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The Interaction of state, prosody and linear order in Kabyle (Berber) : Grammatical Relations and Information Structure

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0. Introduction

The aim of this paper is to show how, starting only from forms belonging to various domains (morphology, syntax, and prosody), it is possible to compute the grammatical relations and the information structure of Kabyle spontaneous speech.
The study is based on recordings made in the field, transcribed, translated and annotated with Praat and Elan.
The methodology consists in systematically retrieving the sequences containing a verb, and looking for the presence of a noun (and its state) within the prosodic group of the utterance, or just outside, as well as studying the linear orders involved.
This non-aprioristic methodology allows to ask fundamental questions about the nature of grammatical relations, and the structures associated with various information structure values in Kabyle.
The hypothesis underlying the paper is that the marking of grammatical relations on nouns are a by-product of the information structure constraints described in part 1.

0.1. General facts about Kabyle

Berber languages are spoken in northern Africa, in a zone delimited by the Atlantic Ocean to the West, the Mediterranean to the North, the oasis of Siwa (Egypt) to the East, and the southern borders of Mali and Niger to the South. Those languages constitute a family within the Afroasiatic phylum. Well-known members of the family are Kabyle (spoken in northern Algeria), Tashelhiyt (Shilha) (spoken in southern Morocco), and Tamashek and Tahaggart (also called Tuareg), spoken in southern Sahara.
Kabyle is spoken by about three million people in the north of Algeria. The variety investigated in this paper is a Western one, spoken in the village of Ait Ikhlef, close to the town of Bouzeguene. All the data have been collected by the author on fieldwork between 2007 and 2011.

In Kabyle as in all Berber languages, a minimal predication consists of a verb and its personal bound pronoun, or a non-verbal predicate. In this paper we will focus on verbal predicates. In addition to this core, the clause may contain noun phrases, and prepositional phrases, as well as adverbs.
Within noun phrases, modifiers follow the modified constituent. The language has two genders, two states and two numbers, which are marked on pronominal affixes and clitics to verbs, nouns and prepositions, as well as on adjectives, and on nouns.

0.2. Relevant coding means

For our study, it is necessary to expose some formal means that come into play in the determination of grammatical relations and information structure.

0.2.1. The State distinction

Nouns have two forms, the absolute (ABS, traditionally called 'état libre'), and the annexed (ANN, traditionally called 'état d'annexion'). e.g. man = *argaz* in the absolute, *wərgaz* in the annexed ; girl = *taqʃiʃt* in the absolute, *təqʃiʃt* in the annexed.
Here are examples:
Table 1: Illustration of state alternation in Kabyle[1]

	Masculine SG	Masculine PL	Feminine SG	Feminine PL
Annexed	w-rgaz 'man'	j-rgaz-n 'men'	t-qʃiʃ-t 'girl'	t-qʃiʃ-in 'girls'
Absolute	a-rgaz 'man'	i-rgaz-n 'men'	t-a-qʃiʃ-t 'girl'	t-i-qʃiʃ-in 'girls'

The state distinction in itself does not code grammatical roles (Galand 1964, Chaker 1988). The annexed state indicates that the noun provides the value for the variable of the function grammaticalized in the preceding constituent (Mettouchi and Frajzyngier to appear). Such functions are diverse. The absolute state is simply the default form of the noun, and as such, has no overall function of its own (Mettouchi and Frajzyngier to appear). Within various structures, the states contribute to the creation of grammatical meaning, thus being the backbone of the grammar of Kabyle.

0.2.2 Prosody
An intonation unit is a segment of speech that has a coherent intonation contour (Chafe 1994), and is delimited by its boundaries (Cruttenden 1997), which bear a 'boundary tone' (Pierrehumbert and Hirschberg 1990). Intonation Units are marked by one or more of the following cues:
Main external cues : (1) final lengthening; (2) initial rush; (3) pitch reset; (4) pause.
Main internal cues (1) declination ; (2) tonal parallelism, or isotony.

On the basis of those cues, a one-hour corpus composed of 20 minutes of dialogue and 40 minutes of monologue (narrative) was segmented into intonation units, regardless of any other cue, syntactic, semantic or other.

0.2.3. Linear Orders
Linear ordering does not concern only noun phrases and verbs, as they also come into play for other units, for instance clauses. In this paper, we consider linear ordering as a series of formal means, crucially depending on the existence of a reference point (Frajzyngier & Shay 2003:60-62), which is overtly and unambiguously coded for this function. This reference point is different depending on languages.
In Berber, the verb is a salient potential reference point, as it is formally always affixed by a specialized paradigm of pronouns. It cannot therefore be confused with another element of the clause.
Another reference point that we consider in this paper is the prosodic boundary between intonation units (see 0.2.2). As a discontinuity in the flow of speech, it constitutes a salient potential reference point, regardless of its functional values, which depend on the boundary tone, and other prosodic cues.
In this paper, we therefore focus on the ordering of noun phrases with respect to the verb: before or after the verb ; as well as the relative order of noun phrases when this is

[1] In this table, only underlying forms are given. Syllabification rules which result in schwa insertion are reflected in the examples throughout the paper.

formally computable. We also take into account the position relative to the prosodic boundary: before or after the prosodic boundary.

0.2.4. Traditional analysis of the structure of the clause in Berber

The verb bears a bound pronoun ('indice de personne') which is considered as the real subject of the clause (Galand 1964).

(1) j-ḥma[2]
3SG.M-be_warm:PFV
'It is/was warm'.

