A semantic map of secondary predication*

Annemarie Verkerk

Radboud University Nijmegen

1. Introduction

Much has been written on the theoretical status of resultatives. However, comparative cross-linguistic work on resultatives has not been carried out, nor has there been much work on the encoding of resultatives in relation to the encoding of depictives and manner predication, two other types of secondary predication. This paper considers secondary predication from a cross-linguistic perspective, by discussing the results of a typological investigation carried out by Verkerk (2009). Based on the findings of this investigation, I propose a semantic map which accounts for the various types of secondary predication found in languages of the world.

2. Secondary predication

This paper focuses on three different types of secondary predication, as illustrated in (1).

(1) *Types of secondary predication*
     Manner predications: Jake walked **slowly**
     Depictives: John ate his meat **raw**
     Resultatives: Peter painted the fence **black**

As has been noted by several researchers (e.g. Schultze-Berndt & Himmelmann 2004: 60–61, 65ff, Loeb-Diehl 2005: 218, van der Auwera & Malchukov 2005: 411), these constructions belong to the same semantic space or conceptual domain. They share the property of containing two predicative constituents, one indicating some kind of action or event, i.e. *ate*, *walk*, or *paint*, and one expressing a state or a property, i.e. *slow*, *raw*, or *black*.

  Although the constructions in (1) seem to occupy the same semantic space, there are differences between them. It is to these differences that I turn now.

(2) *Manner predications*
    a.   Harry worked **efficiently**
    b.   Susie left the room **angrily**

Manner predications, such as *efficiently* or *angrily* in (2), modify the event which is expressed as the main predicate, such as *work* or *leave*. They indicate the manner in which an action is performed, rather than ascribing some property to one of the participants in the event. Thus, (2a) implies that Harry's work was done efficiently, not that Harry himself was efficient. This makes manner predications different from depictives; examples of the latter are given in (3).

(3) *Depictives*
    a.   Mary drinks her coffee **black**
    b.   Carla went to work **drunk**

Depictives indicate the state in which one of the (core) participants of the main event finds himself, such as *black* or *drunk*, while he is doing something else, such as *drinking* or *going*. The participant of which the depictive is predicated is called the 'controller' in the literature; this can be either the object, as in (3a), or the subject, as in (3b). The state expressed by the depictive is necessarily simultaneous with the action expressed by the main predicate. For example, (3b) expresses the fact that Carla was drunk at the same moment as she left for work. Depictives differ in this respect from resultatives, some examples of which are given in (4).

(4) *Resultatives*
    a.   Sam shot his father **dead**
    b.   The waiter wiped the table **clean**

Resultatives also express some kind of state in which a participant finds himself, such as *dead* or *clean*, but in this case the secondary predicate is a consequence or result of the event expressed by the main predicate, such as *shoot* or *wipe*. The two predicates are not true at the same time (or time interval), as is the case for depictives. Rather, resultatives encode an eventuality, state or property which is caused by the main event.

    The correspondences and similarities between the three different types of secondary predication are summarized in (5).

(5)   *Features involved in secondary predication*

	Participant-oriented		Event-oriented	Simultaneous with main event
	Subject-oriented	Object-oriented		
Manner predications	No	No	Yes	Yes
Depictives	Yes	Yes	No	Yes
Resultatives	Marginally	Yes	No	No

Depictives and resultatives can be considered to be participant-oriented. This sets them apart from manner predications, which are clearly event-oriented, since they are predicated of events rather than participants. On the other hand, depictives and manner predications both occur simultaneously with the main event, in contrast to resultatives, which are posterior to the main event. These two differences, or 'semantic parameters', are well-known from the literature.

There is an additional semantic parameter which can be gleaned from (5), however. Resultatives and manner predications refer to a different participant than that introduced as the subject in the main predicate. Manner predications cannot refer to the subject introduced in the main predicate by virtue of the fact that they refer to the event encoded by the primary clause as a whole. In (2a), for example, we see that the manner predication *efficiently* is not predicated of *Harry*, the subject introduced in the primary clause *Harry worked*, but of the clause as a whole. Resultatives, too, cannot refer to the subject of the primary predicate, since they always refer to the object of a transitive sentence. This can be observed in (4), where the objects of the primary predicates *Sam shot his father* and *the waiter wiped the table* wind up *dead* and *clean* as a result of *Sam*'s and *the waiter*'s actions.

As can be seen in (5), however, subject-oriented resultatives are 'marginal'. There seem to be some cases in which resultatives are subject-oriented (i.e. refer to or are controlled by the subject of the primary predicate). Some examples are given in (6).

