Resultative Predicate and Argument Structure: 
A Minimalist Approach

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Phonetic symbols¹

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¹These symbols are borrowed from: Pullum & Laduslaw (1996)
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Vowels
/a/ short mid unrounded vowel
/i/ short high front unrounded vowel
/u/ short high back rounded vowel
/a:/ long mid unrounded vowel
/i:/ long high front unrounded vowel
/u:/ long high back rounded vowel

**Abbreviations**

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الملخص

يهدف هذا البحث إلى دراسة الخصائص النحوية والدلالية للتمييز وذلك في اللغتين العربية الفصحى والإنجليزية. كما يلقي هذا البحث الضوء على أوجه الاختلاف بين الأساليب المشتركة بين كل اللغات العالمية والاختلافات السطحية (التي تتفرد بها كل لغة) للغة العربية الفصحى. من الأساليب المشتركة بين اللغتين شرط التأثير وشرط المفعول به. بينما تركز الاختلافات السطحية على الاختلافات الظاهرة بين اللغتين من خلال مبحث/منظور الخصائص النحوية وإدراك التمييز. الأطار النظري لهذا البحث هو نظريتا المدخل التجريدي ونظرية الأساليب المشتركة بين كل اللغات العالمية والاختلافات السطحية لتشومسكي.
Resultative Predicates and Argument Structure: A Minimalist Approach

Abstract

This paper investigates the semantic and the syntactic behavior of resultative predicates (RPs) in Classical Arabic (CA) and English. It highlights the differences between the universal properties of RPs (principles) and the language particular properties (parameters). The
universal properties of RPs (principles) include Affectedness Condition and Direct Object Restriction. The parameters focus on the surface differences between English and CA with respect to the syntactic behavior and realization of RPs. The theoretical framework used here is Chomsky’s *Principles and Parameters* and the *Minimalist Approach*.

**Key Words**: resultative predicate, argument structure, transformation, gemination

### 0. Introduction

This paper investigates the syntax and argument structure of resultative predicates (RPs) in both English and Classical Arabic (CA). RPs in English are exemplified by the underlined segments in the following examples:

(1) a. He hammered the metal **flat**. Transitive RP (Wechsler, 2001, p.1, 1)
b. He ran his Nikes **threadbare**. Unergative RP (Boas, 2000, p.1, 1)
c. The river froze **solid**. Unaccusative RP (L&R, 1995, p.39, 19a)

Resultative predicates are defined in the literature as secondary predicates which indicate the change of state or location of the affected internal argument as a result of the action of the matrix verb (Simpson 1983; Carrier & Randall 1992; Levin & Rappaport 1995; Boas 2000; among others).

The RP ‘**flat**’ in (1 a) is predicated of the underlying object of the transitive verb ‘**hammer**’. In (1 b), the RP ‘**threadbare**’ is predicated of the postverbal NP of the unergative/intransitive verb ‘**run**’. In (1 c), the RP ‘**solid**’ is predicated of the surface subj of the unaccusative/middle verb ‘**froze**’.

RPs in CA form a subtype of ‘**tamyiiz**’ as illustrated by the underlined segments in the following examples:

(2) a. faggar-na ʕal-arḍ-a ʕyu:n-a-n. exploded-we the-land-acc springs-acc-nun

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1 Ibn Hisham defines tamiiz as follows: it is a noun, indefinite, non-derived, adjunct and always carries the accusative case.

2 Nunnation is a property of non-verbal predicates. It is always associated with indefinites. It is a diagnostic of secondary predicates as illustrated in the following example:
‘We exploded the land into springs.’ (Ibn Hisham, p.281)

carved-we the-mountains-acc homes-acc-nun
‘We carved the mountains into homes.’

c. tajammada ?al-nahr-u Qalj-a-n
got frozen the-river-nom ice-acc-nun
‘The river froze into ice.’

The RP ‘‘uyu:n’’ is predicated of the surface object ‘‘al-ard’’ in (2a). The RP ‘‘buyu:t’’ in (2b) is predicated of the direct object ‘‘al-jiba:l’’. The sentence in (2a) is derived from the sentence in (3) below.

