morpho-phonological, not a syntactic analysis. Based on the distinction between *overt*, *silent* and *floating* morphemes we argue that the apparently stranded prepositions must be analysed as non-projecting affixes to the complementizer. Our analysis confirms the independence of syntax and phonology, and it supports the assumption of articulated phonological representations at the PF interface.

1 Introduction

Taqbaylit of Chemini¹, a language of the Berber family spoken in Northern Algeria, has a closed class of morphemes we pretheoretically call prepositions. These morphemes can be classified according to their phonological weight: we call a morpheme *light*, if its segmental representation consists of a single consonant, e.g. *f* ‘on’. *Heavy* morphemes comprise at least one syllabic nucleus, e.g. *nny* ‘behind’, or *arif* ‘beside’.

The syntactic distribution of Taqbaylit prepositions is correlated with their phonological weight: light prepositions appear to be stranded next to the complementizers *i*, *ara* and *ur* under further extraction of their DP complement, see (1a) and (2a). Heavy prepositions do not have this option, see (1b) and (2b). In left

¹ The data in this article have been elicited from a native speaker of Taqbaylit with L2 French. Taqbaylit belongs to the Northern branch of the Berber family. Our informant speaks the variant of Chemini, a village located to the south west of Bejaïa. We refer to this variant as *Taqbaylit of Chemini*. Unless otherwise indicated, all data in this article are from Taqbaylit of Chemini. We thank our informant Nedjma Brakbi for her patience and help with the data.

dislocation, heavy prepositions require doubling of their DP complement by a clitic, see (1c). In *wh*-interrogatives, heavy prepositions are pied-piped, see (2c).^{2,3}

- (1) a. *akʷərs-aki f i qqim-əʃ*
 chair.FS-DEM on C_{real} sit.PF-1S
 ‘On this chair I sat.’
- b. **axxam-aki arif/nniy i zǝʃ-əʃ*
 house.FS-DEM beside/behind C_{real} live.PF-1S
 intended: ‘Beside/behind this house I lived.’
- c. *axxam-aki arif-is/nniy-əs i zǝʃ-əʃ*
 house.FS-DEM beside-IO:3S/ behind-IO:3S C_{real} live.PF-1S
 ‘Beside/behind this house I lived.’

2 We use the following abbreviations in glosses: CS = construct state, FS = free state, GEN = genitive, DAT = dative, PF = perfective, PFNEG = negative perfective, IPF = imperfective, AOR = aorist, INT = intensive, IMP = imperative, C_{real} = complementizer of clauses in the realis, C_{irr} = complementizer of clauses in the irrealis, C_{neg} = negative complementizer, INTERR = interrogative element, DIR = directional particle, DEM = demonstrative, POSS = possessive, DO = direct object, IO = indirect object, NEG = negation, M = masculine, F = feminine, S = singular, PL = plural, τ = tense marker particle.

3 An anonymous reviewer cites an apparent counterexample to this generalization. Certain varieties of Tamazight apparently strand heavy prepositions. The reviewer cites the following example:

- (i) *Mani lmaħal aʃrm-i θədda*
 Which house to-C 3sf.went
 ‘Which house did she go to’

The example is highly interesting because it raises many important questions for micro-comparative research that have never even been asked before, as far as we know. Alas, lacking access to a native speaker of Tamazight, we can only speculate about an analysis. As far as we can tell, there are two possibilities: either *aʃrm* ‘to’ is a simplex morphological object, or it is complex. If it is a simple object, then Tamazight allows English-type P-stranding in C (as it is discussed in Postal 1972; Merchant 2002). Consequently, there is no Weight Correlation, and therefore no interface-problem to be discussed in Tamazight. We consider this option neither likely, nor interesting. The other possibility is trying to analyse Tamazight *aʃrm* ‘to’ as a morphologically complex element *aʃr-m*. Notice that Taqbaylit of Chemini has a morpheme *m* that appears to the left of C (ii), and that the preposition ‘to’ is *ar*.

- (ii) *anta θaqqijθ m-i-θ jə-fka*
 which.F.FS girl.FS m-C_{real}-DO:3MS 3MS-give.PF
 ‘Which girl has he given it to?’

If Tamazight *aʃrm* ‘to’ is indeed complex, then the Weight Correlation is confirmed for Tamazight, and we need to come up with an analysis of the expression *aʃr-*. As Tamazight is not the main focus of the paper, we leave this question for further research.

- (2) a. *anwa ak^wərsi* *f* *i* *qqim-əB*
 what.FS chair.FS on C_{real} sit.PF-1S
 ‘On which chair did I sit?’
- b. **anwa axxam* *arif/nniy* *i* *zðB-əB*
 what.FS house.FS beside/behind C_{real} live.PF-1S
 intended: ‘Beside/behind which house did I live?’
- c. *arif/nniy* *pp-wənwaxxam* *i* *zðB-əB*
 beside/behind GEN-what.CS house.FS C_{real} live.PF-1S
 ‘Beside/behind which house did I live?’

We summarize these observations as follows:

- (3) Weight Correlation
 Heavy prepositions at the left periphery introduce a barrier for extraction of DP; light prepositions apparently do not.

(3) is a syntactic generalization that makes reference to the phonological features of lexical items. Thus the problem: the phonological features of lexical items should not determine their distribution in syntax. We attempt to eliminate this problem as an artifact of an inadequate morpho-phonological description. We will argue that, despite appearances, the syntactic representation of the problematic examples (1a/2a) does not include a terminal node P. Based on a detailed morpho-phonological argument we propose that the phonological realization of a light preposition to the left of certain complementizers must be the result of *fission*.

The discussion is organized in four major parts. Part one (sections 2–4) introduces existing analyses of Berber prepositions and nominal States, and it motivates our categorial decisions. Part two (section 5) presents our assumptions about the spell-out of syntactic terminals, and supplies the necessary background regarding the phonological representation of vowels and glides in Taqbaylit of Chemini. Part three (section 6) defends our claim that Taqbaylit light prepositions are floating markers, and it develops a positive analysis of their structure to the left of C and N. Part four (section 7) suggests a syntactic analysis of the respective configurations.

2 Prepositions and Cases

The prepositions of Taqbaylit of Chemini govern the Free State (FS), the Construct State (CS), or a Genitive.

- (4) Classes of prepositions in Taqbaylit of Chemini
- a. Light P + Construct State:
 ð ‘with (comitative)’, *f* ‘on’, *g* ‘in’, *n* ‘genitive’, *s* ‘with (instrumental)’
 - b. Heavy P + Construct State:
i ‘dative’, *ar* ‘to’, *ɣər* ‘between’, *am* ‘as/like’
 - c. Heavy P + Construct State or Genitive:
arif ‘beside’, *nny* ‘above/over’, *zðaxəl* ‘inside of’, *zzaθ* ‘in front of’,
ðəffir ‘behind’, *(s)ddaw* ‘under’, *βərɾa* ‘outside of’, *ar θama* ‘at the side
 of’, *sufəlla* ‘on’, *qəl* ‘less than’, *xir* ‘better than’
 - d. Heavy P + Free State:
uqβəl ‘before’, *mbla* (= *mbɿir*) ‘without’, *siwa* (= *ħafa*) ‘except’

The appearance of the Construct State under prepositions has been related to the morpho-syntactic structure of States in the literature on Berber (Guerssel 1987, 1992; Ouhalla 1988). We immediately turn to these analyses.

2.1 Nominal States

Berber nouns appear in one of two States: the Free State (FS) and the Construct State (CS). Some examples from Taqbaylit of Chemini are given in (5).

(5)		<u>Free State</u>	<u>Construct State</u>	
a.	masculine nouns:	<i>axxam</i>	<i>wəxxam</i>	‘house’
		<i>argaz</i>	<i>wərgaz</i>	‘man’
b.	feminine nouns:	<i>θaxxamt</i>	<i>θəxxamt</i>	‘room’
		<i>θaməttuθ</i>	<i>θməttuθ</i>	‘woman’

In Taqbaylit of Chemini, CS nouns appear as post-verbal subjects, see (6), after small numbers like *jiwən* ‘one’, see (7), as clitic doubled direct objects, see (8), and under certain prepositions, see (9):

- (6) Postverbal subject: CS
jə-ttfa *wərgaz-aki*
 3MS-eat.PF man.CS-DEM
 ‘This man ate.’
- (7) After small numbers: CS
jiwən *wəxxam*
 one house.CS
 ‘one house’

(8) Clitic doubled, postverbal direct object: CS

jə-zra-θ *wərgaz-aki*
 3MS-see.PF-DO:3MS man.CS-DEM
 ‘He saw this man.’

(9) Under certain prepositions: CS

i-sərs-it^s *f-θk^wərsit^s*
 3MS-put.PF-DO:3FS on-small chair.CS
 ‘He put it on the small chair.’

The Berber State system must be distinguished from its Semitic namesake. In Semitic, illustrated by a Hebrew example in (10) (cf. Ritter 1988; Borer 1996; Longobardi 2001; Siloni 2001; Shlonsky 2004), the term Construct is used for the phonologically reduced head-noun of prepositionless genitival constructions like the possessive. In Berber, the CS is not the head of a construction. Rather, it depends on what Ouhalla (1988) calls a *construct governor*. In Taqbaylit of Chemini, the set of construct governors includes subject-verb agreement, small numbers, direct object clitics, and certain prepositions.

(10) *beit* *ha-mora* [Hebrew]
 house.CS the-teacher
 ‘the house of the teacher’

If a noun moves out of the c-command domain of its construct governor, or if there is no construct governor, the noun must be realized in the FS. This is true for preverbal subjects, and for direct objects without a preceding clitic, see (11).

(11) a. Preverbal subject: FS

argaz-aki *jə-ttfa*
 man.FS-DEM 3MS-eat.PF
 ‘This man ate.’

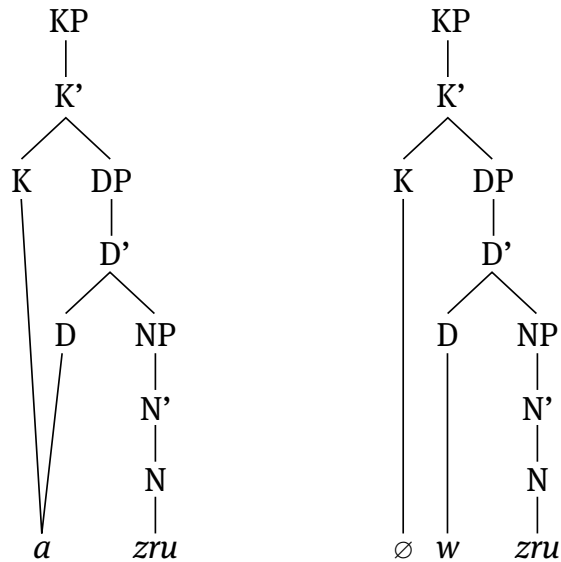
b. Direct object: FS

jə-zra *argaz-aki*
 3MS-see.PF man.FS-DEM
 ‘He saw this man.’