(6)   *Subject-oriented resultatives*
   a.   The wise men followed the star **out of Bethlehem**   (Wechsler 1997:313)
   b.   The sailors rode the breeze **clear of the rocks**   (ibid.)
   c.   He followed Lassie **free of his captors**   (ibid.)

Examples such as those in (6) are typically cited as instances of subject-oriented resultatives with transitive verbs. Of course, there are also many cases where the controller is a syntactic subject with a non-transitive verb, such as those in (7).

(7)   *More subject-oriented resultatives*
   a.   Iris shouted herself **hoarse**
   b.   The river froze **solid**

(7a) has an unergative verb, i.e. *shout*, while (7b) has an unaccusative verb, i.e. *freeze*. However, the controller in (7a) is *herself*, which is in direct object position, rather than *Iris*, while *the river* in (8b) is arguably an underlying object on account of its patient-like qualities. Aside from the examples in (6), then, there is no evidence that resultatives can have a subject-oriented reading. However, notice that the semantics of the events in (6) do not seem as agent-oriented as those of the transitive resultatives in (4). In addition, these examples belong to a specific subtype which incorporates a prepositional phrase with *of*. In my sample I have found examples of resultatives with unergative verbs of the kind in (7a), but none of the kind in (6). The only example that comes close to the latter type is given in (8).

(8) *Thai (Tai-Kadai)*
Ka:nda: khì: mâ: nɨ:y.
Kanda   ride horse be.tired
(i)   'Kanda rode the horse (as the result) she got tired.'
(ii) 'Kanda rode the horse (as the result) the horse got tired.'

Sudmuk (2005: 65)

In (8) there is ambiguity as to whether *Kanda*, the subject of the sentence, has become tired as a result of riding the horse, or whether *mâ:* 'horse', the object of the sentence, has become tired as a result of being ridden by Kanda. The first reading seems to correspond to (7a), i.e. 'Kanda horse-rode herself tired', even though there is no overt reflexive pronoun; thus, it does not constitute a true subject-oriented resultative, as has been claimed for the examples in (6). This type of sentence is found in several languages of South-East Asia, and its semantics require a more detailed investigation than is possible here. Since (6) and (8) constitute the only two types of examples found in the sample, I consider the use of subject or agent-oriented resultatives in the languages of the world to be marginal. Hence, they do not seriously undermine the claim that resultatives are typically controlled by the direct object of the primary predicate.

As we have seen, manner predications and resultatives do not refer to the subject participant introduced in the primary predicate. Subject-oriented depictives as in (3b), on the other hand, always refer to the subject that is present in the main event. Languages which mark the difference between subject-oriented depictives on the one hand and manner predications and resultatives on the other, for instance by means of agreement patterns (as in Modern Hebrew; see (15) below), usually extend this strategy to object-oriented depictives; this was the case for the languages in my sample. The same-subject restriction on subject-oriented depictives, which distinguishes depictives from manner predications and resultatives, is the third semantic parameter which languages can use to split up the conceptual space of secondary predication.

3.   A proposal for a semantic map

Having discussed the three parameters according to which languages shape their semantic map of secondary predication, I now consider the hypotheses that follow from these parameters. These are given in (9).

(9)   *Hypotheses*
     With regard to the encoding of secondary predication:
     a.   depictives and resultatives can use the same encoding because they are both participant-oriented;
     b.   depictives and manner predications can use the same encoding because they are both simultaneous with the main event;
     c.   manner predications and resultatives can use the same encoding because their controller is not the subject introduced by the primary predicate (i.e. they are 'non-same-subject').

Theoretically at least, languages can have the same encoding for all three types of secondary predication, or they can encode them in three different ways. Since the hypotheses indicate that each of the three types can interact with another to form groups of two, we need a circular or triangular semantic map to account for all possibilities — such a map is given in (10) below.

The position of the three constructions in the conceptual space is irrelevant, since each type of secondary predication is adjacent to the other two. However, when we incorporate the map in (10) into a larger conceptual space, for instance one which represents other property word constructions (as van der Auwera & Malchukov 2005 have done for depictives), the relative position of each type becomes potentially relevant. This is a topic for further research.