(3) faggar-na ‘uyu:n-a ?al-ard-i
exploded-we springs-acc the-land-gen
‘We exploded the land into springs’ (Ibn Hisham, p.281)

According to Ibn Hisham, The RP ‘‘uyu:n’’ in (2a) originates as the direct object of the verb in (3), according to Ibn Hisham. A rightward movement moves the direct object in (3) to become an RP in (2a) above and the genitive complement ‘‘al-ard’’ in (3) assumes the role of the surface object in (2a).

In (2c), we get a resultative reading in which the state of ice results from freezing.

The paper is organized as follows: section 1 addresses Simpson’s Affectedness Condition (1983). Section 2 analyzes Hoekstra’s Small Clause analysis of RPs (1988). Section 3 investigates the argumenthood of RPs (Carrier & Randall (1992)). Section 4 explores the Direct Object Restriction (DOR) (Levin & Rappaport (1995)). Section 5 investigates the syntax and semantics of RP in Classical Arabic. Section 6 presents a unified analysis of RPs. Section 7 concludes.

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1 All the Classical Arabic examples which are not cited, I consulted Prof. Amira Youssef with respect to all the examples that are drawn from sources.
1. Simpson`s Affectedness Condition

This section surveys Simpson`s arguments with respect to the Affectedness Condition (AC). She argues that the external argument of the RP must be affected by the verb.

Simpson (1983) argues that the RP must be licensed by a direct object which is directly affected by the action of the verb as illustrated by the following contrast:

(4) a. I shot him dead. (Simpson, 1983, p.147, 27a)
   b.*I shot at him dead.

According to Simpson (1983), the resultative attribute can be AP, NP or PP (transitive preposition) or PP (intransitive preposition) as illustrated by the following examples respectively:

(5) a. I painted the car yellow. (AP)
   b. I painted the car a pale shade of yellow. (NP)
   c. I cooked the meat toa cinder. (Transitive preposition)
   d. The box knocked John out. (Intransitive Preposition) (Simpson, 1983, p.143, 1-4)

The most common category of RP in English is the AP. In contrast, the RP in Arabic must be a noun phrase (NP) as illustrated below:

(6) a.?arda:-hu⁵ qaṭi:l-a-n.
   shot-he-him murdered person-acc-nun
   ‘He shot him dead.’

   carved-we the-mountains-acc homes-acc-nun
   ‘We carved the mountains into homes.’

⁵ The subject (he) is null category.
The observation that the category of the RP must be an NP in CA accounts for another fact, namely, that the RP may originate as an argument of the main verb as in (5) and (6) above.

Adopting the *lexical-functional grammar approach*, Simpson posits that the main verb along with the resultative attribute forms a complex verb. In other words, there is a lexical rule that is responsible for creating a complex verb that consists of the main verb and the resultative attribute.

Arabic exhibits *the complex verb approach* adopted by Simpson in a unique way which can be illustrated by the following paradigm:

(7) a. Ɂiṣfarra Ɂal-walad-u wajh-a-n.
   become pale the-boy-nom face-acc-nun
   ‘The boy’s face became pale.’

b. Ɂiṣfarra wajh-u Ɂal-walad-i.
   became pale face-nom the-boy-gen
   ‘The boy’s face became pale’.

The geminate (r) in the verb ‘Ɂiṣfarra’ in (7) gives the resultative meaning ‘as a result of something, the boy’s face became pale’. Both the root verb and the RP morpheme (the geminated (r)) form a complex verb. In English, we have two separate categories: the verb and the resultative attribute.

Simpson indicates that the resultative attribute must be predicated of the underlying object/thematic object. Therefore, the RP may occur after an active verb (8a) or passive verb (8b).

(8) a. I painted the car yellow.
   b. The car was painted yellow.

She argues that the verb must affect the object. That is the reason why verbs of contact (e.g. I shot him dead) and change of state verbs (the river froze solid) form resultative constructions (RC) freely. The contrast between (9a) and (9b) shows that the affected direct object (9a) allows resultative reading while the non-affected object (9b) does not allow the resultative reading.

(9) a. I shot him dead.
   b. *I shot at him dead.
Perception verbs such as (see, know…etc.) cannot license RPs because their direct object is not affected by the verb as signified by the following contrast.