Two major analyses of the Berber State system have been proposed in the generative framework. Guerssel (1987, 1992) endorses an analysis of the CS as a morphologically defective form. According to him, the full extended projection of a Berber noun includes two functional heads: D and K (case). The prefix that marks the FS is a portmanteau morpheme that spells out both D and K, see (12a). The prefix

corresponding to the CS marks D alone. In the CS, K is silent, see (12b). Guerssel's analysis is particularly well suited to explain the distribution of markers at the left edge of N.

- (12) a. Free State: *azru* 'rock' b. Construct State: *wzru* 'rock' [Tamazight]



(example (39) in Guerssel 1992)

Ouhalla (1996) proposes an analysis that focuses on the external distribution of the CS rather than its morphological structure. According to Ouhalla, the CS is an abstract genitive case. This analysis is particularly well suited to explain data like clitic doubling, and the appearance of the CS under P.

In this paper, we build on Guerssel's morphological analysis of States, and remain neutral with respect to the question whether silent K is abstract genitive or not.

2.2 Prepositions and Case in Tamazight

In his study of prepositions in Tamazight,⁴ Guerssel (1987) distinguishes three classes of prepositional elements, see (13).

(13) Prepositional elements in Tamazight

a. Case markers (+ CS):

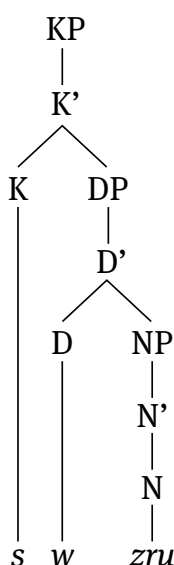
x, 'on', *n* 'of', *zy* 'from', *dy* 'in', *gher* 'toward', *d* 'with (comitative)', *i* 'to (dative)', *s* 'with (instrumental)'

⁴ Tamazight is a Berber language spoken in Central Morocco.

- b. Locational nouns (+ Genitive):
ajens ‘inside’, *ammas* ‘in middle of’, *afella* ‘on top’, *tama* ‘near’, *tanila* ‘in front of’, *nnij* ‘over’
- c. Genuine Prepositions (+ FS):
al ‘until’, *bla* ‘without’

The lexical items in (13a) take nominal complements in the CS. Since nouns in the CS lack an overt marker of K, the elements in (13a) are analyzed as case markers. The fact that they are in complementary distribution with the FS (i.e., with overt K) receives a straightforward explanation.

- (14) Instrumental case: *swzru* ‘with the rock’ [Tamazight]



(example (39) in Guerssel 1992)

The lexical items in (13b) take nominal complements in the genitive. They are analyzed as locational nouns. This analysis is based primarily on two observations. First, their complement is overtly marked as genitive by the prefix *n* ‘of’, and genitive complements are diagnostic of N.⁵ Second, the elements of (13b) exhibit the state-morphology that is typical of nouns. This leaves us with a very small set of genuine prepositions: the two that take their complement in the FS (13c).

In the following two sections we explore whether Guerssel’s case marker analysis of CS-selecting prepositions in Tamazight carries over to Taqbaylit

⁵ In contrast to other languages, where the genitive can be a complement to V, the Berber genitive must be embedded under NP.

of Chemini. As the prefixation of light prepositions to certain particles will be crucial for the discussion, we turn to the status of these particles first.

3 Complementizers and tense markers

In Taqbaylit of Chemini, as in other variants of Taqbaylit (cf. among others Chaker 1983; Mettouchi 2001, 2002), the clause-initial particles $a(\delta)$, i , ara and $u(r)$ have the following distribution:

- (15) $a(\delta)$ introduces a clause in the *irrealis*;
is often used to mark future tense
- i introduces an operator construction in the *realis*;
often appears with a verb in the perfective
- ara introduces an operator construction in the *irrealis*, including
future
- $u(r)$ sentential negation

The arguments for analyzing $a(\delta)$, i and ara , or their equivalents in other Berber languages, as an inflectional head and complementizers respectively, are well known in the literature (cf. among many others Guerssel 1983a; Sadiqi 1986; Ouhalla 1988; Dell and Elmedlaoui 1989; El Moujahid 1993; Ouhalla 1993; Ouali 2008): The particles i and ara appear in constructions involving the complementizer system (wh-questions and relative clauses), $a\delta$ is excluded in these contexts.

The word order of a neutral affirmative sentence in Taqbaylit of Chemini is VSO. This is most evident in the perfective, where a bare inflected verb surfaces clause initially. In *irrealis* contexts like the future tense, the verb is preceded by the particle $a\delta$. The particles i and ara are ungrammatical in the initial position of neutral, affirmative main clauses.

- (16) a. $j\grave{a}\text{-}zra$ $w\grave{a}rgaz$ $\theta ak\theta\grave{a}\beta\theta$
3MS-see.PF man.CS book.FS
'The man saw the book.'
- b. $a\delta$ $i\text{-}z\grave{a}r$ $w\grave{a}rgaz$ $\theta ak\theta\grave{a}\beta\theta$
A δ 3MS-see.AOR man.CS book.FS
'The man will see the book.'
- c. $*i$ $j\grave{a}\text{-}zra$ $w\grave{a}rgaz$ $\theta ak\theta\grave{a}\beta\theta$
I 3MS-see.PF man.CS book.FS
- d. $*ara$ $i\text{-}z\grave{a}r$ $w\grave{a}rgaz$ $\theta ak\theta\grave{a}\beta\theta$
ARA 3MS-see.AOR man.CS book.FS

Under wh-movement of the object, (16a/b) yield (17a/b), respectively: in the perfective, the particle *i* is introduced; in the *irrealis*, the particle *ara* replaces *ađ*. The fact that wh-movement triggers the insertion of *i/ara* suggests that these elements are complementizers.

- (17) a. *anta* *θakθəβθ* *i* *gə-zra* *wərgaz*
 which.F.FS book.FS I 3MS-see.PF man.CS
 ‘Which book has the man seen?’
- b. *anta* *θakθəβθ* *ara* *i-zər* *wərgaz*
 which.F.FS book.FS ARA 3MS-see.AOR man.CS
 ‘Which book will the man see?’

The same pattern can be observed in relative clauses, see (18): *i* and *ara* appear in clause-initial position. The fact that operator constructions trigger the insertion of these particles (which are absent otherwise) indicates that they are complementizers. Notice that Taqbaylit of Chemini does not have specific series of relative complementizers. *i* and *ara* are used in left-dislocation, interrogative and relative clauses.

- (18) a. *uβ-eβ-d* *θakθəβθ* *i* *gə-zra* *wərgaz*
 buy.PF-1S-DIR book.FS I 3MS-see.PF man.CS
 ‘I bought the book that the man saw.’
- b. *a-d* *aβ-eβ* *θakθəβθ* *ara* *i-zər* *wərgaz*
 Ađ-DIR buy.AOR.1S book.FS ARA 3MS-see.AOR man.CS
 ‘I’ll buy the book that the man will see.’

A more original argument is based on the observation that, in Taqbaylit of Chemini, the particles *i* and *ara* are in complementary distribution with an element that can be argued to be a complementizer, the preposition *uqβəl* ‘before’. This preposition may head a transitive PP (19a), an adverbial/intransitive PP (19b), or a subordinate clause (19c).

- (19) a. *θə-pp^wǰ-əd* *uqβəl* *amfif*
 3FS-arrive.PF-DIR before cat.FS
 ‘She arrived before the cat.’
- b. *θə-pp^wǰ-əd* *uqβəl*
 3FS-arrive.PF-DIR Before
 ‘She arrived before.’
- c. *θə-pp^wǰ-əd* *uqβəl* *a* *nə-ttf*
 3FS-arrive.PF-DIR before Ađ 1P-eat.AOR

- i. ‘She arrived before we ate.’
- ii. not: ‘She arrived, and we had eaten before.’

We analyze *uqβal* in (19c) as a complementizer for three reasons. First, *uqβal* selects the tense/aspect morphology of the following verb: only *aḏ + aorist* is grammatical in this context (19c vs. 20). This indicates that *uqβal* is part of the embedded clause.

(20) a.	<i>*θə-pp^wḏ-əd</i>	<i>uqβal</i>	<i>nə-ttfa</i>	
	3FS-arrive.PF-DIR	before	1P-eat.PF	
b.	<i>*θə-pp^wḏ-əd</i>	<i>uqβal</i>	<i>ara</i>	<i>nə-ttf</i>
	3FS-arrive.PF-DIR	before	ARA	1P-eat.AOR
c.	<i>*θə-pp^wḏ-əd</i>	<i>uqβal</i>	<i>i</i>	<i>nə-ttfa</i>
	3FS-arrive.PF-DIR	before	I	1P-eat.PF

Second, adverbial modifiers normally appear to the right, not to the left of the verb they modify. The position of *uqβal* in (19c) is not the position of an adverb, but that of a complementizer.

Third, the semantics of (19c) suggests that *uqβal* takes the proposition to its right as a complement. Observe first that *uqβal* orders times in the sense that its complement refers to an event after the reference time of the containing clause. Thus, in (19a) *she* (the subject) *arrives earlier* than *the cat* does. In (19b), where *uqβal* is used as an adverb, the subject’s arrival is earlier than another, implicit, event. In (19c), the matrix event (*she arrives*) occurs earlier than the embedded event (*we eat*). This interpretation is predicted, if the embedded proposition is a complement of *uqβal*, ie, if *uqβal* is a complementizer. If *uqβal* were an adverbial modifier in the embedded clause in (19c), we would expect a different interpretation. The verbal event (*we eat*) should occur earlier than some other, implicit event. Most naturally, the implicit later event should be the one introduced in the matrix clause, yielding the interpretation given in (19c.ii). This interpretation is not available for (19c). We conclude that *uqβal* in (19c) cannot be a fronted adverb; it is indeed a complementizer.

The complementizer *uqβal* selects the particle *aḏ*, and it is in complementary distribution with the synonymous particle *ara* (19c vs 20b). We thus conclude, in agreement with the literature, that *aḏ* is a tense marker, and that *ara* is a complementizer.

Taqbaylit of Chemini differs from other Berber languages with respect to the negative particle *ur*. This particle is often realized in the inflectional domain below C. In Taqbaylit of Chemini *ur* is in complementary distribution with complementizers. We argue that Taqbaylit of Chemini *ur* is realized in C, spelling out both negation and C.