(10)   *A conceptual space of secondary predication*
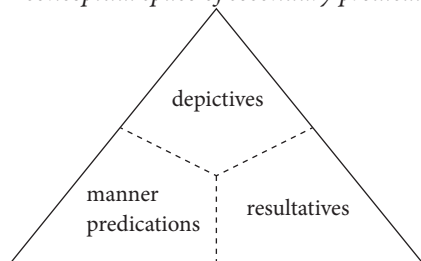
This map should be read as follows. Depictives and resultatives are both participant-oriented, and can cluster together on the right side of the conceptual space; in this case there is a boundary between depictives and resultatives on the one hand, and manner predications on the other. Since both depictives and manner predications occur simultaneously with the main event, they can share an encoding

strategy on the left side of the conceptual space; in this case there is a boundary between depictives and manner predications on the one hand, and resultatives on the other. Finally, manner predications and resultatives are both 'non-same-subject' orientated, and can cluster at the bottom of the conceptual space; in this case there is a boundary between manner predications and resultatives on the one hand, and depictives on the other.

Having established this, the question that must now be addressed is whether the hypotheses in (9) and the map in (10) can be maintained in the face of cross-linguistic data.

4.   Cross-linguistic encoding patterns

Verkerk (2009) discusses the results of a cross-linguistic investigation of the encoding patterns as displayed by the three types of secondary predication described above. Verkerk's sample consisted of 46 languages, and was designed to be as genetically and geographically diverse as possible — which proved to be difficult, since information on these constructions is often hard to find. However, Verkerk managed to include genetically diverse languages from all continents except the Americas, where the lack of suitable descriptions was the most acute. Data was gathered from different sources, including scientific papers, grammars, and (native) informants.

As was noted in Section 3, the three types of secondary predication yield a total of five possible encoding patterns. The first option is for all three types to be encoded in the same way. This is the case in several Germanic and Romance languages. The second option is for all three types to be encoded differently, such that each type has its own strategy. In addition to these two options, there are three ways to form groups of two. First, depictives and manner predications can form a group to the exclusion of resultatives ('resultative-excluding strategies'). Second, depictives and resultatives can form a group to the exclusion of manner predications ('manner-excluding strategies'). Third, manner predications and resultatives can form a group to the exclusion of depictives ('depictive-excluding strategies').

In the remainder of this paper I will be mainly concerned with illustrating these different types of encoding. The table in (11) summarizes the different strategies and the number of languages in the sample that makes use of them.

(11)   *Strategies: total times encountered and per language*

Strategy	DMR	D-M-R	DM	MR	DR	M	D	R
Times encountered	33	8	10	14	5	23	9	16
Per language	30	7	7	7	5	14	7	13

The first column in (11) lists the number of 'all-purpose strategies'. The second column lists the number of strategies which encode all three types differently. The next three columns list resultative-excluding, depictive-excluding and manner-excluding strategies, respectively. The last three columns list the numbers of 'single-use' strategies, i.e. strategies used for manner predications, depictives or resultatives only. The first row in (11) lists the attested number of strategies. The second row lists the number of languages that makes use of each individual strategy. The numbers in this row are lower, given that some languages use two different strategies for the same type. The number of DMR, D-M-R, DM, MR, and DR strategies per language does not add up to 46, since languages may use two or more of these strategies to encode the domain of secondary predication.

The first pattern that I would like to discuss is one where a language uses the same encoding for each of the three types of secondary predication. I call this the 'all-purpose strategy'. 30 of the languages in the sample (54%) use this strategy, which makes it the most frequent encoding pattern. For instance, Lao uses serial verb constructions to encode all three kinds of secondary predication.[1] Examples are provided in (12).

(12)   *Lao (Tai-Kadai, Tai)*
   a.   man2 kin3 paa3 nii4 **vaj2**.
        3SG   eat   fish   DEM   fast
        'He ate this fish fast.'
   b.   man2 kin3 siin4 **dip2**.
        3SG   eat   meat   raw
        'He eats meat raw.'
   c.   Laaw2   ñing2 nok1 **taaj3**.
        3SG.FAM shoot bird die
        'She shot a bird dead.'   Enfield (2007)

(12a–c) contain examples of a manner predication, a depictive and a resultative, respectively. (I will use this order for all examples considered below.) In Lao, secondary predicates form the second verb in a serial verb construction, although some depictives and manner predications may occur in the position of the first verb.