The lexical item coreferent with the subject pronoun is either (Galand 1964) the 'indicateur de thème' : (the noun is in the absolute state and appears before the verb); or the 'complément explicatif' (the noun is in the annexed state and appears after the verb).

(2) aḍaʒin j-ḥma
tagine:ABS.M.SG 3SG.M-be_warm:PFV
'The tagine (cooking pot) is hot'

(3) j-ḥma uḍaʒin
3SG.M-be_warm:PFV tagine:ANN.M.SG
'The tagine is hot'

The term 'indicateur de thème', which we will translate as "topic", is not limited to subject, as the noun preceding the verb can also be coreferent with pronouns other than the subject:

(4) aksum j-čča=t
meat:ABS.M.SG SBJ3SG.M-eat:PFV=ABSV3SG.M
'He ate the meat' ('object')

(5) argaz-nni t-mmut tmṭṭut-is
man:ABS.M.SG-CNS SBJ3SG.F-die:PFV woman:ANN.F.SG-POSS3SG ('possessor')
'That man, his wife died'.

The 'complément explicatif', which we translate as "nominal expansion", can also be coreferential with pronouns other than the subject in Kabyle:

(6) j-čča=t wəksum-nni
SBJ3SG.M-eat:PFV=ABSV3SG.M meat:ANN.M.SG
'He ate the meat' ('object')

[2] List of abbreviations : ABS : absolute state ; ABSV : absolutive pronominal paradigm ; ANN : annexed state ; AOR : aorist ; ASSOC : associative ; CAUS : causative ; CNS : consensual (jointly reconstructed) referent ; COM : comitative ; COP : copula ; DAT : dative ; EXNEG : existential negative ; F : feminine ; GEN : genitive ; HESIT : hesitation ; IDP : independent pronoun ; IPFV : imperfective ; KIN : kinship pronominal paradigm ; M : masculine ; NEG : negation ; PFV : perfective ; PL : plural ; POS : positive ; POSS : possessive pronominal paradigm ; PREP : prepositional pronominal paradigm ; PROX : proximal ; SBJ : subject pronominal paradigm ; REAL : realis ; REL : relator ; RELSBJ : subject relativization circumfix ; SG : singular ; VOC : vocative.

And the pronoun can be affixed to a noun, and not only to the verb :

(7) t-mmut tmṭṭut-is wərgaz-nni
SBJ3SG.F-die:PFV woman:ANN.F.SG-POSS3SG man:ANN.M.SG-CNS ('possessor')
'His wife died, that man'.

The problem with this traditional analysis, is that only two possible structures are taken into account :

- Topic – V
- V – Nominal expansion

Those structures have essentially been used to argue against the attribution of the subject role to noun phrases (Galand 1964). Some publications have gone further in their endeavor to study the information structure of the structures actually encountered (Mettouchi 2007a, 2007b, 2008, Kuningas & Leino 2006). But no systematic study of all possible combinations has been completed so far.

0.2.5. Constituent order analysis

The present paper adopts a non-aprioristic methodology: it only takes into account the coding means (state, prosodic boundary, linear order), without presuming on the function of each noun before the structures are examined. Consequently, a higher number of constructions are actually investigated. The potential structures[3] are listed below. Note that the abbreviation V_{sbj} represents the minimal predication composed of a verb and its obligatory personal affix (and possibly other bound pronouns).

- $[V_{sbj}]$
- $[V_{sbj}\ NP_{abs}]$
- $[V_{sbj}\ NP_{ann}]$
- $[V_{sbj}\ NP_{ann}\ NP_{abs}]$
- $[V_{sbj}\ NP_{abs}\ NP_{ann}]$
- $[NP_{abs}\ V_{sbj}]$
- $[NP_{abs}\ V_{sbj}\ NP_{abs}]$
- $[NP_{abs}\ V_{sbj}\ NP_{ann}]$
- $\mathbf{NP_{abs}}\ [V_{sbj}\ (NP)\ (NP)]$
- $[V_{sbj}\ (NP)\ (NP)]\ \mathbf{NP_{ann}}$

When the NP does not bear the indices "ann" or "abs", it means that both states are possible in this position. The state opposition is an independent coding means whose function is not to mark grammatical relations or information structure (cf 0.2.1.). Indication of the state borne by the nouns, however, is relevant to distinguish among some structures: for instance between $[V_{sbj}\ NP_{abs}]$ and $[V_{sbj}\ NP_{ann}]$, which do not have the same information structure value.

Noun phrases following prepositions have not been taken into account here because they are unambiguous as far as function is concerned: indirectly affected argument is introduced by preposition *i*, instrumental complement is introduced by preposition *s*.

1. Information structure

[3] [and] indicate prosodic boundaries.

As a result of the investigation of the functions of those structures, five constructions were found, each one consisting of one or more structures, and having one function:

- [V_{sbj} (N_{abs})] which subsumes the following:
  - [V_{sbj}]
  - [V_{sbj} N_{abs}]
- [V_{sbj} N_{ann} (N)], which subsumes the following:
  - [V_{sbj} N_{ann}]
  - [V_{sbj} N_{ann} N_{abs}]
  - [V_{sbj} N_{abs} N_{ann}]
- [N V_{sbj} (N)] which subsumes the following
  - [N_{abs} V_{sbj}]
  - [N_{abs} V_{sbj} N_{abs}]
  - [N_{abs} V_{sbj} N_{ann}]
- **N_{abs}** [V_{sbj} (N) (N)]
- [V_{sbj} (N) (N)] **N_{ann}**

The exact functions of those constructions will be investigated one by one, in main and independent clauses.