Consider first the distribution known from the literature on other Berber languages. In Tachelhit, Tarifit and Tamazight, *ur* follows C, see (21):

- (21) a. Tachelhit:
is ur a i-tta (Dell and Elmedlaoui 1989: 173)
 INTERR NEG AR 3s-eat:IPF
 ‘Doesn’t he eat?’
is-t ur t-zri-t? (El Moujahid 1993: 435)
 C-3MS.S.ACC NEG you-has seen
 ‘Haven’t you seen him?’
- b. Tarifit:
afrux ay ur irzi-n fus in = s
 boy COMP NEG break-part hand of = his
 ‘It was the boy who did not break his hand.’
 (Ouhalla 2005a: (13a))
- c. Tamazight:
argaz ay-ur-da-as-t ywshen idda
 man that-not-will-him-it give went
 ‘The man who will not give it to him has left.’
 (Ouali 2005: 2)

Notice that the presence of negation does not trigger the choice of a specific complementizer. So we would expect that *i/ara* cooccurs with *ur* in Taqbaylit of Chemini. This is not the case, though (Chaker 1983; Mettouchi 2001). In the presence of *ur*, *i/ara* is ungrammatical.⁶ The affirmative examples in (22a), (23a) and (24a) correspond to the negative ones in (b), where *ur* replaces *i/ara*. The co-occurrence of *ur* and other complementizers is ungrammatical (the [c] examples).

- (22) a. *anta θaqəndurθ s-i/ara-t^s i-zra/zər*
 which.F shirt.FS with-COMP-DO:3FS 3MS-see.PF/AOR
 ‘With which shirt has he seen her/will he see her?’
- b. *anta θaqəndurθ s-u-t^s i-zra (a)ra*
 which.F shirt.FS with-ur-DO:3FS 3MS-see.PFNEG NEG
 ‘With which shirt hasn’t he seen her?’
- c. **anta θaqəndurθ s-i/ara-u-t^s i-zra (a)ra*
 which.F shirt.FS with-COMP-ur-DO:3FS 3MS-see.PFNEG NEG

⁶ Chaker (1983: 404–405): “Lorsque le prédicatoire est accompagné de la négation, le pronom relais *ay* est exclu.”

- (23) a. *s-θqəndurθ-aki* *s-i/ara-t^s* *i-zra/zəɾ*
 with-shirt.CS-DEM with-COMP-DO:3FS 3MS-see.PF/AOR
 ‘It is with this shirt that he has seen her/will see her.’
- b. *s-θqəndurθ-aki* *s-u-t^s* *i-zra* *(a)ra*
 with-shirt.CS-DEM with-*ur*-DO:3FS 3MS-see.PFNEG NEG
 ‘It is with this shirt that he has not seen her.’
- c.* *s-θqəndurθ-aki* *s-i/ara-u-t^s* *i-zra* *(a)ra*
 with-shirt.CS-DEM with-COMP-*ur*-DO:3FS 3MS-see.PFNEG NEG
-
- (24) a. *θaqəndurθ* *s-i/ara-t^s* *i-zra/zəɾ* *t^saməllalt*
 shirt.FS with-COMP-DO:3FS 3MS-see.PF/AOR PRED.white.FS
- b. *θaqəndurθ* *s-u-t^s* *i-zra* *(a)ra* *t^saməllalt*
 shirt.FS with-*ur*-DO:3FS 3MS-see.PFNEG NEG PRED.white.FS
- c.* *θaqəndurθ* *s-i/ara-u-t^s* *i-zra* *(a)ra* *t^saməllalt*
 shirt.FS with-COMP-*ur*-DO:3FS 3MS-see.PFNEG NEG PRED.white.FS
 ‘The shirt with which he has not seen her is white.’

We conclude that *ur* is realized in C, spelling out Neg and C. It is thus comparable with the confirmed complementizers *i* and *ara*, to be distinguished from the tense marker *a(ð)*.

4 Taqbaylit of Chemini light prepositions cannot be Cases

Guerssel’s (1992) case marker analysis accounts well for light prepositions to the left of CS nouns. In Taqbaylit of Chemini, light prepositions appear in an additional context, to the left of the complementizers *i*, *ara*, *ur*. In this section we try to extend Guerssel’s analysis to this additional context. We consider two options. If light prepositions are case markers in a very strict sense, they encode a case feature of a head noun. This option predicts that the sequence <light-P_C_proposition> should have the distribution of a case-marked noun, which is disconfirmed by the data. The second option (more in line with Guerssel’s analysis) holds that case-markers are heads in the determiner system. The appearance of light P next to C would then have to be attributed to a process of cliticization. This option predicts that the light Ps of Taqbaylit should have the distribution of clitics. Once more, the prediction will be disconfirmed by the data. We will therefore conclude that the light prepositions of Taqbaylit cannot be analysed as case-markers.

Notice before we proceed that light prepositions are prosodically weak elements that attach to a host. In the left clausal periphery, light prepositions attach to the complementizers *i*, *ara*, *ur*, see (25) and (26), but not to the tense marker $\alpha(\bar{\theta})$, see (27).

- (25) *ak^wərs-aki* *f-i* *qqim-əB*
 chair.FS-DEM on-C_{real} sit.PF-1S
 ‘On this chair I sat.’
- (26) a. *anta* *θaqəndurθ* *s-i-t^s* *i-zra*
 which.F.FS shirt.FS with-C_{real}-DO:3FS 3MS-see.PF
 ‘With which shirt/dress has he seen her?’
 b. *anta* *θaqəndurθ* *s-ara-t^s* *i-zər*
 which.F.FS shirt.FS with-C_{irr}-DO:3FS 3MS-see.AOR
 ‘With which shirt will he see her?’
 c. *anta* *θaqəndurθ* *s-u-t^s* *i-zr-ara*
 which.F.FS shirt.FS with-C_{neg}-DO:3FS 3MS-see.PFNEG-NEG
 ‘With which shirt hasn’t he seen her?’
- (27) **anta* *θaqəndurθ* *s-a-t^s* *i-zər*
 which.F.FS shirt.FS with-T-DO:3FS 3MS-see.AOR
 intended: ‘With which shirt will he see her?’

Only *light* prepositions can appear in this configuration. The heavy preposition *ar* ‘to’ attaches to C as *B*, see (28) and dative *i* is replaced by *m*, see (29). Heavy CS-selecting prepositions that do not have a light allomorph (*γər* ‘between’, *am* ‘as/like’) do not appear in this configuration (cf. note 3).

- (28) a. *θ-ruħ* *ar* *wəxxam*
 3FS-go.PF to house.CS
 ‘She went to the house.’
 b. **anwa* *axxam* *ar-i* *θ-ruħ*
 which.M house.FS to-C_{real} 3FS-go.PF
 c. *anwa* *axxam* *B-i* *θ-ruħ*
 which.M house.FS B-C_{real} 3FS-go.PF
 ‘To which house did she go?’
- (29) a. *jə-fka-jas-θ* *i* *θəqfiθ*
 3MS-give.PF-IO:3S-DO:3MS DAT girl.CS
 ‘He gave it to the girl.’
 b. **anta* *θəqfiθ* *ij-i-θ* *jə-fka*
 which.F.FS girl.FS DAT-C_{real}-DO:3MS 3MS-give.PF

- c. *anta* *θaqfiθ* *m-i-θ* *jə-fka*
 which.F.FS girl.FS *m-C_{real}-DO:3MS* 3MS-give.PF
 ‘Which girl has he given it to?’

4.1 Can light P in C be a case marker in the strict sense?

Two options must be considered in the evaluation of the case-marker analysis of light prepositions. If we interpret the term “case marker” in a strict sense, it refers to a morpheme that specifies the case-feature of a nominal head. If we interpret the term in a broader sense following the spirit of Abney’s (1987) DP hypothesis, it is possible to analyze case markers as independent heads of the determiner system. Guerssel’s structures in (12) and (14) certainly favor the latter option. However, since we are going to argue against the case marker analysis of CS-selecting prepositions, we need to consider the former option as well.

If light prepositions are case markers in a strict sense, the head they are affixed to must be nominal. The complementizers *i* and *ara* should thus be nominal morphemes. This assumption would find support in the typological tendency of demonstratives to be used as complementizers. For Taqbaylit, Galand (1957), Mettouchi (2005: 92ff.), among others defend the hypothesis that the particles *i* and *ara* have a nominal origin. It is thus possible to maintain the case marker analysis of light P, and to derive a testable prediction from it. If light prepositions prefixed to C are case-markers, then clauses headed by light P+C should have the same distribution as case-marked nouns. In particular, they should appear in the complement of verbs that select the respective cases. This prediction is disconfirmed by the data. Take the verbs *hðar* ‘talk’, *çθəβ* ‘write’ and *nnax* ‘fight’. These verbs select complements headed by *f* ‘on’ (30). As exemplified in (31), *f* cannot head a (nominalized) complement clause.⁷ Therefore, it cannot be a case-marker in the strict sense.

⁷ The intended interpretations can be obtained in several different ways. For (31a,b), the substitution of the morpheme *bəlli* in place of the P-C cluster renders the construction grammatical (i-ii) (on the status of *bəlli*, Chaker 1983: 434–435, Mammeri 1976: 97). (31c) is saved by the introduction of a *wh*-complement (iii).

- i. *jə-hðr-iji-d* *bəlli* *j-usa-d*
 3MS-talk.PF-IO:1S-DIR 3MS-come.PF-DIR
 ‘He talked to me about his coming.’
- ii. *jə-çθβ-iji-d* *bəlli* *i-pp^wəð*
 3MS-write.PF-IO:1S-DIR 3MS-come.PF
 ‘He wrote to me that he arrived.’
- iii. *t^s nnax-ən* *anwa* *ara* *jawðən* *ð-amənzū*
 fight.INT-3MP which.M.FS C_{irr} come.PART.AOR PRT-first
 ‘They are having a dispute about who came first.’

- (30) a. *jə-hðr-iji-d* *f-θmurθ-is*
 3MS-talk.PF-IO:1S-DIR on-country.CS-POSS:3S
 ‘He talked to me about his country.’
- b. *jə-çθβ-iji-d* *f-θmurθ-is*
 3MS-write.PF-IO:1S-DIR on-country.CS-POSS:3S
 ‘He wrote to me about his country.’
- c. *nnuκ-ən* *f-wəxxam*
 fight.PF-3MP on-house.CS
 ‘They had a dispute about the house.’
- (31) a. **i-hðr-iji-d* *f-i-d* *j-usa*
 3MS-talk.PF-IO:1S-DIR on-C_{real}-DIR 3MS-come.PF
 intended: ‘He talked to me about his coming.’
- b. **jə-çθβ-iji-d* *f-i-d* *i-pp^wəð*
 3MS-write.PF-IO:1S-DIR on-C_{real}-DIR 3MS-arrive.PF
 intended: ‘He wrote to me that he arrived.’
- c. **nnuκ-ən* *f-i-d* *i-pp^wəð* *ð-amənz*
 fight.PF-3MP on-C_{real}-DIR 3MS-come.PF PRT-first
 intended: ‘They had a dispute over who came fist.’

4.2 Can light P be a clitic?

Light prepositions could be analyzed as case markers in a broader sense. Following the DP hypothesis it is reasonable to assume that Case is a syntactic head of the determiner system. The presence of light prepositions in C will then have to be attributed to a process of cliticization. As a matter of fact, Guerssel (1992: 22) suggests that “a clitic is a morphological realization of case”. An analysis along these lines predicts that the light prepositions of Taqbaylit of Chemini should behave like regular clitics and obey the rules of clitic placement known in the literature on Berber (cf. among many others, Dell and Elmedlaoui 1989; Ouhalla 2005b).

