Complex Predicates in Telugu: A computational perspective

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ABSTRACT

Complex predicates raise the question of how to encode them in computational lexicons. Their computational implementation in South Asian languages is in its infancy. This paper examines in detail the variety of complex predicates in Telugu revealing the syntactic process of their composition and the constraints on their formation. The framework used is First Phase Syntax (Ramchand 2008). In this lexical semantic approach that ties together the constraints on the meaning and the argument structure of complex predicates, each verb breaks down into 3 sub-event heads which determine the nature of the verb. Complex predicates are formed by one verb subsuming the sub-event heads of another verb, and this is constrained in principled ways. The data analysed and the constraints developed in the paper are of use to linguists working on computational solutions for Telugu and other languages, for design and development of predicate structure functions in linguistic processors.

KEYWORDS: Complex Predicates, Dravidian, First Phase Syntax, Argument Structure, Telugu.

1 Introduction

Complex predicates are predicates that are multi-headed; they are composed of more than one grammatical element (either morphemes or words), each of which contributes part of the information ordinarily associated with a head (Alsina *et al.* 1997). They exhibit word-like properties in terms of argument structure composition and in sometimes having lexicalised meanings (Lapointe 1980). They exhibit phrase-like properties in allowing certain syntactic operations, such as movement, to manipulate their internal structure (Bresnan and Mchombo 1995). While complex predicates have two or more heads, these heads function as a single predicate in a monoclausal configuration. Computationally, we need a mapping procedure in order to account for the full set of predicate meanings that can be associated with monoclausal structures, which derives both 'word-like' meanings, and 'phrase-like' meanings (Mohanan 2007).

2 Theoretical Framework: A super quick guide to First Phase Syntax

In First Phase Syntax (Ramchand 2008) terms, the verbal domain decomposes into 3 distinct heads or subevent projections: init[iation]P, proc[ess]P, and res[ult]P. Each subevent head enters in a predicational relation with its specifier position. InitP introduces the causation event and licenses the external argument – the Initiator. ProcP specifies the process or the nature of the change and licenses the internal argument – the Undergoer. ResP introduces the result state and licenses the holder of the result state – the Resultee. Depending on which subevent heads a verb lexicalizes, it belongs to a particular verb class – <init, proc, res>, <proc,res>, etc. Activities are <init, proc>. Achievements are <init, proc, res>. Unergatives have co-indexed <init, proc>. Unaccusatives lack <init>. The DP argument can occupy two or more specifier positions. For example, Initiator-Undergoer in *John ran*, Undergoer-Resultee in *The vase broke*, and Initiator-Undergoer-Resultee in *John arrived*. Composite thematic roles are encoded in the lexical entry of the verb – the verb determines whether a DP will raise from one specifier to another or not. An event head can have verbal or non-verbal material (DP, AP, PP, etc.) occupying its complement position – Rheme. Rhemes are not subjects of events but part of the description of the predicate. A DP in the rheme position builds one joint predication with the verb. A DP in the specifier position of a subevent head is a verbal argument.

3 Verbal Complex Predicates in Telugu

There are 3 aspectual/completive light verbs in Telugu, shown in (1).

(1) | **poo 'go'** | **veyyi 'throw'** | **paDa.veyyi 'throw down'** |
|---|---|---|
| Sita paD.i.pooindi | Sita pustakam cadi.veesindi | Sita pustakam cadiv.i.paDesindi |
| Sita fall.perf.went | Sita book read.perf.throw | Sita book read.perf.throwdown |
| 'Sita fell (fully)' | 'Sita read the book (fully)' | 'Sita read the book (totally)' |

Complex predicates like these have been analyzed in First Phase Syntax terms as underassociation of the main or heavy verb features under the light verb. This is shown for the Telugu data that is given above in (2). The light verb bears tense and agreement. The heavy verb appears as a perfective/conjunctive participle with the marker -*i*. The light verb has a very abstract semantics. The semantic content of the complex predicate comes from the heavy verb. The subevent feature specification of the light verb is the same as the subevent specification of that verb when it is used as a heavy verb (Butt's Generalization; see Butt 1997, 2003). The heavy verb lexicalizes or occupies the rheme position. Together they form one joint predication.

(2)
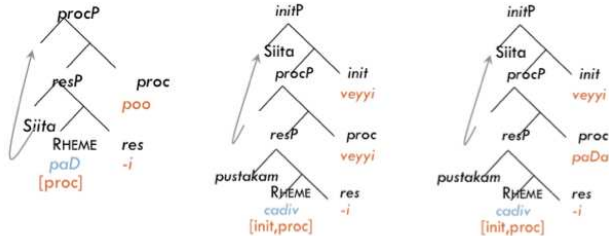
Of the 3 aspectuals in Telugu, *poo* is an unaccusative verb (<init>-less in First Phase terms) and selects for other unaccussative verbs. The other two have an <init> head and select for verbs with <init>. The <init>-less light verb cannot select <init> verbs and the <init> light verb cannot select <init>-less verbs as shown in (3). This further strengthens the selectional restrictions of light verbs that Ramchand (2008) identifies from Bangla data.
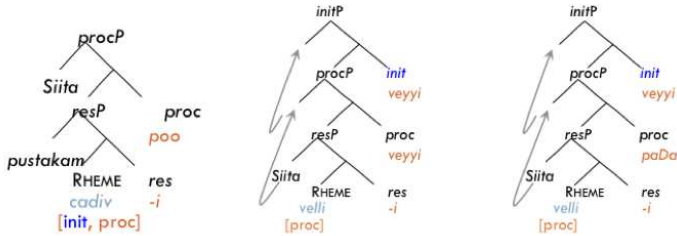
(3)