1.1. Function of [V_{sbj} (N_{ABS})]

This construction is the default one in terms of syntax (it constitutes in itself a full-formed clause) and information structure. It has no marked value, but builds on previous context without any shift or change of perspective. All examples of verbs, possibly followed by a noun in the absolute within the same intonation unit, were encountered inside a subtopic in a narrative, or a conversation.
Subtopics are discourse-level topics that rank lower than a basic-level topic, but higher than a sentence topic. A topic is "an aggregate of coherently related events, states and referents that are held together in some form in the speaker's semi-active consciousness" (Chafe 1994:121). Chafe implicitly states that a subtopic should encompass more than an intonation unit, since an intonation unit is generally associated with a "focus of consciousness" related to "active" information (1994:29).

(8) i-ṛuħ ar wədrar //
SBJ3SG.M-go:PFV to mountain:ANN.SG.M //
He went to the mountain,

i-ṛuħ ar wədrar a Amina /
SBJ3SG.M-go:PFV to mountain:ANN.SG.M VOC Amina /
he went to the mountain, Amina,

i-qqaz i-qqaz i-qqaz i-qqaz
SBJ3SG.M-dig:IPFV SBJ3SG.M-dig:IPFV SBJ3SG.M-dig:IPFV SBJ3SG.M-dig:IPFV
He dug and dug,

i-qqaz i-qqaz / i-xdəm lbir /
SBJ3SG.M-dig:IPFV SBJ3SG.M-dig:IPFV / SBJ3SG.M-make:PFV well:ABS /
he made a well,

annʃtilat //
enormous //
an enormous one.

In this discursive environment, using the verb (with its obligatory subject pronoun), possibly followed by a noun in the absolute - which is never coindexed with a preceding pronoun - (such as *lbir*, 'well', the object of *i-xdəm*, 'he made'), is the unmarked informational function, namely (sub-)topic continuity: the protagonist is the same, the narrative is carried forward. This function is very well described in the general literature across languages (Givón 1983, Chafe 1994, Lambrecht 1994), for Kabyle it has been analyzed in Mettouchi 2008. Even if there are several protagonists, only bound pronouns are used (cf. Mettouchi 2005 and 2007b).

Once noun phrases other than the direct object, i.e. noun phrases coreferent to a bound pronoun appear, the information structure value is changed. This shows that the mere presence of a noun phrase coreferent to a bound pronoun, in a pronominal-argument language such as Kabyle, has information structure value. Which value this is, depends on the position of that noun with respect to the verb and the prosodic boundary, as well as on the state of the noun (absolute or annexed).

1.2. Function of [V_{sbj} NP_{ann} (NP_{abs})]

This construction is realized as three different structures, depending on the presence of two NPs or one. The important factor is the presence of a noun in the annexed state in the position after the verb (possibly separated from it by another noun, in the absolute), within the same intonation unit as the verb. More precisely, the constraint is either that the noun in the annexed state be in the position directly after the verb, or in the position directly before the prosodic boundary.

- [V_{sbj} NP_{ann}]
- [V_{sbj} NP_{ann} NP_{abs}]
- [V_{sbj} NP_{abs} NP_{ann}]

The three structures topicalize an event or a state: both the main participant and the predicate are expressed, and even if the participant is known or mentioned, the relationship it holds with the predicate is presented as new, and about to be developed in the following intonation units. This structure was analyzed as "sentence-focus" or "thetic" in Mettouchi 2008, because newness was not limited to the referent, but to the state of affairs itself, as described by the association of a verb (and its bound subject pronoun) and a noun in the annexed state. That analysis is true at the level of the sentence, but it doesn't provide information about its role in discourse.
Investigations conducted on our corpus shows that in discourse, the structure is used to introduce a new episode in a narrative, or a new subtopic in a conversation. Sometimes, as in the following example, it is mentioned as an event whose occurrence (or truth) is under debate:

(9) SP3: anda lla-nt tlata təqʃiʃin //

where be:PFV-SBJ3PL.F three girls:ANN //
Where are those three girls?

SP2: jaɦ / tə-mmut lwiza //
indeed SBJ3SG.F-die:PFV Louisa //
Indeed, Louisa died.

The preceding discourse was structured around the subtopic of the woman's number of children. When it was clear that the two speakers hadn't come up with the same number of children, Speaker 2 came with her information that a daughter had died. Since the statement is sad, it is soon replaced by another a piece of information: the names of the two other daughters, presented with the same structure:

(10) SP2: tə-lla nadija / faḍila əːːː /
SBJ3SG.F-be:PFV Nadia / Fadila HESIT /
'There was Nadia, Fadila...'

SP1: faḍila d nadija d tinəggura //
Fadila ASSOC Nadia COP last:ABS.PL.F
'Fadila and Nadia are the youngest ones'.

This structure is used typically in wh- questions with presupposed information, as in Speaker 3's question above, or for new information (regardless of the activation state of the referent itself).