Berber clitics are enclitics. In Taqbaylit, clitics appear in two contexts: if one of the particles *i*, *ara*, *ur*, *a* (*ð*), is present, the clitics appear to the right of the particle. Notice that clitic placement does not distinguish the complementizers *i*, *ara*, *ur* from the tense marker *a* (*ð*). If no particle is present, the clitics appear right-adjacent to the verb. The order of clitics in a cluster is invariable.

(32) Distribution of clitics:

- a. $\{u(r), i, ara, a(\delta)\} - CL_{OI} - CL_{OD} - CL_{DIR} \dots V$
- b. $V - CL_{OI} - CL_{OD} - CL_{DIR}$

- (33) a. *mənhu i-θ jəzran*
 who C_{real}-DO:3MS see.PART.PF
 ‘Who saw it/him?’
- b. *α-s-θ-id awi-β*
 T-IO:3S-DO:3MS-DIR bring.AOR-1S
 ‘I will bring it to him/her.’
- c. *jə-zra-θ*
 3MS-see.PF-DO:3MS
 ‘He saw it/him.’
- d. *pp^wi-β-as-θ-id*
 bring.PF-1S-IO:3S-DO:3MS-DIR
 ‘I brought it to him/her.’

Light prepositions have an entirely different distribution. First, their host can never be *a(δ)* or *V* (see (27) above). Second, light prepositions are always realized as prefixes, ie., to the left, not to the right of their host.

(34) Distribution of light P:

- a. P – N_{cs}
 b. P – C

- (35) a. *i-sərs-it^s f-θk^wərsit^s*
 3MS-put.PF-DO:3FS on-small chair.CS
 ‘He put it on a small chair.’
- b. *jə-ttfa s-θβənɜawθ*
 3MS-eat.PF with-spoon.CS
 ‘He ate with a spoon.’
- c. *jə-zðəβ g-wəxxam-aki*
 3MS-live. PF in-house.CS-DEM
 ‘He lives in this house.’
- (36) a. *anwa ak^wərsi f-i θə-zra jəmma-s*
 which.M.FS chair.FS on-C_{real} 3FS-see.PF mother-POSS3S
 ‘On which chair has she seen her mother?’
- b. *anta θaqəndurθ s-i-t^s i-zra*
 which.F.FS shirt.FS with-C_{real}-DO:3FS 3MS-see.PF
 ‘With which shirt/dress has he seen her?’
- c. *anta θaqəndurθ s-ara-t^s i-zər*
 which.F.FS shirt.FS with-C_{irr}-DO:3FS 3MS-see.AOR
 ‘With which shirt will he see her?’

- d. *anta* *θaqəndurθ* *s-u-t^s* *i-zr-ara*
 which.F.FS shirt.FS with-C_{neg}-DO:3FS 3MS-see.PFNEG-NEG
 ‘With which shirt hasn’t he seen her?’

An anonymous reviewer suggests that light prepositions in constructions like (36a) could still be analysed as enclitics to C, if the element *i* in examples (36a-b) were not a complementizer, but part of a clitic cluster, “with C null”. According to this view, the string *f-i* in (36a) should be analysed as C_o – *f* – *i*. We do not adopt this suggestion for the following reasons. First, it would force us to assume that null C can be a clitic host, while we would like to maintain that only overt categories can host clitics. Second, we have argued above that the morphemes *i*, *ara*, *ur* are in fact complementizers, and not meaningless prosodic support strings. Third, prosodic support strings do exist in Taqbaylit, but they have a different form. They appear, when a light preposition takes a clitic complement. (37) gives the attested forms, with examples in (38).

- (37) light P as affix light P as clitic host⁸
- | | | |
|----------|--------------|-----------------|
| <i>f</i> | <i>fəll</i> | ‘on’ |
| <i>s</i> | <i>jis</i> | ‘with (instr.)’ |
| <i>ð</i> | <i>jið</i> | ‘with (com.)’ |
| <i>n</i> | <i>(j)in</i> | ‘of/gen’ |
| <i>g</i> | <i>ðɣ</i> | ‘in’ |

- (38) P as a clitic host
- a. *að* *i-sərs* *θaβrat^s* *fəll-as*
 T 3MS-put.PF letter.FS on-IO:3S
 ‘He’ll put the letter on it.’
- b. *jə-zra-t^s* *jis-sən*
 3MS-see.PF-DO:3FS with-IO:3MP
 ‘He saw her with them.’

The tonic prepositions in (38) head phrasal PPs that are not attracted by the clitic hosts *u(r)*, *i*, *ara* and *a(ð)*. This is illustrated in (39) with our own data from Taqbaylit. The PPs *fəll-as* ‘on-it’ and *jið-əs* ‘with-him/her’ appear in the phrasal positions to the right of the subject NP, see (39a) and (39b), or to the left of the

⁸ Dative *i* does not appear in table (37), because there exists a specific dative paradigm for clitics.

complementizer, in clause initial position, see (39c) and (39d).⁹ (40) illustrates the same phenomenon for other variants of Taqbaylit discussed in Chaker (1983) and Mettouchi (2006).

- (39) a. *ur i-qqim-ara wəqfiʃ fəll-as*
 NEG 3MS-sit.PFNEG-NEG boy.CS on-IO:3S
 ‘The boy was not sitting on it.’
- b. *a-tʰ i-sərs wəqfiʃ fəll-as*
 T-DO:3FS 3MS-put.PF boy.CS on-IO:3S
 ‘The boy will put it on it.’
- c. *jið-əs i-d i-pp^wəð*
 with-IO:3S C_{real}-DIR 3MS-arrive.PF
 ‘He arrived with her.’
- d. *fəll-as i-tʰ i-sərs*
 on-IO:3S C_{real}-DO:3FS 3MS-put.PF
 ‘He put it in it.’
- (40) a. Taqbaylit (Azouza, Grande Kabylie)
fəll-as i θə-ma
 ‘She was born just after him.’
 (Chaker 1983: appendix, line 501)
- b. Taqbaylit (Azouza, Grande Kabylie)
að θ-ərr-əð ðɣ-əs irðən
 ‘so that you add wheat’
 (Chaker 1983: appendix, line 111)
- c. Taqbaylit
að i-ddu jið-əs
 ‘He will accompany him/her’
 (Mettouchi 2006: 25)
- d. Taqbaylit
ur i-tʰəddu jið-əs
 ‘He won’t accompany him/her’
 (Mettouchi 2006: 26)

⁹ Chaker (1983: 140) remarks that only certain exceptional contexts, e.g. poems and idiomatic expressions, allow the realization of P-clitic clusters in a clitic position: “le [...] phénomène d’attraction existe aussi, dans la langue poétique et dans certaines expressions figées (“scories diachroniques”), pour les syntagmes constitués d’une préposition + pronom affixe personnel.”

In other Berber languages (e.g. Tashlhiyt), P+clitic clusters behave like clitics. They occupy the final position of the clitic cluster. If the clitic-host is a particle, the verb must follow P+clitic (42). This is not the case in Taqbaylit.

(41) Tashlhiyt (Dell and Elmedlaoui 1989: 170)

CL: datives object directional adverbs prep.phrases
 1 2 3 4 5

(42) Tashlhiyt (Imdlawn)

ur a di-s i-ftta

‘He doesn’t eat with her.’

(Dell and Elmedlaoui 1989: 173 [22])

Table (43) summarizes the distribution of clitics and light prepositions in Taqbaylit: there is not a single context shared by light prepositions and true clitics. We thus conclude that Taqbaylit light prepositions are not true clitics.

(43) host	proper clitic	light P
_C (<i>i, ara, ur</i>)	–	+
C_	+	–
_T (<i>að</i>)	–	–
T_	+	–
_V	–	–
V_	+	–
_N	–	+
N_	+ ¹⁰	–

Since the light prepositions cannot be analyzed as clitics, Guerssel’s analysis of those elements as K-markers cannot be applied to Taqbaylit. We will therefore assume from now on that the category of light prepositions is P.

4.3 Interim conclusion

We have established three major facts about Taqbaylit light prepositions. First, light prepositions are always affixes to a host. Second, light prepositions can be prefixed to C and to N, but not to T. Third, the cases of apparent P stranding in the left clausal periphery involve prefixation of P to C. Taken together,

¹⁰ The only clitics that can appear in this context are possessive clitics.

these observations suggest a reformulation of the original problem (the Weight Correlation) as a morpho-syntactic generalization as follows:

(44) Weight Correlation, version 2

A preposition in the left clausal periphery introduces a barrier for extraction of DP, unless it is spelled out as an affix to C.

Unfortunately, this new formulation just moves on the problem. Why should the morphological in/dependence of a lexical item have an influence on its syntactic behavior? In the second half of the paper we take the affixal status of light prepositions for granted, and try to eliminate the unless-clause of (44). Its empirical content will be analyzed as an epiphenomenal result of independent morpho-phonological principles.

5 Morphophonology

5.1 Spell-out and floating markers

Building on Bendjaballah and Haiden (2007), Haiden (2008, 2009, 2011) and Bendjaballah (2012), we assume that *spell-out* maps syntactic terminal nodes on intervals of phonological time. Phonological time is modeled in terms of a CV skeleton (Lowenstamm 1996). Spell-out thus consists in the association of syntactic terminals with sequences of CV syllables.

Linearization of syntactic terminals happens in different ways depending on whether the category is overt or empty. If a category is lexically associated with both a segmental value and an extension in phonological time, see (45a), it is linearized as an independent morpho-phonological object. In such cases, “a position is invariably associated with a particular sort of exponence” (Noyer 1997: 42). The linear order of such objects is determined by general principles that do not immediately concern us here.¹¹ Empty categories lack both segmental value and skeletal support, see (45b). Therefore, they can be vacuously linearized wherever they are syntactically licensed.

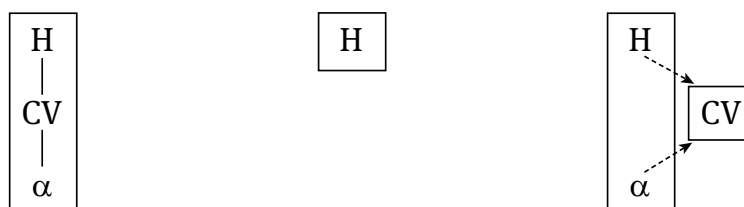
(45a) and (45b) do not exhaust the logical possibilities.¹² An important third marker type was introduced in autosegmental phonology to account for the

¹¹ For explicitness, we adopt the model of *parallel linearization* defended in Haiden (2008): constraints of linear order (like the head parameter) apply to syntactic terminals the moment they merge, not after the completion of cycles, as it is proposed in Fox and Pesetsky (2004).