(10) a.*She saw the hero into stone. (Simpson,1983, p.146, 24) 
b. She stared him down.

The *Affectedness Condition* (AC) is crucial in licensing RPs. The AC simply requires the postverbal NP to be affected by the action of the verb. This signifies that not any direct object may function as the external argument of the RP.

This *affectedness condition* (AC) is operative in CA as illustrated by the following example:

(11) tajammada Ɂal-nahr-u Ɵalj-a-n. 
froze the-river-nom ice-acc-nun 
‘The river froze into ice.’

In my opinion, the word ‘Ɂal-nahr: the river’ in (11) serves two grammatical functions. It functions as the external argument of the RP ‘Ɵalj: ice’. It also serves as the internal argument of the unaccusative verb ‘tajammada: froze’ as illustrated by the following example:

(12) jammadat Ɂal-riyaːh-u Ɂal-nahr-a Ɵalj-a-n. 
froze the-wind-nom the-river-acc ice-acc-nun 
‘The wind froze the river into ice.’

*Causation* in (12) is part of the morphology of the verb whose object ‘Ɂal-nahr:the river’ is the external argument of RP ‘Ɵalj: ice’. The sentence in (13) below is ungrammatical because the verb does not include a *geminatemorpheme*.

(13) *jamuda Ɂal-nahr-u Ɵalj-a-n 
froze the-river-nom ice-acc-nun 
‘The river froze into ice.’

Wright (1896) indicates the morphological analysis of the verb ‘tajammada: froze’ in (11). It has three radicals which are ja, ma, and da, the prefix ‘ta’ and the *geminate morpheme* ‘m’. The prefix ‘ta’ has passive and reflexive meaning. The geminate morpheme has causative meaning.
To summarize, there is a correlation between gemination and the RP in CA. The *geminatemorpheme* in CA creates a direct object, which is affected by the verb. This affected object functions as the external argument of the RP. In (12), the river is an internal argument and an affected object. The presence of the RP requires an affected internal argument. This is achieved in CA via verb morphology (*gemination*), which creates an internal argument that functions as the external argument of the RP.

2. RPs as Small Clauses

Hoekstra (1988) assumes a *Small Clause* (SC) analysis for RPs in which a postverbal NP and the RP form one syntactic unit, which he terms *Small Clause*.

Hoekstra (1988) assumes that the postverbal NP ‘*himself, the soap, the door*’ in (14) below along with the RP ‘*sick, out of his eyes, green*’ forms a Small Clause (SC) as illustrated in the following examples:

(14)   a. He laughed [SC himself sick].
      b. He washed [SC the soap out of his eyes].
      c. He painted [SC the door green]. (Hoekstra, 1988, PP.115-117)

Hoekstra assumes that the verb within non-resultative constructions (15) does not license an SC because the postverbal NP is not part of the theta grid of the main predicate. The verb ‘laugh’ in (14a) is unergative verb. It does not license an internal argument as in (15a). The verb ‘wash’ is a transitive verb but the postverbal NP ‘the soap’ is not semantically selected (s-selected) by the verb as in (15b).

(15)   a. *He laughed himself.
      b. *He washed the soap.

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1 Gemination is defined as doubling the consonant, according to Wright (1896). It creates an extra argument within the argument structure of the verb as illustrated in the following paradigm:

   i. xaraja  ?al-walad-u  
      went the-boy-nom
      The boy went

   ii. xarraj  ?al-rajul-u  ?al-walad-a
       made went the-man-nom the-boy-acc
       The man made the boy went

7 *Theta grid* is defined as the numbers of the arguments which are required by the verb to give a complete meaning.
Hoekstra assumes that the transitive verb ‘paint’ licenses an SC whose subject is the door and whose predicate is AP ‘green’ despite the fact that the verb ‘paint’ obligatorily s-selects the postverbal NP ‘the door’ as in (16).

(16) He painted the door.

Accordingly, he assumes that (14c) above will have the corresponding tree in (17) below:

(17)

Hoekstra indicates that the transitive verb ‘paint’ licenses the SC, as the transitive verb can appear as intransitive verb as in (18). In other words, the direct object ‘the door’ in (16) can be implicit argument as in (18). Based on this, the verb can form SC, according to Hoekstra.