Sometimes, a noun in the absolute also appears in the structure: either after the noun in the annexed state ([V_{sbj} N_{ann} N_{abs}]) or before ([V_{sbj} N_{abs} N_{ann}])

In the following example, the father, prompted by his sons, is sending his younger son to steal a beautiful carpet from an ogress:

(11) jə-nna=jas ẓra-n wajtmas tazarwit
SBJ3SG.M-say:PFV=DAT3SG see:PFV=SBJ3PL.M brother:ANN.PL carpet:ABS.SG.F
ar jəmma Nuʒa /
to mother:ANN.F.SG Nuʒa
'The father told his son that his brothers had seen a carpet at Jemma Nuja's'.

This new piece of information is the basis of his demand to his son, that he should go and steal it from the ogress.
In the following example, taken from the same tale, the brothers come to the father with the news that the ogress has a hen, whose eggs heal all sorts of illness.

(12) t-sʕa tajaẓiṭ jəmma Nuʒa /
SBJ3SG.F-possess:PFV hen:ABS.SG.F mother:ANN.F.SG Nuʒa /
'Mother Nuja has a hen'.

All three structures belong to the same construction, as they all have the same informational value, the difference is first between intransitive and transitive predication, and second, among the latter, between the default order, which is [V_{sbj} N_{ann}

N_{abs}] if both nouns have equal weight, but becomes [V_{sbj} N_{abs} N_{ann}] if the noun in the annexed state is heavier.

Note that only this construction can appear in a dependent clause. This is in keeping with the fact that that the construction construes a globalized event or situation. If only a verb and its subject affix appear (construction 1.1.), the construction is the default one and is used as such.

1.3. Function of [N_{ABS} V_{sbj} (N)]

Within the same prosodic unit, a noun can appear before the verb. This noun is always in the absolute state (the annexed state is only used postverbally).

This construction, which has not been described for Kabyle yet, is used as backgrounding for further developments, when a salient preceding situation is recapitulated, so that the listener grasps the whole situation and its importance for the current discourse.

In the following example, all aspects of the situation have already been introduced, mostly through [V_{sbj} N_{ann} (N_{abs})] structures. Most referents have been previously mentioned, as is shown by the suffix *–nni*, which marks jointly constructed reference (Mettouchi (2011 : 482)) (often by previous mention).

(13) taqjunt-nni t-ssəglaf /
dog:ABS.SG.F-CNS SBJ3SG.F-bark:CAUS.IPFV /
'The dog was barking,

azdduz-nni jə-ʈʈawi=t ubəħri /
big_stick:ABS.SG.M-CNS SBJ3SG.M-bring:IPFV=ABSV3SG.M wind:ANN.SG.M /
the wind was moving the stick,

nutənti zddəm-nt /
IDP3PL.F gather_wood:IPFV-SBJ3PL.F /
the girls were gathering wood'.

In the first line, the noun in the absolute is the subject, as in the third line, but in the second line, it is an object, and is taken up by the absolutive pronoun =t. What is important here is that one argument appears before the verb, but not separated from it by a prosodic boundary. The construction allows the reduction of a long and complicated story into its salient characteristics.

In conversation, similar recapitulations occur, as in the following example, where the speaker takes up the information scattered in the preceding context, where various brothers of her grandfather's, as well as the grandfather himself, were said to have married a number of women, and then goes on to commenting on the genealogy of the family:

(14) ʒəddi j-uɣ səʈʈi /
grandfather:ABS.SG.M SBJ3SG.M-take:PFV grandmother:ABS.SG.F /

'My grandfather married my grandmother'.

This construction must not be confused with the following one, where the noun in the absolute preceding the verb is also before the prosodic boundary that precedes the verb.

1.4. Function of N_{ABS} [V_{sbj} (N) (N)]

This construction is characterized not by the internal structure of the intonation unit, but by constituent ordering with respect to the verb (possibly preceded by a particle or auxiliary, as in the following example with negation[4]), and prosodic boundary. The argument preceding the prosodic boundary is taken up by a bound pronoun in the clause.
Such constructions are always contrastive in Kabyle, in the sense that they imply at least a shift in perspective, as in the following example. They are not topic-promoting devices, where a referent is promoted from non-active state to active state as argued in Kuningas and Leino (2006): indeed it is another structure which has this function in Kabyle: [V_{sbj} (N) (N)] N_{ANN}, studied in part 1.5.

In the following example, what is important is the fact that the presupposition concerning the stepmother's relationship to her husband's daughters (built throughout the previous episode: she promised she would take care of them and love them dearly), is rejected.

(15) aj argaz tura jəssi-k-agi /
VOC man:ABS.SG.M now daughter:ABS.PL-KIN2SG.M-PROX /
"My husband, now those daughters of yours,

ur zəddɣ-əɣ ara jid-sənt //
NEG dwell:IPFV-SBJ1SG POSTNEG COM-PREP3PL.F //
I'm not living with them!"

Similarly, in the next example, the father had given his seven wives apples. They all gave birth to a normal boy, except the last one, who had eaten only half an apple:

(16) tin iwumi jə-fka akka nnəfṣ
the_one:SG.F to_whom SBJ3SG.M-give:PFV thus half
'The one to whom he had given half

n təṯəffaẖt / t-urw=ədd lʕabd /
GEN apple:ANN.SG.F / SBJ3SG.F-give_birth:PFV=PROX human_being:ABS.SG /
an apple, gave birth to a human being,

qqar-n=as / aʕmar nnəfṣ //

[4] Note that preverbal particles (modal, aspectual or negative) have fixed position, and nothing else that a string of clitics can separate the particle from the verb. This makes the particle an alternative reference point to the verb for the calculation of linear ordering.

say:IPFV-SBJ3PL.M=DAT3SG / Aʃmar half //
whom people called Amar the Midget,

t-urw=it=idd d nnəfṣ //
SBJ3SG.F-give_birth:PFV=ABSV3SG.M=PROX COP half //
it was half a child she had given birth to.'