¹² Cf. Bendjaballah and Haiden (2007) for a full taxonomy of partially overt categories and their linearization.

behavior of tones. It was shown that some tones behave independently of the segmental level, and thus are best modeled as floating objects. At the same time, tones may have a morphological value (cf. Spencer 1991: chapter 5, for an overview). Floating tones with a morphological value are called *floating markers*. Subsequent work on Ethio-Semitic and other languages showed that this property is not specific of tones. In principle, any autosegmental element may have a morphological value as a floating marker (McCarthy 1983; Rose 1995; Lowenstamm 1996, 2000a, 2000b). Formally, floating markers are pairings of a syntactic feature H and an autosegmental value α . As an overt category, H must be linearized, i.e., it must have access to a host-position on the CV skeleton, as depicted in (45c).

- (45) a. overt morpheme b. empty category c. floating marker plus host position



where H is a syntactic terminal node, and α a phonological (auto-)segment.

Host positions like the boxed CV unit in (45c) were first exploited in Lowenstamm and Kaye (1986), who posit empty syllabic sites in order to account for compensatory lengthening in Tiberian Hebrew and discuss the implications of this analysis for medial gemination in Classical Arabic. Guerssel and Lowenstamm (1990) generalize the application of empty templatic sites to the verbal system of Classical Arabic. They argue that verbal templates include what they call *derivational sites*: initially unlabeled marker positions formalized as CV-units, which serve to express different morpho-syntactic features like causative and intensive (cf. Lowenstamm 1999, 2003, for further discussion). In the framework of Distributed Morphology, “abstract morpheme positions” that are “underspecified as to the type of features they express” (p. 34) are defended in chapter 1 of Noyer (1997).

Turning back to floating markers, we would like to stress that the requirement of a host CV-position is not an instance of phonology determining syntactic structure. Rather, it is a consequence of the general requirement of overt syntactic heads to be linearized, together with our assumption that spell-out maps syntactic terminal nodes on intervals of phonological time. Linearization as an interface requirement on syntactic heads must be distinguished from the operations internal to the phonological component: displacement or de-linking of

autosegments α does not affect the validity of a floating marker H at the interface. In this sense, we firmly maintain the independence of syntax from (auto-) segmental phonology.

5.2 CV syllable structure

We follow Guerssel (1990: 2), who argues that “[t]he canonical structure of a Berber syllable is CV, where neither the onset nor the coda branches. In addition, nuclei may be underlyingly empty.” This analysis is supported by the instability of certain consonant clusters, and by the distribution of *schwa*. We summarize Guerssel’s argument with data from Taqbaylit.

Consider first word initial clusters. Guerssel (1990) observes that nearly any CC sequence is grammatical in this position. (46) gives 2nd singular imperative forms from Taqbaylit. We find initial geminates (46a), sequences that would typically be classified as branching onsets (46b), their mirror-images (i.e., typical coda-onset sequences) in (46c), and sequences that are not prototypical instances of either type (46d). “[S]uch an absence of restriction casts doubt on the assumption that Berber has genuine branching onsets.” (Guerssel 1990: 7). The initial clusters in (46), in particular the ones in (46b), are sequences of two onsets separated by an empty nucleus: a CCV sequence on the surface is underlyingly CVCV.

- (46) a. *qqən* ‘to tie’
 kkəs ‘to take off’
 ffəɣ ‘to go out’
 b. *frəq* ‘to share’
 frəs ‘to prune’
 fləs ‘to be ruined, to ruin’
 c. *rkəm* ‘to boil’
 rgəm ‘to insult’
 rfəð ‘to lift’
 d. *xðəm* ‘to work’
 çfəm ‘to enter’
 θləf ‘to expell’

A possible alternative to the CV analysis could consist in the claim that the first consonant of rogue initial clusters is extrasyllabic. However, extrasyllabicity would not account for the behavior of internal clusters. Consider *fr* and *fl* in (47a). These clusters look like typical branching onsets. However, if they were genuine

branching onsets, i.e., single constituents, they should remain stable across the paradigm. This is not the case. In the forms of (47b), the clusters are obligatorily broken up by a *schwa*.

- (47) a. *a-d* *i-frəq*
 T-DIR 3MS-share.AOR
 ‘He will share’
 a-θ *i-fləs*
 T-DO:3MS 3MS-ruin.AOR
 ‘He will ruin him’
- b. *i-fərq-əd* **i-frəq-d*
 3MS-share.PF-DIR
 ‘He shared’
 i-fəls-iθ **i-fləs-iθ*
 3MS-ruin.PF-DO:3MS
 ‘He ruined him’

We claim with Guerssel (1990) that the consonants of a cluster are systematically separated by an empty V position, as illustrated in (48). The spell-out of empty V positions is determined by independently motivated conditions on segmental interpretation (Kaye, Lowenstamm, and Vergnaud, 1985; Kaye 1990). In short, an empty V position is spelled out as *schwa*, if the following V position is not pronounced.

- (48)
- | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C | V | C | V | C | V | C | V | C | V | C | V |
| | | | | | | | | | | | |
| f | | r | | q | | f | | r | | q | |
- (underlying) *frəq* *fərqəd*

The same argument can be made with clusters of the coda-onset type. Such clusters are illustrated in (49) below. For every apparent cluster (49a), there is a form in the same paradigm in which the two consonants are separated by a *schwa* (49b). The distribution of *schwa* follows from the same principle as above, once we posit a silent V position between the consonants of apparent clusters.

- (49) a. *i-qəɬβ-iθ*
 3MS-turn.PF-DO:3MS
 ‘he turned him’
 i-θəɬf-iθ
 3MS-expell.PF-DO:3MS
 ‘he expelled him’

- b. $\alpha\text{-}\theta$ $i\text{-}ql\theta\beta$
 T-DO:3MS 3MS-turn.AOR
 ‘he will turn him’
 $\alpha\text{-}\theta$ $i\text{-}\theta l\theta f$
 T-DO:3MS 3MS-expell.AOR
 ‘he will expell him’

We conclude that the syllable structure of Taqbaylit is CV. Accordingly, the skeletal level of phonological representations consists in sequences of CV units (Lowenstamm 1996).

5.3 Vowels and glides

The vocalic system of Taqbaylit is given in (50). It consists of three peripheral vowels and a *schwa*. In Taqbaylit, the quality contrast between peripheral vowels and schwa marks a length opposition: the three peripheral vowels of the system are phonologically long, while the neutral vowel *schwa* is short (Lowenstamm 1991; Jebbour 1993; Idrissi 2000a, 2000b; Bendjaballah 1999, 2001, 2005). The representation of the peripheral vowels is given in (51a): the elements I, A and U are linked to two V positions. The representations in (51b) are ill-formed in Taqbaylit.

- (50) i u
 ə
 a

- (51) a. C V C V C V C V C V C V
 \ / \ / \ /
 I U A
 [i] [u] [a]
- b. * C V * C V * C V
 | | |
 I U A

With respect to glides, we follow the largely accepted view that they have the same segmental composition as the corresponding high vowels, I and U. They

differ with respect to their position in syllable structure (Kaye and Lowenstamm 1984).

- (52) a. vocoid as nucleus: [i]/[u] b. vocoid as onset: [j]/[w]
- | | |
|------------------------------|---------|
| C V C V | C V |
| \swarrow \searrow
I/U |
I/U |

Guerssel (1986) argues that Berber has stable vocoids that always surface as full vowels, and alternating vocoids that are realized as vowels or as glides depending on the context in which they appear. To the left of a full vowel, the alternating vocoid is always realized as [j] / [w], see (53). To the left of a single consonant, it surfaces as [i] / [u], see (54). To the left of a consonant cluster, we find [jə] / [wə], see (55). Following Guerssel's analysis, we uniformly represent alternating vocoids as onsets, whose realization depends on the status of the following V position, see (52b).¹³

- (53) a. [jusad] 'he arrived' Taqbaylit (Guerssel 1990: 46 [56])
b. [wadu] 'wind.cs'
- (54) a. [iru] 'he cried' Taqbaylit (Guerssel 1990: 47 [57])
b. [umaraj] 'secretary.cs'
- (55) a. [jəbda] 'he began' Taqbaylit (Guerssel 1990: 46 [55])
b. [wərgaz] 'man.cs'

6 Light prepositions are floating markers

We can now turn to the morpho-phonological representation of light prepositions in the two contexts they appear: as prefixes to N and to C. Based on observations about their phonological length in the two contexts we argue that light prepositions are floating markers. If a floating marker projects a syntactic terminal node,

¹³ Guerssel's analysis relies on a licensing constraint on glides: "Glides must be governed. That is, a glide in an onset position must be followed by a rime whose nucleus is a phonetically realized vowel [...]. If the glide is not followed by a phonetic vowel in the nuclear position, then it occupies that nuclear position" Guerssel (1990).

its linearization requires an available position in a host template. Otherwise, the syntactic terminal node cannot be spelled out, and the derivation crashes. We argue that CS nouns provide the respective positions, but that complementizers do not. The light prepositions we find prefixed to the complementizer must therefore be introduced at the PF interface. They cannot project a syntactic terminal node.

6.1 Prefixal positions in the nominal template

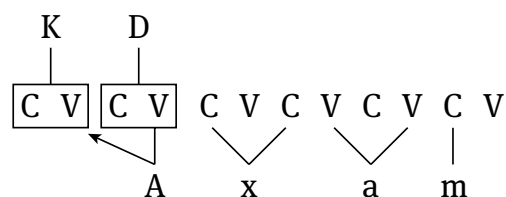
At the left periphery of the noun, we find markers for state, gender, and number, illustrated in (56) with the paradigm of the noun *axxam* ‘house’. The masculine is characterized by the State markers *a/w(ə)* in the singular, and *i/j(ə)* in the plural; the feminine is marked by *θa/θ(ə)* in the singular, and *θi/θ(ə)* in the plural (for discussion and references, cf. chapter 1 of Idrissi (2000b), and Bendjaballah and Haiden (2007)).

(56)

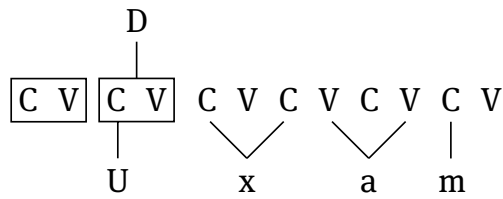
		FS	CS	Gloss
MASCULINE	SG.	<i><u>a</u>xxam</i>	<i><u>wə</u>xxam</i>	‘house’
	PL.	<i><u>i</u>xxamən</i>	<i><u>jə</u>xxamən</i>	‘houses’
FEMININE	SG.	<i><u>θa</u>xxamt</i>	<i><u>θə</u>xxamt</i>	‘room’
	PL.	<i><u>θi</u>xxamin</i>	<i><u>θə</u>xxamin</i>	‘rooms’

The phonological representations of the singular forms of *axxam* ‘house’ and *θaxxamt* ‘room’ are given in (57) and (58). In addition to the segmental values, these forms exhibit an asymmetry in length. An outer CV unit is segmentally identified in the FS. In the CS, this outer position does not have a segmental interpretation. Building on Guerssel’s analysis of States (cf. section 2.1.), we claim that the inner prefixal position spells out the syntactic head D, the outer position spells out K.