(18) He painted.

His SC analysis, however, fails to account for the following examples:

(19)a. He blushed red.
   b. The river froze solid.

The resultative predicates ‘red’ and ‘solid’ in (19) cannot form an SC due to the absence of a postverbal NP.

Another drawback in Hoekstra’s analysis is that he did not tackle unaccusative predicates such as the verb ‘froze’ in (19b) above. He only dealt with unergative predicates ‘laugh’ and transitive verb ‘paint’.
The researcher rejects Hoekstra`s assumption on the ground that it violates the ThetaCriterion (Chomsky, 1981) as in (14c) repeated below as (20).

(20) He painted the door green.

The NP ‘thedoör’ serves as the internal complement of the verb ‘paint’ and the external argument of the RP ‘green’.

In conclusion, Hoekstra`s SC hypothesis fails to capture the behavior of RPs in intransitive constructions (19a) and unaccusative constructions (19b). In addition, it violates the ThetaCriterion (14c).

In section (6), I argue that Hoekstra`s SC analysis does not provide a comprehensive analysis that captures all the characteristics of RPs in linguistic theory. Through the VP Split Analysis, I provide a unified analysis that captures the facts of both English and CA.

3. RPs as arguments

In contrast to Hoekstra`s SC analysis, Carrier & Randall (hereafter C&R) (1992) assume that the RP is an argument of the verb. Therefore, they propose a ternary analysis in which both the postverbal NP and the RP are sisters with the main verb. The examples in (21) will have the corresponding tree in (22).

(21) a. The gardener watered the tulips flat. Transitive Resultative
b. The jogger ran himself sick. Intransitive Resultative
   (C&R, 1992, p. 173)

(22)

The ternary tree in (22) indiscriminately applies to both transitive and intransitive verbs. Both the direct object ‘the tulips’ in (21a) and the fake reflexive ‘himself’ (Simpson, 1983) in (21b) function as the external arguments of the RPs ‘flat’ and ‘sick’ respectively.

However, the ternary branching analysis violates the ThetaCriterion. The direct object ‘the tulips’ in (21) carries two thematic roles: the internal argument of the main predicate ‘water’ and the external argument of the
RP ‘flat’. In section (6) below, I propose a VP Split Analysis that captures Hoekstra’s SC analysis and C&R’s ternary analysis.

In section (6), I argue that C&R analysis does not provide a comprehensive analysis that captures all the characteristics of RPs in linguistic theory. Through the VP Split Analysis, I provide a unified analysis that captures the facts of both English and CA.

4. Unaccusativity and RPs

Levin & Rappaport (1995) use the Unaccusativity Hypothesis to corroborate Simpson’s Affectedness Condition. An unaccusative predicate takes one argument only which originates as the complement of the verb.

Levin & Rappaport (1995), following Simpson (1983), argue that RP must be predicated of the direct object of the main verb. This generalization is called the Direct Object Restriction (DOR). DOR is applied to transitive verbs as in (23). The RP ‘flat’ is predicated of the direct object ‘themetal’ of the transitive verb ‘hammered’ in (23).

(23) He hammered the metal flat.

The RP ‘solid’ in (24a) is predicated of the surface subject ‘the river’. This is a surface violation for DOR. However, the example is grammatical because the surface subject ‘the river’ originates as the direct object of the unaccusative verb ‘froze’ in (24b) which moves to the subject position to satisfy the Extended Projection Principle (EPP) in (24a).

(24) a. The river froze solid.
   b. froze the river solid.

L&R argue that the DOR applies also to unergative verbs despite the fact that the latter do not have a direct object as in (25a) below. An RP cannot be predicated of the subject as corroborated by the ungrammaticality of (25b). In (25c), the RP ‘hoarse’ takes the fake reflexive ‘himself’ as its external argument.

(25) a. He shouted.
   b.*He shouted hoarse.
   c. He shouted himself hoarse.

To summarize, both unaccusative and unergative predicates are one-place predicates. Yet, both can license a RP without violating the DOR. The
former has its argument as an internal one, satisfying the DOR and the latter creates the fake reflexive to satisfy the DOR.