We suggest to call those structures "contrastive comments", since they go against a presupposition about the topic that was built in the preceding context.

1.5. Function of [V_{sbj} (N) (N)] N_{ANN}

Those structures are characterized by the presence of a noun in the annexed state after the prosodic boundary. Here again, the internal composition of the prosodic unit is not important. It is the state of the noun and the position after the boundary, which formally identify the construction. This type of construction is often called "right-dislocated" in the literature. We will not use that term because we make no assumptions concerning possible underlying structures; we rely only on surface forms.

If the noun is in the absolute state and after the prosodic group of the verb in Kabyle, it cannot be related to the preceding verb, but has to be construed as starting a new clause. This is due to the function of the state distinction (see Mettouchi & Frajzyngier to appear).

All examples involving such a construction are used to activate a referent that had lost its active (and even semi-active) status. This reactivation is always associated to further continuation of the discourse with the activated referent as topic. In the following example, the house is reactivated after having stayed unmentioned for a few intonation units, and then, the following subtopic starts (the girls set to explore the house, which is described in details).

(17) t-ufa d amʃiʃ n wədrar //
SBJ3SG.F-find:PFV COP cat:ABS.SG.M GEN mountain:ANN.SG.M //
'She found it was the Mountain Cat

i=t izədɣən / wəxxam-nni //
REL.REAL=ABSV3SG.M dwell:PFV:RELSBJ.POS / house:ANN.SG.M-CNS //
who inhabited it, the house.'

1.6. Synthesis on information structure

The study of formal sequences based on position relative to the verb, and to a prosodic boundary, provides a number of structures which can be grouped together on the basis of function:

Construction [V_{sbj} (N_{abs})], without any surrounding nouns belonging to the clause outside the prosodic group of the verb, marks (sub-)topic continuation. Typically, we

find sequences of verbs with their obligatory person affix, possibly complemented by nominal direct objects.

- [V_{sbj}]
- [V_{sbj} N_{abs}]

Construction [V_{sbj} N_{ann} (N)] has no surrounding nouns belonging to the clause outside the prosodic group of the verb either, but there is at least one noun after the verb, and it bears the annexed state. Typically, these are structures where the nominal subject follows the verb within the same prosodic unit. A nominal direct object can be present too, and in that case both relative orders of nouns are possible, without any change in the function of the construction. The function of this construction is topicalization of an event or a state, with a thetic perspective. This construction is used to present situations or events as a whole as new, regardless of the activation status of the referents themselves: they inform, provide a statement that triggers a new subtopic.

- [V_{sbj} N_{ann}]
- [V_{sbj} N_{ann} N_{abs}]
- [V_{sbj} N_{abs} N_{ann}]

Construction [N_{abs} V_{sbj} (N)] has no surrounding nouns belonging to the clause outside the prosodic group of the verb either, and its defining feature is the presence of a noun in the absolute state just before the verb, and still within the prosodic group containing the verb. Another noun can appear after the verb. This construction recapitulates salient elements of a situation that have been narrated before at some length. It is a summary, which provides backgrounding for the following discourse.

- [N_{abs} V_{sbj}]
- [N_{abs} V_{sbj} N_{abs}]
- [N_{abs} V_{sbj} N_{ann}]

Construction **N_{abs}** [V_{sbj} (N) (N)] is characterized by the presence of a noun in the absolute before the prosodic boundary opening on the prosodic unit containing the verb. This noun has to bear the special continuative (rising) boundary tone that links it to the following sequence, otherwise it would not be interpreted as a topic, but as belonging to the previous clause. This construction is binary, as it involves a topic and a comment. The topic is a referent reactivated from the previous discourse, but the important element here is the comment: it goes against a presupposition about the topic that was built in the preceding context. This is the reason why we propose to label the function of this construction "contrastive comment".

Construction [V_{sbj} (N) (N)] **N_{ann}** is characterized by the presence of a noun in the annexed state after the right prosodic boundary of the prosodic unit containing the verb. The annexed state here is the mirror image of the continuative boundary tone on the topic in the absolute in the abovementioned construction: its role is to tie this noun to the clause, and indicate that it does not belong to the following clause. The function of this construction is the reactivation of a participant for topic promotion.

2. Grammatical Relations[5]

[5] A preliminary version of this part was written during a period of collaborative work with Zygmunt Frajzyngier on the state opposition in Kabyle. I am grateful to him for his insights and inspiring comments on those hypotheses, and the role his methodology played in the elaboration of the argumentation.

We have just shown that constructions characterized by word order and prosodic grouping, and to some extent state alternation, had specific informational values in discourse. Our hypothesis in this second part is that information structure values imply that in some cases grammatical relations on nouns be transparent, whereas in other cases, they needn't be. Indeed, in this section, we are going to show that grammatical relations are not systematically coded on nouns. For this, we are using the same non-aprioristic method as in part 1, with a query in mind: to what extent are prosodic grouping, state alternation and word order also involved in the encoding of grammatical relations in Kabyle, at the level of the clause?
This way of investigating things makes it possible to show how discourse and clause-level grammar interact in spontaneous speech in Kabyle.