- (57) Masculine singular:
FS: *axxam*

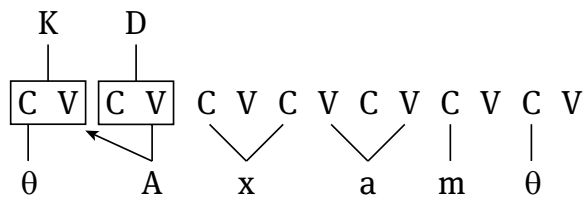


CS: *wəxxam*

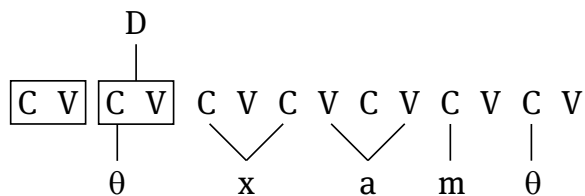


(58) Feminine singular:

FS: *θaxxamt*



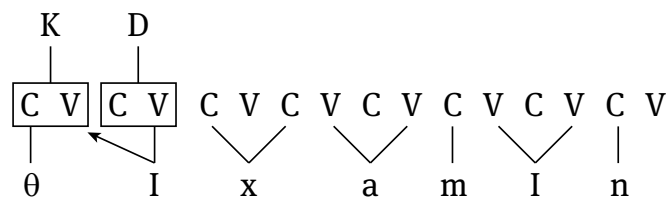
CS: *θəxxamt*



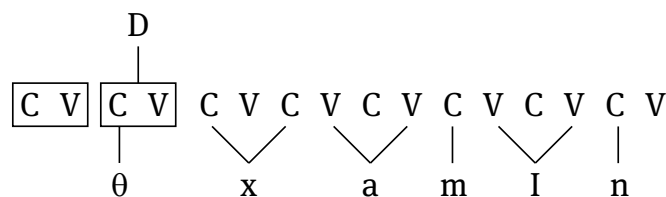
The same scenario can be observed in the feminine plural. In the FS, the feminine marker *θ* precedes a full vowel *i*. In the CS, the vowel is reduced to zero or *schwa*, depending on the right consonantal context (59–60). In all cases, the initial CV unit of the nominal template remains empty in the CS.

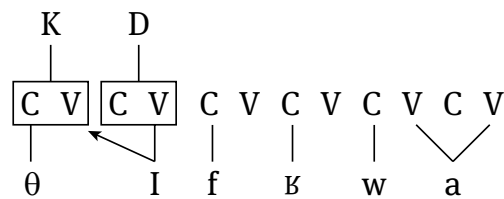
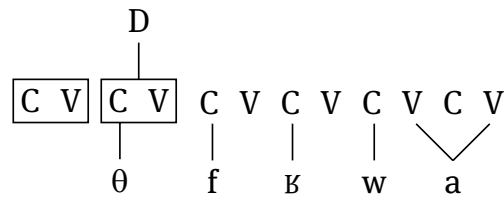
(59) Feminine plural (CCV-initial root):

FS: *θixxamin*

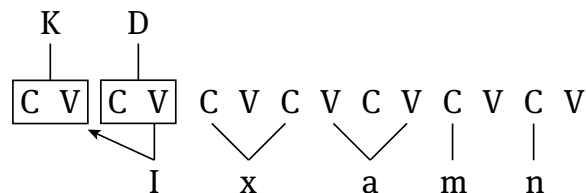
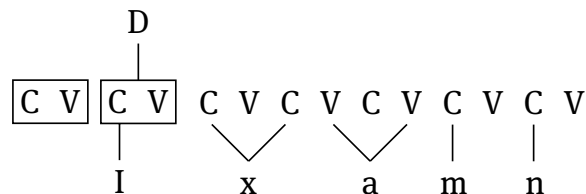


CS: *θəxxamin*



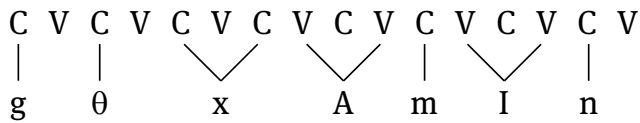
(60) Feminine plural (CV-initial root):FS: *θifəwə* ‘artichokes’CS: *θfəwə*

In the masculine plural, the special behavior of glides renders the scenario more complex. On the surface, FS and CS may coincide as [i]. A contrast between underlying /i/ in the FS vs /jə/ in the CS nevertheless exists, as pointed out in Mammeri’s reference grammar of Taqbaylit (Mammeri 1976: § 44.d p.31, §49 p.32), and also, among others, in Guerssel (1983b: 328–329), Idrissi (2000b: 60, 63) and Chaker (1995: 40).

(61) Masculine plural:FS: *ixxamən*CS: *jəxxamən*

Independent phonological evidence for an underlying State alternation in the masculine plural can be found in the interaction of the CS-marker with a preceding preposition *g* ‘in’. We know that this preposition takes nominal complements in the CS: (62) exemplifies the State government of *g* ‘in’ with a feminine plural, where no interesting assimilation takes place.

(62) /g-θxxamin/ → gθəxxamin ‘in the rooms’



When g ‘in’ precedes a masculine plural, we find [gg] instead of the expected [gj] or [gi]. The initial segment of the noun is de-linked, and g geminates.

(63) g + j → [gg]

<i>ruza-n-tən</i>	g-jəxxamn-aki	→ ggəxxamn-aki
wait.PF-3MP-DO:3FS	in-houses. CS -DEM	*gjəxxamn-aki, *gixxamn-aki
‘They waited for them (m) in these houses.’		

The same phenomenon can be observed with confirmed onset vocoids. Consider the noun *izi* ‘fly’. This noun belongs to the class of vowel-initial nouns to be discussed immediately below. In this class, the CS is marked by an additional initial glide. Its CS form is *jizi*. When g is prefixed to *jizi*, the phonetic output is [ggizi], not [gjizi], see (64):

(64) g + j → [gg]

<i>g-jizi</i>	→ [ggizi], * [gjizi]
in-fly.CS	
‘inside the fly’	

By contrast, the assimilation does not take place, when /g/ precedes a confirmed vowel. This context is exemplified in (65).

(65) g + i → [gi]

<i>anwa</i>	<i>axxam</i>	g-i-t^s	<i>ruza-n</i>	→ [git ^s], * [ggəts]
which.M	house. FS	in-C-DO:3FS	wait.PF-3MP	
‘In which house did they wait for her?’				

The initial segment of the masculine CS noun /jəxxamən/ patterns with confirmed glides, and not with vowels. We conclude that it occupies an onset, not a nucleus. The CS is marked by an underlying onset /j/ in the masculine plural.

This allows us to generalize the metrical shape of State markers: The markers of the FS occupy the two initial CV-positions of the nominal template. The markers of the CS occupy the inner CV-position only; the outer CV-position is left empty in the CS.

6.2 Vowel-initial nouns

As pointed out by an anonymous reviewer, our metrical analysis of State markers is apparently contradicted by the class of vowel-initial nouns, exemplified by the noun *izi* ‘fly’ above. In this class, the CS is marked by an initial glide that precedes the initial vowel, rather than replacing it. Although this class is small, its behavior is stable enough to merit discussion. As a matter of fact, vowel-initial nouns are evidence in favor of our analysis (Bendjaballah 2011).

The following table summarizes the data from various variants of Taqbaylit drawn from Hamouma (1987: 48–49, 53–54), Mammeri (1986: 25–28), Chaker (1983: 93), Hanoteau (1906: 37), Dallet (1982). We have found a total of 42 vowel-initial nouns, and have classified them according to their metrical shape.¹⁴

(66)		<i>number of examples</i>	<i>FS</i>	<i>CS</i>	<i>Gloss</i>
a.	VC	2	<i>ul</i>	<i>wul</i>	‘heart’
b.	VCC	1	<i>ass</i>	<i>wass</i>	‘day’
c.	VCəC	8	<i>isəm</i>	<i>jisəm</i>	‘name’
d.	VCV	5	<i>imi</i>	<i>jimi</i>	‘mouth’
e.	VCCəC	5	<i>uffən</i>	<i>wuffən</i>	‘jackal’
f.	VCCV	1	<i>açli</i>	<i>waçli</i>	‘slave’
g.	VCVC	10	<i>awal</i>	<i>wawal</i>	‘word’
h.	VC ₁ C ₁ VC ₂	10	<i>aggur</i>	<i>waggur</i>	‘moon/month’
		42			

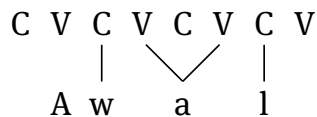
In the literature (Basset 1932; Basset and Picard 1948; Guerssel 1983b; Jebbour 1988, 1996; Dell and Jebbour 1995; Idrissi 2000a, 2000b), the initial vowel in the FS form of these nouns is analysed as a root segment, not as a state marker.¹⁵

¹⁴ An anonymous reviewer reports a similar behavior for the noun *argaz* ‘man’ in Tarifit. In Taqbaylit of Chemini, as in all known varieties of Taqbaylit, the noun *argaz* is a regular noun with the CS form *wərgaz*, not *wargaz* (Mammeri 1976, 1986; Dallet 1982; Chaker 1983; Hamouma 1987; Guerssel 1990).

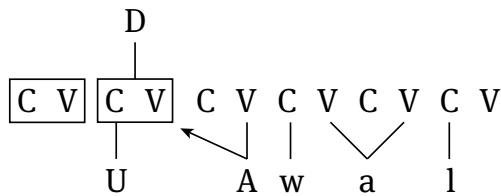
¹⁵ One of the arguments presented for this analysis is the fact that the initial vowel of these nouns remains stable in the plural, e.g. *awal* ‘word.SG.FS’, *awalən* ‘word.PL.FS’; in regular nouns the initial state marker exhibits a number alternation, e.g. *axxam* ‘house.SG.FS’, *ixxamen* ‘house.PL.FS’.

We adopt this analysis and represent vowel-initial nouns as in (67).¹⁶ The initial vowel does not satisfy the condition on segmental licensing given in (51): it is supported by just a single root V position and thus remains floating. In order to be well formed, the initial root vowel must spread into the inner prefixal position, as illustrated in (68).

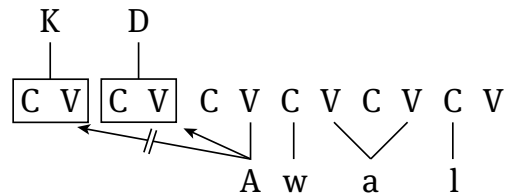
(67) stem without prefixes: /awal/ ‘word’



(68) a. CS: *wawal*



b. FS: *awal*



Given this assumption, the State marking pattern in vowel initial nouns is fully regular. In the CS, the root-initial vowel spreads into the V position of the inner affixal CV unit, as illustrated in (68a). The onset of this inner affixal position hosts the masculine singular CS-marker *U*. As usual, the outer prefixal position remains empty in the CS.

In the FS, the outer prefixal position spells out *K*, see (68b). Segmentally, that position is normally identified by spreading of the adjacent vowel, see (57–61). In the present case this is impossible, because the initial root vowel is already linked to two V positions. It cannot be linked to a third V position.