5. RPs in Classical Arabic

This section investigates the syntax and semantics of RPs in CA. Section 5.1 surveys the syntactic constructions that host RPs. Section 5.2 investigates the two properties that characterize RPs in CA: gemination and rightward movement transformation.

5.1 The syntactic distribution of RPs in CA

The syntax of CA exhibits three distinct realizations of RPs:

(26) \(V+S+O+RP\) (Transitive RP)

a. nah\(\hat{a}t\)-na al- jiba:l-a buyu:t- a- n.
carved- we the- mountains-acc homes-acc-nun
‘We carved the mountains into homes.’

b. \(?\)arda:-hu qati:l-a-n.
shot-he- him murdered person-acc-nun
‘He shot him dead.’

(27) \(V+S+RP\) (Unaccusative RP)

a. tajamm\(\hat{a}d\)a al-nahr-u alj-a-n
became frozen the- river-nom ice-acc-nun
‘The river froze into ice.’

b. takassar al-zuja:j-uqita\(\hat{a}\)-a-n
got broken the- glass-nom pieces-acc-nun
‘The glass got broken into pieces.’

(28) \(V+S+RP\) (Inherent RP: gemination)

\(?\)ihmarra al-walad-u wajh-a-n
blushed the- boy-nom face-acc-nun
‘The boy’s face blushed red.’

I argue that these three distinct types observe the universal properties of RPs attested so far, namely, the DOR and the argumenthood of the RP. The syntax of CA provides independent evidence of the argumenthood of the RP.
5.1.1 The DOR and Transitive Verbs

The following paradigm exhibits an explicit pattern whereby the underlined RPs have the direct objects of the verb as their external arguments:

(29) a. nahat-na ʔal- jiba:l-a  buyuː-t a- n.
carved- we the- mountains-acc homes-acc-nun
‘We carved the mountains into homes.’

b. kassart-u ʔal-zaːj-a  qitaːr-a-n
broke- I the-glass-acc pieces-acc-nun
‘I broke the glass into pieces.’

c. ʔardaː-hu  qatiːr-a-n.
shot-he- him murdered person –acc-nun
‘He shot him dead.’

5.1.2 The DOR and Unaccusative Verbs

The unaccusative predicate in (30) licenses RP:

(30)a. tajammada ʔal-nahr-u  ʕalj-a-n
got frozen the- river-nom ice-acc-nun
‘The river froze into ice.’

b. tafaqqaʔa ʔal-rommaːn-u  ʕaːsir -a-n
got squeezed the-pomegranate-nom juice-acc-nun
‘The pomegranate was squeezed into juice.’

The underlined RPs in (30) above are predicated of the surface subjects ‘ʔal-nahr: the river’ and ‘ʔal-rommaːn: the pomegranate’, respectively, which carry the normative case. These surface subjects originate as the direct objects of the verbs as verified by the corresponding sentences:

(31)a. jammadat ʔal-riyaː-h -u  ʔal-nahr-a  ʕalj-a-n
froze the- wind-nom the –river-acc ice-acc-nun
‘The wind froze the river into ice.

b. faqaʔa ʔal-rajul-u  ʔal-rommaːn-a  ʕaːsir-a-n
squeezed the-man-nom the -pomegranate-acc juice-acc-nun
‘The man squeezed the pomegranate into juice.’

With unaccusative verbs in CA, RPs are predicated of surface subjects which carry the nominative case. These subjects, however, originate as
internal complements. As such, they can assume the role of the external arguments of RPs.

5.1.3 The DOR and Inherent RPs

In CA, the RP does not have to be realized as a separate constituent. The following example demonstrates that the RP originates as a geminate morpheme of the main verb:

(32) Ɂi Ɂal-walad-u wajh-a-n
blushed the- boy-nom face-acc-nun
‘The boy’s face blushed red.’