It is important to note that the bound pronouns that are obligatorily affixed to the verb form a special paradigm that codes the main participant in the situation, regardless of semantic role, animacy, topicality etc[6]. We can therefore consider this paradigm as a subject paradigm. As the verb and its subject affix alone constitute a well-formed sentence, we do not consider them as agreement markers, but as a case of pronominal argument marking (Galand 1964, Mettouchi 2005).
Other bound pronominal paradigms are: absolutive clitics (objects of transitive verbs and main participant of non-verbal predicates) and dative clitics (affected participant)[7].
All pronominal paradigms in Kabyle are inflected for person, number, and gender (in the second and third person (singular and plural) for the subject and absolutive paradigms, in the second (singular and plural), and third (plural) for the dative paradigm).

(18) tə-wwət=it
3SG.F-kick.PFV=ABSV3SG.M
'She kicked it.'

(19) ulaʃ=it
EXNEG=ABSV3.SG.M
'He is not there.'

(20) tə-mmut=as təqʃiʃt
3SG.F-die.PFV=DAT3SG.M girl.ANN.SG.F
'She lost a daughter (lit. a girl died on her)'.

In this context, noun phrases are often used as expansions of the bound pronouns. This is true for NPs coreferent to subject affixes, or absolutive ones. Indirect objects are

[6] Here is the paradigm, with perfective radical –*uli*-, 'go up', 'climb'.

	Singular	Plural
1	uli-**ɣ**	**n**-uli
2 M	**t**-uli-**dˤ**	**t**-uli-**m**
2 F		**t**-uli-**mt**
3 M	**j**-uli	uli-**n**
3 F	**t**-uli	uli-**nt**

[7] Clitics are characterized by their ability to climb from the default position after the verb, to the position after the negative, modal or aspectual particle preceding the verb, or the position after the relative marker in relative clauses.

introduced by preposition *i*, and won't be considered here because their role is quite transparent given their prepositional phrase structure. Only one type of NP is not coreferent to any pronoun, and this is the nominal direct object, as will be shown below.
Formally, all we can rely on, for the computation of grammatical relations on nouns, is the state of the noun, its gender-number markers, its position with respect to the verb and the prosodic boundary, as well as the gender-number markers on the pronominal affixes and clitics.

We will now show that:
a) the state opposition in itself does not mark grammatical relations
b) coreference in gender and number between the noun and the bound pronoun, in itself, is not transparent for the encoding of grammatical relations
c) word order in itself does not mark grammatical relations.
However, the interaction of state, word order, and prosodic grouping allows the computation of grammatical relations for nouns, while gender-number coreference can disambiguate grammatical roles.

2.1. Grammatical relations are not marked unambiguously by one coding means

2.1.1. The state opposition in itself does not mark grammatical relations

This first statement is demonstrated by the fact that the noun in the annexed state can be a subject or an object. If the same mark is compatible with two grammatical relations that are in principle incompatible, then it is not its function to indicate grammatical relations.
In the following example, the noun in the annexed state has the same referent as the subject pronoun of the clause:

(21) tə-mmut t-qʃiʃ-t //
SBJ3SGF-die.PFV F-child:ANN-F
'The little girl was dead'

In the following example, the noun 'house' in the annexed state has the same referent as the 'object' (absolutive) pronoun =t:

(22) t-ufa d a-mʃiʃ n wə-drar //
SBJ3SG.F-find:PFV COP ABS.SG-cat GEN M.ANN-mountain //
i=**t** izədγən / **wə-xxam-nni** //
REL=ABSV3SG.M inhabit:PFV:RELSBJ.POS / M.ANN-house-CNS //
'She found it was the Mountain Cat who inhabited it, the house'

2.1.2. Coreference in gender and number in itself does not mark grammatical relations

This second statement is demonstrated by the fact that a noun can have the same features of gender and number than the subject affix, without being coreferent to it. This shows that identity in number and gender (often called 'agreement') is not sufficient to mark grammatical role.

(23) tə-fka=jas tafunast tabərkant

SBJ3F.SG-give.PFV=DAT3SG cow:ABS.F.SG black-ABS.F.SG
'She gave him/her the black cow' (and not 'The cow gave him/her the black one' or 'The black one gave him/her the cow')

According to Frajzyngier and Shay (2003: 64), "(agreement) must occur in any clause with a singular nominal or pronominal subject in the clause and it cannot occur if there is no nominal singular subject in the clause." This definition of agreement clearly excludes what happens in Berber in terms of person-gender-number marking on the verb, since this marking is obligatory, regardless of the presence of a nominal argument in the clause. This brings Frajzyngier and Shay (2003:64) to the following conclusion : "in many languages, so-called agreement phenomena are actually independent coding means in that they occur regardless of whether the argument that they code appears in the clause".
We will not study in details the role of person-number-gender marking on the verb, but will observe that on the one hand this mark is necessary for the verb to become a clause, a predication; and on the other hand it plays a role in referent-tracking in discourse, and, as shown in part 1.1., if not accompanied by a coreferential noun in the same clause (in the prosodic group of the verb or in the immediately preceding prosodic unit), has the function of marking continuing topic as far as information structure is concerned.

2.1.3. Word order in itself does not mark grammatical relations

As nouns that are computable as subjects and objects can both precede or follow the verb, and as, if they follow the verb, there is no fixed ordering between them, then word order in itself is not sufficient to mark grammatical relations.