We conclude that vowel initial nouns do not threaten our metrical analysis of State markers. If anything, they support it. The template of a noun in the CS includes an empty prefixal CV position.

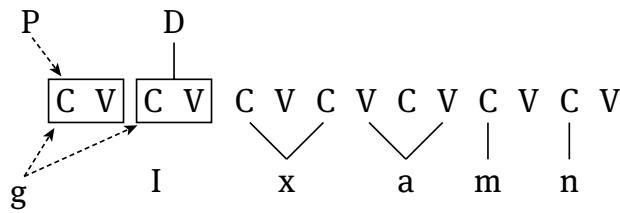
¹⁶ A similar case of an initial floating segment has been reported by Jebbour (1993). He describes geminate-initial verbs like *ffəb* ‘go out’ that exhibit a full vowel in the causative (*ssufəb*). He argues that the two forms have a single underlying root with a floating initial vowel *U* that can be realized in the causative thanks to the skeletal space provided by the causative prefix.

- c. *n* ‘genitive’:¹⁷ (i) /*n* + *θ*/ → [tt] optional
 (ii) /*n* + *w*/ → [pp^w] obligatory
 (iii) /*n* + *j*/ → [kk] obligatory

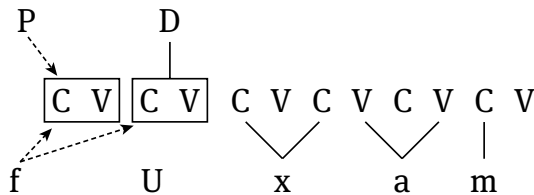
The assimilations involving the prepositions *g* ‘in’ and *f* ‘on’ are illustrated in (72). In both contexts, the segmental value of the State marker (I/U) is de-linked from its skeletal position, and the prepositional segment spreads into the liberated C-position to its right. In other words, even when *g* ‘in’ and *f* ‘on’ geminate on the surface, they do not increase the size of the nominal template. This confirms their analysis as floating morphemes, illustrated in (73).

- (72) a. *g*- *-jəxxamən* → [ggəxxamən], * [gjəxxamən]
 in house.P.CS
 ‘in the houses’
 b. *f*- *-wəxxam* → [ffəxxam], * [fwəxxam]
 on house.CS
 ‘on the house’

- (73) a. *g* + *jəxxamən* → [ggəxxamən]



- b. *f* + *wəxxam* → [ffəxxam]



If the preposition *n* ‘of/genitive’ is followed by a feminine noun (with initial *θ*), then the segment *n* may remain unrealized, and the stem-initial *θ* geminates as [tt], see (74). The rule /*n* + *θ*/ → [tt] typically applies word-internally in Taqbaylit, for instance, between the nominal stem and the feminine marker /*θ* _ *θ*/, in verbal agreement, and in pronominal clitics, see (75).

¹⁷ In Tamazight (Guerssel 1983a) and in Tashlhiyt (Dell and Elmedlaoui 2002), the preposition *n* is assimilated to all sonorants. This is not the case in Taqbaylit of Chemini.

- (74) $\theta\acute{a}qfi\theta$ ‘girl’ (CS)
axxam **n-** $-\theta\acute{a}qfi\theta$ → [axxam ttəqfiθ]
 house.FS of girl.CS
 ‘the house of the girl’
- (75) a. *uffən* “jackal” θ -*uffən*-**θ** → [θuffətt] ‘female jackal’
 b. *xəðm-ən* “they (m) worked” *xəðm-ən*-**θ** → [xəðmətt] ‘they (f) worked’
 c. *jið-sən* “with them (m)” *jið-sən*-**θ** → [jiðsətt] ‘with them (f)’

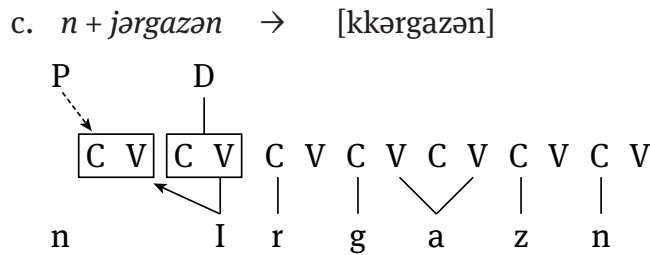
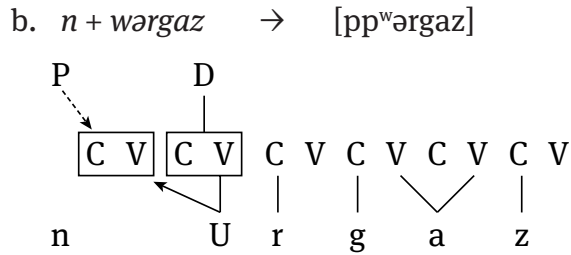
The same scenario can be observed, if the nominal State marker following *n* ‘of/genitive’ is a glide. In this context, the assimilations in (71c ii, iii) take place. They are illustrated in (76a) and (76 b), respectively.

- (76) a. *axxam* **n-** $-\mathit{w}\acute{e}rgaz$ → [axxam pp^wərgaz]
 house.FS of man.CS
 ‘the house of the man’
 b. *axxam* **n-** $-\mathit{j}\acute{e}rgazən$ → [axxam kkərgazən]
 house.FS of man.P.CS
 ‘the house of the men’

In Taqbaylit, θ geminates as [tt], *w* as [pp^w], and *j* as [kk].¹⁸ The assimilations between the preposition *n* ‘of’ and the following noun must therefore be represented as gemination of the noun-initial consonant. The segmental value of the light preposition remains unrealized. This situation is again fully compatible with the hypothesis that light prepositions are floating morphemes which are realized inside the nominal template. If light prepositions had their own, inherent skeletal support, additional assumptions would be needed to account for these facts. We conclude that the light prepositions of Taqbaylit are indeed floating markers.

- (77) a. $n + \theta m\acute{a}t\acute{t}u\theta$ → [ttməttuθ]
-

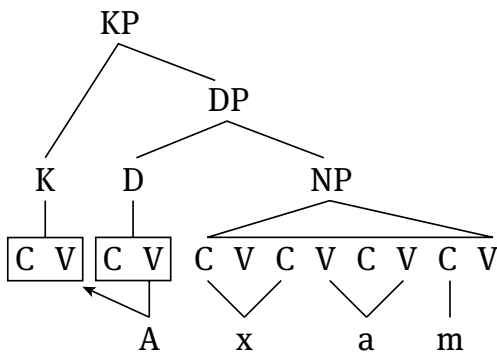
¹⁸ On Berber geminates, cf. Elmedlaoui (1988, 1992, 1993); in TC, as in other variants of Taqbaylit (Dallet 1982: 596) there is a specific feminine pronunciation in which geminated /w/ and /j/ are devoiced and realized as [pp^w] and [kk]. We report the feminine pronunciation in this paper.



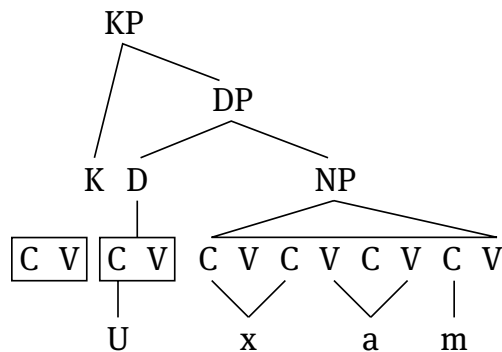
6.4 Morphosyntax

In section 2.1 we adopted Guerssel’s analysis of States. According to this analysis, the FS is marked by an overt prefix K. In the CS, K is empty. This asymmetry is corroborated by the phonological data discussed in sections 6.1 and 6.2. As an empty category, K_{CS} does not have a spell-out. It is therefore not linked to a position at the CV skeleton, see (78b). The initial CV unit of the nominal template in the CS remains free, and it may host a floating preposition, see (78c).

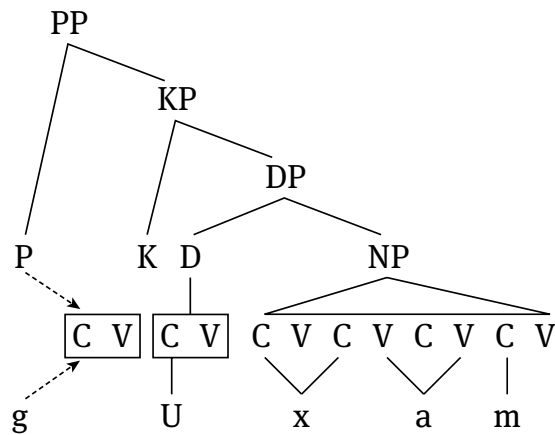
(78) a. FS: overt K



b. CS: empty K

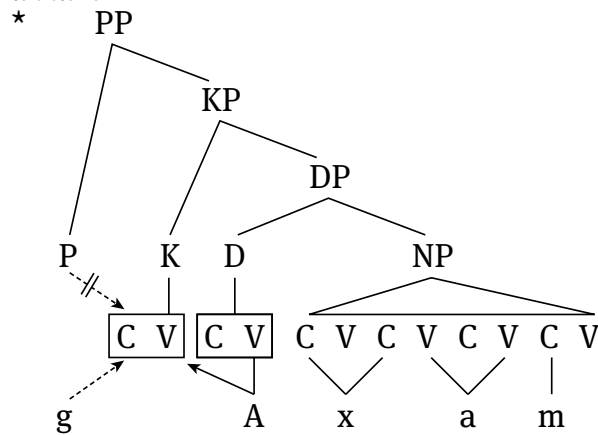


c. light P + CS



This analysis predicts that light prepositions can never take nominal complements in the FS. Since the marker of the FS is an overt head, it must be linearized in the outer affixal position of the nominal template. This position is thus unavailable for the linearization of a floating preposition. The derivation in (79) crashes, because the overt syntactic head P cannot be spelled out. This prediction is borne out by the data.

(79) **g-axxam*



Notice a detail, brought to our attention by an anonymous reviewer: Taqbaylit of Chemini has lost the preposition s 'to', which exists in other Berber languages

(including some variants of Taqbaylit), and which takes nominal complements in the FS. Instead of *s*, the speakers of Taqbaylit of Chemini use *ar* ‘to’.¹⁹

(80) a. Taqbaylit, Grande Kabylie

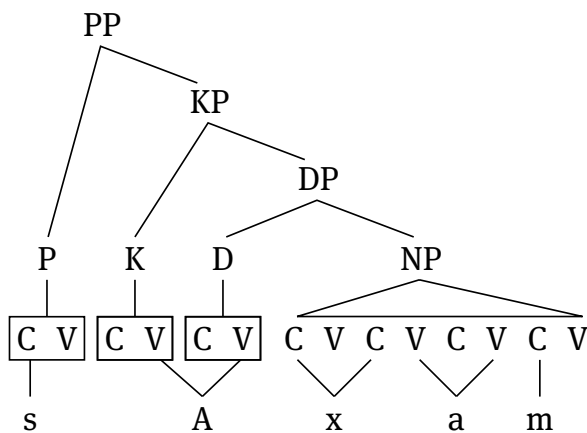
s axxam
to house.FS
‘towards the house’

b. Taqbaylit of Chemini

ar wəxxam
to house.CS
‘towards the house’

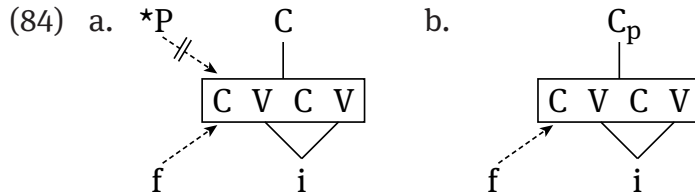
Assume that the light prepositions of Taqbaylit of Chemini have diachronically lost their skeletal support, while they continue to be fully overt markers (including skeletal support) in other Berber languages. It is then immediately evident why Taqbaylit of Chemini should have lost precisely the one preposition that requires the FS: once it had lost its skeletal support, this preposition could no longer be spelled out.