There are many other languages which use serial verb constructions in this way, especially those spoken in West Africa, such as Ewe (Niger-Congo, Kwa), and Oceanic languages, such as Mwotlap (North and Central Vanuatu), Samoan (Polynesian) and Jabêm (Huon Golf). However, the sample also contained other verbal all-purpose strategies, such as the use of preverbs or coverbs in the Australian languages Warlpiri (Pama-Nyungan) and Jaminjung (non-Pama-Nyungan), the 'coordination' of two verbs by the element *de* in Mandarin Chinese (Sino-Tibetan) and the use of gerundial or participial strategies in languages such as Tamil

(Dravidian), Korean (Altaic) and Limbu (Tibeto-Burman, Kiranti). Most all-purpose strategies in the sample are verbal (67%). Of the remaining all-purpose strategies, the majority is adjectival (24%). Some of the languages which employ adjectival all-purpose strategies use an invariable adjective (e.g. Dutch and German), while others use an adjective which agrees with its controller in features such as gender, number and case (e.g. Spanish and Italian). Most of these languages are Indo-European.

The other languages in the sample use strategies that divide the conceptual space of secondary predication into two or three parts. There are 26 languages in the sample which use such 'splitting strategies'. I first consider manner-excluding strategies. An example of a language which uses such a strategy is Icelandic, as is shown in (13).

(13)   *Icelandic (Indo-European, Germanic)*
    a.   Þeir   voru að keyra allt of **hratt**.
            they.MASC.NOM.PL were to drive all too fast.NEUT.ACC.SG
            'They were driving way too fast.'
    b.   Við   kláruðum kjötbollurnar   **kaldar**.
            we.NOM finished   meatballs.DEF.FEM.ACC.PL cold.FEM.ACC.PL
            'We finished the meatballs cold.'
    c.   Járnsmiðurinn barði   málminn   **flatan**.
            blacksmith.DEF pounded metal.DEF.MASC.ACC.SG flat.MASC.ACC.SG
            'The blacksmith pounded the metal flat.'   Whelpton (2006)

Icelandic encodes depictives (13b) and resultatives (13c) by means of adjectives which display agreement in gender, case and number with their NP controller. (13a) shows that manner predications do not show this kind of agreement; these always appear in the neuter, accusative, singular form.

Although depictives and resultatives are both participant-oriented, only 9% of the languages in the sample makes use of a manner-excluding strategy. This includes Swedish and Norwegian, which are closely related to Icelandic, and Greek, another Indo-European language. The only non-Indo-European language in the sample that makes use of a manner-excluding strategy is Mandarin Chinese, which uses verbal compounds for depictives and resultatives, in addition to an all-purpose strategy with *de*. The languages in the sample display a tendency for manner predications to be encoded by 'single-use' strategies, i.e. strategies used for one type of secondary predication only, alongside other strategies which are not manner-excluding (but which are all-purpose or depictive-excluding, for instance). See also the table in (11), which shows that manner predications use 'single-use' strategies most often. This is the case for 9 languages, including English, making this a more common option than the manner-excluding strategy

discussed above. One language, Jabêm (Oceanic, Huon Golf) has no fewer than 4 single-use manner predication strategies, alongside one all-purpose strategy and several depictive-excluding strategies.

A more common 'splitting strategy' is the resultative-excluding encoding pattern. An example of such a language is Hungarian, as is shown in (14).

(14)   *Hungarian (Uralic, Ugric)*
    a. Péter **mérges-en** ment el.
        Peter angry-ADV went away
        'Peter left angrily.'   de Groot (2008)
    b. János **üres-en**   hozta   be a   vázát.
        John empty-ADV brought.3SG in the vase.ACC
        'John brought in the vase empty.'   Marácz (1989)
    c. Mari **piros-ra** festette   a   falat.
        Mary red-SUBL painted.3SG the wall.ACC
        'Mary painted the wall red.'   Marácz (1989)

Hungarian manner predications (14a) and depictives (14b) get adverbial marking with *-en* or one of its allomorphs, while resultatives (14c) have the sublative case marker *-ra* or its allomorph *-re*. Both markers are directional or locative in nature.

Other languages that use a resultative-excluding strategy are Turkana (Nilo-Saharan, Nilotic), Middle Mongolian (Altaic), Aceh (Austronesian, Malayic), Igbo (Niger-Congo, Igboid), Sranan (Creole) and Ewe (Niger-Congo, Kwa). The fact that the sample contains seven genetically diverse languages, which amounts to 12,5% of the sample, suggests that resultative-excluding strategies are fairly common cross-linguistically.

An equally common strategy is the depictive-excluding pattern, which also occurs in 7 languages (12,5%). One language which uses this strategy is Modern Hebrew, as illustrated in (15).