poo + <init>	**veyyi + <init>less**	**paDa.veyyi + <init>less**
*Sita cadives.i.poindi	*Sita USA vell.i.veesindi	*Sita USA vell.i.paDeesindi
Sita read.perf.went	Sita USA go.perf.threw	Sita USA go.perf.throwdown
Intended: 'Sita read'	Intended: 'Sita went to USA'	Intended: 'Sita went to USA'

The constraints on underassociation that Ramchand (2008) derives from analyzing complex predicates in Bangla and Hindi are the following: 1) Underassociation of category features of any 'main verb' is possible, constrained by Agree. 2) Agreeing categorial features must unify their conceptual content. This means that if the heavy verb is specified for [init] but the light verb is not, the structure will not converge.
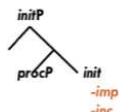
Among the 3 aspectual light verbs, *paDa.veyyi* is a complex light verb and involves 'double' complex predication of two verbs *paDu* and *veyyi* as shown in (4).
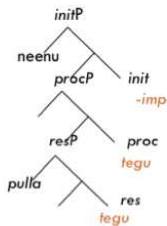
(4)
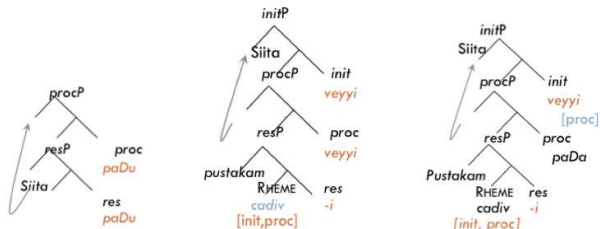
The causative suffix in Telugu is *-inc* or *-imp* as shown in (5)a. An unaccusative verb can be transitivized using the causative as shown in (5)b. It can causativize further with underassociation as shown in (5)c.
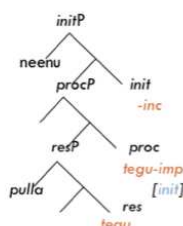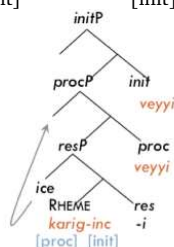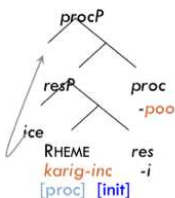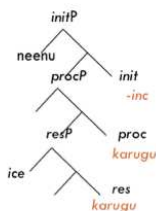
(5) a.   b.   c.

But the causative cannot co-occur with an unaccusative (<init>less) light verb, as shown in (6). This is because the [init] feature of *-inc* cannot underassociate with the <init>less light verb, whereas it can underassociate with <init> light verbs, as predicted by the constraints on underassociation.

(6)   *karig-inci-poo vs. karig-inci-veyyi   *karig-inci-poo vs. karig-inci-veyyi
                                [init]   [init]-[init]

The benefactive light verb in Telugu is *peTTu* 'put'. In most languages it is 'give'. It is an applicative light verb. It always increase the valency, as shown in (7).

(7)   Sita pustakam akkaDa peTTindi   Sita Raviki cadiv.i.peTTindi
      Sita book   there   put   Sita Ravi   read.PERF.put
      'Sita put the book there'   'Sita read for Ravi (out loud or for his sake)'

The permissive light verb in Telugu is *an + ivvu – aN* is the infinitival marker, *ivvu* is 'give'. It is also an applicative light verb. But it doesn't increase the valency, as shown in (8).

(8)   Sita pustakam Raviki iccindi   Sita Ravini cadav.an.iccindi
      Sita book   Ravi   give   Sita Ravi   read.inf.give
      'Sita gave the book to Ravi'   'Sita let Ravi read'

In summary, there are three aspectuals in Telugu – one of these light verbs is itself complex. There are three Transitivizers – light verbs with direct lexicalization. They provide inceptual meaning. Non-aspectuals compose differently from aspectuals. There are other interesting beasts in the Telugu light verb jungle. Causativization with light verbs differs syntactically and semantically from that with the causative morpheme. Unlike the aspectual light verbs, the applicative light verbs can combine with <init> and <init>less verbs.

4 Nominal Complex Predicates in Telugu

In nominal complex predication, the light verb lexicalizes the subevent heads and provides the argument structure skeleton (Pantcheva 2007 *et seq.*). The light verb has a very abstract semantics. The semantic content of the complex predicate comes from the preverb (Lazard 1957). The preverb lexicalizes the rheme. Together they form one joint predication. This is shown in (9).