(81) *s axxam* ‘towards the house’ [Taqbaylit, Grande Kabylie]



¹⁹ In contrast to the light prepositions, the predication particle *d* has kept its skeletal support in TC. On the distribution of the predication particle *d* vs the homophonous light preposition ‘with/and’ cf. Chaker (1983: 320–326), Mammeri (1986: 75–77; 1976: 108–109). We cite (Mammeri 1986: 75): “La copule *d* est toujours suivie de E.L.; elle se distingue ainsi de la conjonction *d* “et” qui est suivie de EA. *axxam d atemmu* “la demeure etait une hutte” *axxam d utemmu* “une maison et une hutte” – The copula *d* always precedes the FS; this is what distinguishes it from the conjunction *d* ‘and’, which is followed by the CS. *axxam d atemmu* ‘the house was a hut’ *axxam d utemmu* ‘a house and a hut’ (translation by SB/MH).

prefixed to C in phonology is fission, see (84b). According to this analysis, the light preposition is not a syntactic terminal node, but a non-projecting feature of the complementizer.²⁰



7 Predication at the left periphery

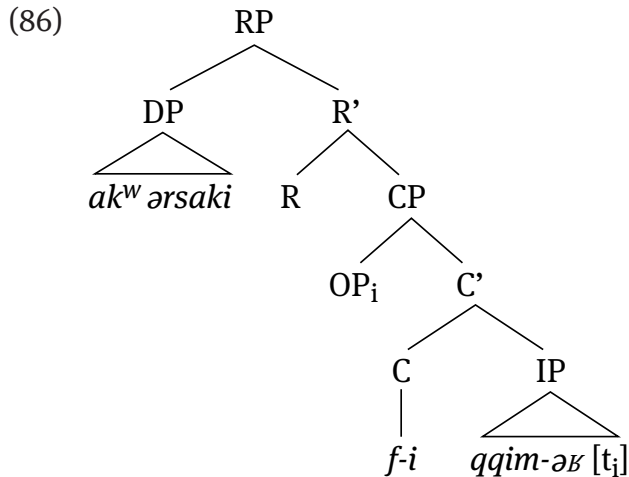
If light prepositions to the left of C are not syntactic heads, but non-projecting features of C, then the Weight Correlation disappears immediately. Recall the data in (1), repeated as (85): Fronted heavy prepositions ban further extraction of their DP complement, see (85a); for light prepositions, this configuration is apparently available, see (85b). Thus the problem: the phonological weight of certain lexical items appears to influence their behavior in syntax. Now that we know that *f* ‘on’ in (85b) is not a syntactic terminal node, there is no P-stranding, and no Weight Correlation.

- (85) a. **axxam-aki arif/nniy i zðB-əB*
 house.FS-DEM beside/behind that live.PF-1S
 intended: ‘Beside/behind this house I lived.’
- b. *ak^wərs-aki f-i qqim-əB*
 chair.FS-DEM on-that sit.PF-1S
 ‘On this chair I sat.’

The phonological content of the Weight Correlation has now been moved from the domain of syntax into morpho-phonology. According to the analysis presented above, the phonological lightness of certain prepositions in Taqbaylit of Chemini is correlated with a specific morpho-phonological representation (fissioned complementizers), and not with an exceptional syntax. However, we are now confronted with a complementary problem of an entirely syntactic nature: what is the grammatical function of the initial DP in (85b)?

²⁰ The analysis is corroborated by Chaker’s observation that clusters of light preposition plus complementizer tend to be lexicalized: “Par leur stabilité et leur fréquence dans certains parlers, ces complexes sont certainement l’indice d’une tendance à la constitution d’un paradigme de supports spécifiques.” Chaker (1983: 398)

We suggest that the initial DP in (85b) is related to the following CP by means of predication, rather than extraction. Borrowing from den Dikken (2006), we call the head that mediates this relation R. The structure we propose for (85b) is given in (86). Taking into account the structure of the Taqbaylit example, its translation should actually be more like ‘This chair is where I sat’ – with a silent copular predicate, and a relative clause headed by a local complementizer.



A full discussion of A'-syntax goes beyond the scope of this article. Let us just examine how the proposed structure can account for the existing patterns in Taqbaylit, and how it excludes the non-existing ones. (87) and (88) give the full paradigm of options for long wh-dependencies.

(87) *anwa* *axxam* *g-i-s* *θə-qqar* *nə-t^srazu-t^s*
 which.M.FS house.FS in-C-IO:3S 3FS-say.INT 1P-wait.INT-DO:3FS
 ‘In which house does she think that we are waiting for her?’

(88) a. (?) *anwa* *axxam* [*i-s* *θə-qqar* [*g-i-t^s* *nə-t^srazu*]]
 b. *g-wənwa* *axxam* [*g-i-s* *θə-qqar* [*nə-t^srazu-t^s*]]
 c. (?) *g-wənwa* *axxam* [*i-s* *θə-qqar* [*g-i-t^s* *nə-t^srazu*]]
 d. *g-wənwa* *axxam* [*i-s* *θə-qqar* [*nə-t^srazu-t^s*]]
 e. * *anwa* *axxam* [*g-i-s* *θə-qqar* [*g-i-t^s* *nə-t^srazu*]]
 f. * *g-wənwa* *axxam* [*g-i-s* *θə-qqar* [*g-i-t^s* *nə-t^srazu*]]

Light prepositions can appear prefixed to both the interrogative DP and to the complementizer, see (88b) and (88c). This fact is difficult to reconcile with an analysis as preposition-stranding. (88c) – although slightly marginal – is particularly problematic for a stranding analysis, as it would require stranding of a preposition in an intermediate landing site, which is ungrammatical across

languages (cf. Postal 1972 and Merchant 2002 on English). Our analysis in terms of fissioned complementizers and predication does not face these problems, and furthermore, it offers an explanation for why (88e) and (88f) must be ungrammatical. Consider the examples in turn.

In (88a), RP is a complement to the verb *qqar* ‘believe/say’. The subject of RP *anwa axxam* ‘which house’ identifies the silent operator of the embedded clause, and then moves to the matrix [Spec,C], see (89). (88c) differs only with respect to the subject of RP, which is PP, rather than DP (90).

(89) $[_{CP} [anwa\ axxam] [is\ [_{IP}\ \theta\acute{a}qqar\ [_{RP}\ [anwa\ axxam] [[_R] [_{CP}\ OP\ [git^s\ [_{IP}\ n\acute{a}t^srazu\ \Theta P]]]]]]]]]$

(90) $[_{CP} [gw\acute{a}nwa\ axxam] [is\ [_{IP}\ \theta\acute{a}qqar\ [_{RP} [gw\acute{a}nwa\ axxam] [[_R] [_{CP}\ OP\ [git^s\ [_{IP}\ n\acute{a}t^srazu\ \Theta P]]]]]]]]]$

In (88b) and (91), RP takes the highest CP as its complement, and PP as its subject. A silent operator moves from inside the most embedded IP to the highest [Spec,CP]. The interrogative PP is generated *in situ*.

(91) $[_{RP} [gw\acute{a}nwa\ axxam] [[_R] [_{CP}\ OP\ [gis\ [_{IP}\ \theta\acute{a}qqar\ [_{CP}\ \Theta P\ [[_{IP}\ n\acute{a}t^srazu\ \Theta P]]]]]]]]]$

(88d)/(92) is a standard case of PP pied-piping, exactly as it applies to heavy prepositions.

(92) $[_{CP} [gw\acute{a}nwa\ axxam] [is\ [_{IP}\ \theta\acute{a}qqar\ [_{CP} [gw\acute{a}nwa\ axxam] [[_{IP}\ n\acute{a}t^srazu\ [gw\acute{a}nwa\ axxam]]]]]]]]]$

(88e, 88f)/(93, 94) require the generation of two RP layers, and of two corresponding silent operator constructions. The higher operator OP_1 originates as subject of the lower RP, and it is identified by an overt category (the overt DP *anwa axxam* ‘which house’ in (88e), the PP *gw\acute{a}nwa axxam* ‘in which house’ in (88f)). The lower operator OP_2 cannot be identified by an overt category. The derivation therefore crashes at the LF interface.

(93) $* [_{RP} [anwa\ axxam] [_R] [_{CP}\ OP_1\ [gis\ [_{IP}\ \theta\acute{a}qqar] [_{RP} [\Theta P_1] [[_R] [_{CP}\ [OP_2] [[_{IP}\ n\acute{a}t^srazu\ [\Theta P_2]]]]]]]]]]]$

(94) $* [_{RP} [gw\acute{a}nwa\ axxam] [_R] [_{CP}\ OP_1\ [gis\ [_{IP}\ \theta\acute{a}qqar] [_{RP} [\Theta P_1] [[_R] [_{CP}\ [OP_2] [[_{IP}\ n\acute{a}t^srazu\ [\Theta P_2]]]]]]]]]]]$

8 Conclusion

In this paper we addressed a specific problem for the PF-syntax interface posed by the light prepositions of Taqbaylit. On the assumption (which we later rejected) that overtly realized lexical items are uniformly present in syntax, we observe that light prepositions exhibit an anomalous syntax in the left clausal periphery. Apparently, they allow further extraction of their DP complement. We argued that the data do not threaten the independence of syntax and phonology, as they receive an independently motivated morpho-phonological explanation. The explanation relies on articulated phonological representations, and on the assumption that the spell-out of overt syntactic heads consists in the association of a syntactic terminal nodes with sequences of positions at the CV-skeleton. These assumptions predict that floating morphemes cannot project a syntactic terminal node, unless a host template provides a free skeletal position for the linearization of their syntactic features. As the light prepositions of Taqbaylit of Chemini are floating markers and the respective complementizers do not provide a host position, light prepositions prefixed to C cannot be syntactic terminal nodes. Their presence in phonology does not call for non-standard assumptions in syntax. To the extent that our analysis is tenable, it confirms the standard hypothesis regarding the independence of syntax and segmental phonology, and it supports the assumption of articulated phonological representations at the PF-interface.

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