In the following example, the noun in the position before the verb can be interpreted as subject or object:

(24) aɣəṛdaj-nni jə-čča=t
rat.ABS-CNS SBJ3M.SG-eat.PFV=ABSV3M.SG
'He ate the rat' or 'The rat ate it'

In the following examples, the nouns following the verb can be interpreted as subject or object, the position just after the verb does not code subject or object exclusively. We have to additionally take into account the state borne by the noun.

(25) jə-swa wəmʃiʃ ajfki
SBJ3M.SG-drink.PFV cat.ANN.SG.M milk.ABS.SG.M
'The cat drank milk'

(26) jə-swa ajfki wəmʃiʃ
SBJ3M.SG-drink.PFV milk.ABS.SG.M cat.ANN.SG.M
'The cat drank milk'

As none of those coding means transparently code grammatical relations, we have to hypothesize either that grammatical relations are not relevant for nouns in Kabyle, but

only for pronouns, or that they are transparently retrievable, but through the interaction of several coding means.

2.2. The interaction of state, position, prosodic grouping and gender-number marking

Investigation of the various coding means shows that the first distinction is between nouns that are outside of the prosodic group of the verb and those which are inside.

2.2.1. Nouns outside the prosodic group of the verb

In the position before the opening prosodic boundary of the prosodic group containing the verb, nouns are in the absolute state, and can have any grammatical role:
In the following example, the noun *mmis* can be interpreted as subject of the verb *ğğa*.

(27) l̩l̩aɦ i-barək mmi-s /
God SBJ3SG.M-give_luck:AOR son:SG.KIN3SG /

atan i-ğğadd səṭṭa //
PRST SBJ3SG.M-leave:PVF=PROX six //
'God bless her son, here he is with six children'.

However other roles also appear in this position: in the following example, the noun ajtma is coreferent to the dative clitic =asn.

(28) ajtma / t-uɣ-ḍ=asn=idd /
brother:ABS.PL / SBJ2-take:PFV-SBJ2SG=DAT3PL.M=PROX /
'My brothers, you bought them things'

The position before the prosodic boundary opening on the prosodic group of the verb is therefore not a coding means for grammatical relations. Those grammatical relations can be retrieved through coreference in gender and number with one of the pronominal affixes or clitics surrounding the verb. However, ambiguity is always possible if more than one pronoun has the same features of gender and number as the initial noun:

(29) taqʃiʃt / t-uɣ=as=idd taksiwt
girl:ABS.SG.F / SBJ3SG.F-take:PFV=DAT3SG=PROX dress:ABS.SG.F
'The girl bought her a dress' or 'She bought a dress for the girl'.

Gender-number identity of features between pronoun and noun is therefore not a coding means for grammatical relations either.
In the position before the prosodic boundary, grammatical relations cannot be transparently computed.

In the position after the prosodic boundary closing the prosodic group of the verb, nouns are in the annexed state, and can have any grammatical role:
In the following example, the noun wəmɣar is coreferent with the possessor pronoun *–is* on the noun, its grammatical role, if one is to be attributed to it, is possessor.

(30) tə-mmut t-mṭṭu-t-is / wə-mɣar-nni //
SBJ3SG.F-die:PFV F-woman:ANN-F-KIN3SG / M.ANN.-old_man-CNS //
'His wife died, that man'

In the following example, the noun in the annexed state after the prosodic group of the verb is coreferent with the subject pronoun, its grammatical role, if one is to be attributed to it, is subject.

(31) ad=dd ħku-ɣ / amk i / ʈʕiʃ-nt
POT=PROX tell:AOR-SBJ1SG / how REL.REAL / live:IPFV SBJ3PL.F

zik / lxalat n lqbajl-nnəɣ /
long_ago / woman:ANN.PL.F GEN kabyle_tribe:ANN.PL-POSS1PL/
'I will tell how they lived in the old days, the Kabyle women'.

Those are not the only grammatical relations that can be found in this position. Others are object, kinship relationship (but not indirect object, which is always preceded by a preposition).

The position after the prosodic boundary closing on the prosodic group of the verb is therefore not a coding means for grammatical relations. Those grammatical relations can be retrieved through coreference in gender and number with one of the pronominal affixes or clitics surrounding the verb, but ambiguities in gender and number can always arise.
In the position after the prosodic boundary, grammatical relations cannot be transparently computed.

2.2.2. Nabs after the verb within the prosodic group of the verb

This situation is much more constrained than the one described in 2.2.1.: the absolute state implies that the noun is not to be interpreted as the variable of a function grammaticalized on the preceding constituent (Mettouchi & Frajzyngier to appear), namely the subject role marked by the bound pronoun on the verb. By default, it is interpreted as the direct object.

(32) i-sʕa t-a-qədʕi-t /
SBJ3SGM-possess:PFV F-ABS.SG-herd-F
'He had a herd'

Only two noun phrases can appear after the verb within its prosodic group: one in the absolute state, one in the annexed state. The latter is necessarily the nominal subject (no other grammatical interpretation was possible for such nouns in such position), and the former the nominal object. The relative ordering of the two noun phrases is irrelevant, as state is here sufficient to disambiguate the grammatical role of each NP (cf. 2.1.3.). The noun in the absolute can therefore immediately follow the verb, as above, or be separated from it by another noun, as below.