The RP ‘red’ in English is realized in CA as a geminate of the 3rd radical (r) in the verb ‘Ɂiḥmarra: caused to be red’. This means that the main verb has two morphemes in addition to the base form, the causative morpheme and the RP morpheme. Thus, ‘Ɂiḥmarra’ reads as ‘something that caused the boy’s face to be red’. The following tree represents the sentence in (32):

(33)

The geminate (causative) morpheme also is used in unaccusative verbs as well. This inherent property of RPs in CA has two significant implications for linguistic theory. Firstly, it corroborates Randall’s (2010) claim that the RP originates as an argument of the verb. As a minor predicate, the RP is semantically linked to the main verb to the extent that it originates as one of its morphemes. Secondly, RPs in CA always show up as NPs.
5.2 Gemination and transformation in RCs

Some RPs originate as arguments and undergo rightward movement as represented by the following pair:

(34)a. faggar-na ‘uyu:n-a ?al-arḍ-i
exploded-we springs- acc the-land-gen
‘We exploded the land into springs.’

exploded we the-land-acc springs- acc- nun
‘We exploded the land into springs.’

What is interesting is that the inherent RP discussed in the previous section triggers the same rightward movement as shown below:

(35)a. ?ihmarra wajh-u ?al-walad-i
blushed face-nom the- boy-gen
‘The boy`s face blushed red.’

b. ?ihmarra ?al-walad-u wajh-a-n
blushed the- boy-nom face-acc-nun
‘The boy`s face blushed red.’

Unlike (34b), where the RP ‘‘uyu:n: springs’ undergoes movement, it is the external argument ‘wajh: face’ which undergoes the movement. In both (34b) and (35b) the genitive complements ‘?al-arḍ: land’ and ‘?al-walad: the boy’ assume the surface position of the moved constituent.

To recap, both gemination (causation) and the rightward movement transformation partly characterize RPs in CA. These particular language properties (Parameters) corroborate the universal properties (Principles) of RPs, namely, DOR and the argumenthood of the RP.

6. The VP Split Analysis: A Unified Analysis of RPs

The VP Split Analysis first initiated by Larson (1988) was designed to account for ditransitive verbs. Larson’s pioneering work which is now termed the VP split analysis extended to account for all verbs that take more than one complement. The essence behind the VP split analysis is the presence of a higher light (v) which hosts the extra morphemes that affect the argument structure of the verb. In contrast, the lower (V) hosts the basic form root of the verb. The VP split
analysis can elegantly capture the syntactic and semantic behavior of RPs in both English and CA.

The VP split analysis provides a unified analysis for all three types of RC in English. The light (v) hosts the null causative affix, which gives RC the meaning of causation (i.e. he hammered the metal. Hammering metal caused it to be flat). VP split analysis works for transitive, unergative and unaccusative RC as in (a, b, c) respectively. The light (v) has a strong feature (null causative affix) which triggers lexical verb from big (V) to light (v).

(36)  a. He hammered the metal flat.

```
TP
  spec
  T'
    T
      spec
      he
      v
      null causative affix
      spec
      the metal
      v
      hammer
      VP
      v'
      spec
      the metal
      v
      hammer
      RP
      flat
```

b. He laughed himself sick.
c. The river froze solid.

The VP split analysis provides a unified structure for all types of RC verbs in CA as well. The light (v) hosts all extra morphemes that affect the argument structure of the root verb:

\[
\text{(37) nahat-na ?al-jiba:l-a buyu:t a-n.}
\]

carved- we the-mountains-acc homes-acc-nun

‘We carved the mountains into homes.’
The causative morpheme triggers the raising of the verb root.

To conclude, The VP split analysis provides a unified analysis that captures the syntactic, semantic and morphological properties of RPs in both English and CA.

7. Conclusion

This paper provides evidence that RPs in CA above the two universal properties are observed by their counterparts in English. These are the DOR and the argumenthood of the RP. The abstract causative morpheme under the light verb in English is morphologically represented by the geminate causative morpheme in CA. The syntax of CA presents clear-cut evidence concerning the argumenthood of the RP. The RP can originate as an argument of the theta grid of the main verb, which, in turn, becomes an RP via rightward movement. In addition, inherent RPs provide independent evidence of the strict semantic link between the verb and the RP it licenses.

As for the DOR, all RPs in CA must take an internal complement of the main verb as their external argument.
Reference


Media.