(9)
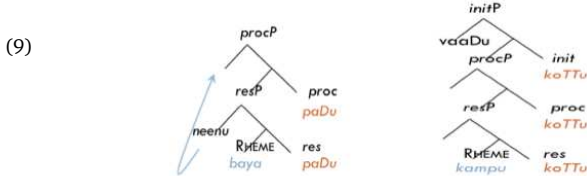
As the light verb lexicalizes the verbal heads, the argument structure depends entirely on the categorial specification of the light verb. Karimi-Doostan (1997) divides Persian light verbs into two classes: initiatory and transition light verbs. Telugu light verbs also fall into these two groups as shown in (10). In First Phase Syntax terms, initiatory light verbs have <init> specification, transitory light verbs do not have an <init> subevent head.

(10)

<init> light verbs		<init>less light verbs	
ceyyi 'make'	ivvu 'give'	paDu 'fall'	avvu 'happen'
peTTu 'put'	tiyyi 'remove'	kalugu 'arose'	tegu 'break'
koTTu 'hit'	aaDu 'play'	poo 'go'	digu 'go down'
veyyi 'throw'	cuupincu 'show'	ekku 'go up'	maaru 'change'

When the <init> light verbs compose with a nominal element, they have an initiatory meaning with an external argument. When the <init>less light verbs combine with a nominal element, they have an experiential meaning only. This is shown in (11) and (12).
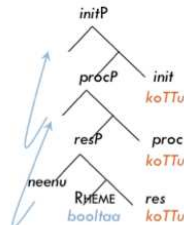
(11) **paDu**
neenu booltaa paDDaanu
I flip fell
'I flipped'
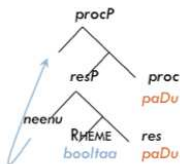
koTTu
neenu booltaa koTTeenu
I flip hit
'I did a cartwheel'

(12) **<init>less = experiential**
baya paDu 'get scared'
pedda avvu 'grow up'
muuta paDu 'closed down'

<init> = initiatory
baya peTTu 'scare someone'
pedda ceyyi 'bring up'
muuta veyyi 'close something down'

5

Loan words productively enter into nominal complex predicate formation. The loan words are overwhelmingly verbs in the language they are borrowed from. But in the nominal complex predicates they enter as rhemes. This is shown in (13).

(13)

Loanwords with \<init\> light verbs *ceyyi 'make', koTTu 'hit', ivvu 'give'*	**Loanwords with \<init\>less light verb** *avvu 'happen'*
print/phone/call/defeat/post/apply hurt/help/type/madad/ready/brush	surprise/shock/excite/ defeat/begin/irritate/

In sum, in nominal complex predicates in Telugu, the verb determines the argument structure. The lexical-encyclopaedic information is smeared from the nominal element onto this skeleton. \<init\>less to \<init\> change in light verb changes meaning from undergoer to initiator. The nominal complex predicate behaves syntactically like the light verb that constitutes it.

Nominal predicates enter into constructions only with corresponding verbal predicates. This is shown in (14). The nominal complex predicate behaves syntactically like the light verb that constitutes it. A mismatch is not allowed in terms of sub-event heads. This is shown in (15).

(14)

poo 'go'	**veyyi 'throw'**	**paDa.veyyi 'throw down'**
Sita bay.paD.i.poindi	Sita guraka.peTT.i.veesindi	Sita sutti.koTT.i.paDeesindi
Sita fear.fell.perf.went	Sita snore.put.perf.threw	Sita hammer.hit.perf.fall.threw
'Sita got afraid'	'Sita snored away'	'Sita talked boringly'

(15)

\<init\>less NomCPr + \<init\> verb	**\<init\> NomCPr + \<init\>less verb**
*Siita baya.paD.i.veesindi	*Siita sutti.koTT.i.pooindi
Sita fear.fell.perf.threw	Sita hammer.hit.perf.went
Intended: 'Sita got afraid'	Intended: 'Sita talked boringly'

A comparison of nominal and verbal complex predicate formation in Telugu is given in (16).

(16)

Nominal Complex Predication	**Verbal Complex Predication**
a. No underassociation	a. Underassociation
b. No inceptual meanings	b. Inceptual meanings
c. Less compositional meaning (partly from N, partly from V)	c. More compositional meaning ('skeletal' light verb)
d. Nominal is without any wrapping.	d. Heavy V has perfective wrapping

Conclusion and perspectives

This detailed analysis of complex predicates of all types, verbal and nominal, in Telugu, shows that underlying their superficial differences and display of variety, they can be fruitfully analyzed in a lexical decompositional approach like First Phase Syntax in a unified manner, which along the way reveals the syntactic process of their composition and the constraints on their formation. This is of interest to computational linguists working on languages that heavily employ complex predicates in designing and developing solutions for predicate and argument structure and function in linguistic processors. The data presented here is an initial exploration of the approach towards a lexical semantic implementation of complex predicates together with the constraints on the composition of their argument structure and meaning.

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