(33) i-sʕa umeksa t-a-qədʕi-t /
SBJ3SGM-possess:PFV shepherd:ANN.SG.M F-ABS.SG-herd-F
'The shepherd had a herd'

If position only was involved, the computation of grammatical relations would not be possible. But since one of the nouns must be in the absolute state and the other in the annexed state, the two roles cannot be mixed up. The noun in the absolute appears only when the verb is transitive, and it refers to its second argument. It is therefore the object. The nominal object can therefore be defined as a noun in the absolute state following the verb inside the prosodic group of the verb.
No coreference is involved because in Kabyle, the nominal object is the only direct complement in postverbal position, within the prosodic group of the verb, which does not corefer to a pronoun.

2.2.3. Nann after the verb within the prosodic group of the verb

Only one noun phrase in the annexed state can occur in the prosodic group of the verb. This noun is always coreferent to the subject affix. If the verb is intransitive, only the noun in the annexed state occurs. If it is transitive, a noun in the absolute may appear, which is computed as object (cf above).
The combination of annexed state and position (following (immediately or not) the verb within the prosodic group of the verb) provides unambiguous instructions for the decoding of the grammatical relation 'subject'.

(34) SP1 : <ça fait> t-mmut=as təqʃiʃt i Zaɦwa Taʕliṯ //
it_is SBJ3SG.F-die:PFV=DAT3SG girl:ANN.SG.F DAT Zaɦwa daughter_of_Ali //
So she lost a girl, Zahwa Taalits ?

SP2 : t-mmut=as tmənzut //
SBJ3SG.F-die:PFV=DAT3SG elder:ANN.SG.F //
Her eldest daughter died (on her)

2.2.4. Nabs before the verb within the prosodic group of the verb

The noun in the absolute is unambiguously the subject if and only if there is no clitic pronoun in the prosodic group of the verb (only the subject affix). Indeed, in the position before the verb, the noun has to be coreferent to a pronoun affixed or cliticized to the verb.

(35) taqjunt-nni t-ssəglaf /
dog:ABS.SG.F-CNS SBJ3SG.F-bark:CAUS.IPFV /
'The dog was barking'

(36) tiqʃiʃin ur mmut-nt ara /
girl:ABS.PL.F NEG die:PFV-SBJ3PL.F POSTNEG /
'The girls didn't die'.

If there are one or two clitics the grammatical relation is no longer transparent and has to be disambiguated thanks to gender-number features identity. In the following example, based only on coreference in gender and number, the noun can be computed as the affected object, but if the subject affix was feminine, ambiguity would arise and the noun *jiwət* could be interpreted as the subject as well:

(37) jiwət	jə-fka=jas	nnəfṣ //
one:F	SBJ3SG.M-give:PFV=DAT3SG	half //

'He gave half (an apple) to one (of his wives).

In the position before the verb, the noun can be transparently coded as subject if and only if there are no pronouns cliticized to the verb, only the subject affix.

2.4. Implications

This raises the question of what can be called a function: do we call something a function only if there is a one-to-one relationship between a coding means and a value? In that case only pronominal paradigms mark grammatical relations, and nouns can only be indirectly computed as subjects or objects.
If we accept that a function can be marked by the interaction of several coding means, then we can say that grammatical relations are coded on nouns in Kabyle, but that this coding is complex. In that case it is important to distinguish between complex function-coding, and coreference, which always has potential for ambiguity.
In Kabyle, nominal subjects and objects can only be unambiguously computed within the prosodic group of the verb:
a) a noun is a nominal subject if and only if, within the prosodic group of the verb:
- the verb has no clitics other than the subject affix AND the noun occurs before the verb, and is in the absolute state;
- the noun occurs after the verb (immediately or not) and is in the annexed state.
b) a noun is a nominal object if and only if, within the prosodic group of the verb, the noun occurs after the verb (immediately or not) and is in the absolute state.

As far as information structure is concerned, functions are clearly complex, and involve the presence or absence of the noun, its state, and its position relative to the verb and prosodic boundaries.
It would perhaps be interesting to distinguish between first-level functions (involving only one coding means), and second-level functions (involving more than one coding means) for the analysis of languages.

General Conclusion

Why is it that in a language such as Kabyle, nominal subject and nominal object are only coded in specific environments? We hypothesize that this has to do with the fact that the language has pronominal argument marking instead of agreement. Mithun (1992:58) already links that kind of language with pragmatically-based word order, and the appositive role nouns play in those languages, as opposed to pronouns which bear the primary case relations to the verb. We have shown that in Kabyle, nouns are not simply appositive (for instance, nominal objects can appear without an object clitic), but

that their presence and ordering code a number of pragmatic functions, and in some cases, syntactic ones.

The question is now why are subject and object grammatical relations relevant only in some contexts when nouns are involved, whereas they are always unambiguously coded by bound pronouns (subject affixes and object clitics)? A look at those contexts may provide an answer: structures involving two nominal arguments (or one when the verb is intransitive) within the prosodic group of the verb are either topicalizations of events or states with a thetic perspective, or recapitulations of salient elements of a previously narrated episode. In both cases, the construal of the situation is not of the "comment on a topic", or "topic continuation", or "reactivation of a referent" type, but rather implies the role of each participant in the event or state. This type of context therefore calls for disambiguation of grammatical roles, which is what we see in Kabyle. Other structures conveying information of the "aboutness" or "topic promotion" type are less tied to their argument structure, what is important there is referential information, and topical information. In those structures, grammatical relations on nouns are not unambiguously retrievable.

It would be interesting to see whether pronominal argument languages with no basic word order, and a pragmatically-based ordering in the sense of Mithun (1987) tend to restrain to some contexts only the expression of grammatical relations on nouns.

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