(15)   *Modern Hebrew (Afro-Asiatic, Semitic)*
    a. Hu po'el   **be-hofshiut**.
        3SG work.PRES in-freedom
        'He acts freely.'   Loeb-Diehl (2005)
    b. Efrat xatsta   et   ha-misderon **yexefa**.
        Efrat cross.3S.PAST.FEM ACC DET-hall   barefoot.FEM
        'Efrat crossed the hall barefoot.'   (own data)
    c. Hu cava   et   ha-kir   **be-adom**.
        3SG painted ACC DET-wall in-red
        'He painted the wall red.'   Son (2007)

The data in (15) show that Hebrew encodes manner predications and resultatives in the same way, with the prepositional element *be-* 'in' prefixed to the adjective (15a,c). Depictives, on the other hand, involve an adjective which agrees with its controller in terms of number and gender (15b).

Aside from Modern Hebrew, other languages with a depictive-excluding orientation are Indonesian (Austronesian, Malayic), Jabêm (Oceanic, Huon Golf), Teop (Oceanic, Solomonic), Japanese (Altaic), Ewe (Niger-Congo, Kwa) and French (Indo-European, Romance). This makes the depictive-excluding strategy one of the three most common types of splitting strategies in the sample.

Languages with a three-way split are also equally common in the sample. One such language is Biak, as exemplified in (16).

(16)   *Biak (Austronesian, South Halmahera-West New Guinea)*
    a. I-disen   **pyum**.
        3SG-sing good
        'She sang beautifully.'
    b. I-bur   rum   byedi **rofyor b<y>abo**   kaker.
        3SG-leave house his   since <3SG>young still
        'She left home young.'
    c. P<y>am-i   **fa**   **i-mar**.
        <3SG>shoot-3SG CONS 3SG-dead
        'She shot him dead.'   (own data)

As (16a) shows, manner predications in Biak are formed by adding the uninflected root verb to the sentence. Depictives require the word *fyor* or *rofyor* 'since' and a verb, e.g. *babo* 'young', which is inflected for person and number (16b).[2] Resultatives are also formed by an inflected verb and, in addition, require the consequential marker *fa* (16c).

There are seven languages in the sample with this pattern (12,5%). Apart from Biak, these are Russian (Indo-European, Slavic), Finnish (Uralic, Finnic), Amharic (Afro-Asiatic, Semitic), French (Indo-European, Romance), Yimas (Papuan, Sepik) and Minang Kabau (Austronesian, Malayic). This is a genetically diverse range of languages, suggesting that the 'three-way split' is an important pattern for encoding secondary predication.

Like all-purpose languages, splitting languages can use adjectives to encode one or more types of secondary predication. Such adjectives often receive special marking, for instance by means of case (as in Hungarian resultatives, see (14c)), adpositions (as in Modern Hebrew manner predications and resultatives, see (15a,c)), or adverbial marking (as in Hungarian depictives and manner predications, see (14a,b)). While such markers are often used in splitting languages, it

would seem that that they are never used in all-purpose languages. It is as yet unclear how this difference should be explained.

To sum up, we have seen that each of the five possible encoding patterns in the conceptual space of secondary predication is attested in languages of the world. We have also seen that all-purpose strategies occur more often than any of the other, 'splitting' strategies. The fact that the majority of languages opts for all-purpose encoding suggests that speakers of these languages 'judge' the three strategies to be sufficiently similar. This, and the fact that any two of the three strategies may pattern together in languages, shows that these strategies are situated in the same region of the conceptual space of property word constructions. The crosslinguistic data reported in this paper provide additional empirical support for this view.

5.   Conclusion

This paper has reported on the results of a cross-linguistic investigation into the encoding of three types of secondary predication, viz. depictives, manner predications and resultatives. On the basis of two familiar semantic parameters and one additional parameter, i.e. the same-subject restriction on depictives, a triangular map of secondary predication was proposed. This map predicts a total of five encoding types (all-purpose, three-way split, resultative-excluding, depictive-excluding and manner-excluding), each of which is found in languages of the world. The map of secondary predication proposed in this paper accurately accounts for each of these patterns.

Notes

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1. I am aware of the fact that Schultze-Berndt & Himmelmann (2004: 59) have indicated that depictives are necessarily different from serial verb constructions, and the fact that the term 'serial verb construction' itself is controversial, but see Enfield's (2007) excellent description of these serial verb constructions.

2. Unfortunately I do not have any information on *(ro)fyor* 'since', but it seems to be some kind of verb root or verb root derivative.

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Author's address

Annemarie Verkerk
Radboud University Nijmegen
Department of Linguistics
P.O. Box 9103
6500 HD Nijmegen
The Netherlands

annemarie.verkerk@gmail.com