RESULT XPS AND THE ARGUMENT-ADJUNCT DISTINCTION

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Abstract

In this paper I discuss the English resultative and its status in terms of the argumenthood of the result phrase. By utilizing 8 tests for argumenthood, I will show that the result phrase is an added or derived argument, as discussed in Needham and Toivonen (2011), which, although syntactically optional, acts in most other ways as an argument of the verb.

1 Introduction

In this paper I will discuss the argument status of the result phrase in the English resultative (*flat* in (1), *solid* in (2)) based on eight tests for argumenthood: syntactic obligatoriness, core participants, VP preposing, fixed preposition, prepositional content, pseudocleft, uniqueness/iterativity and VP anaphora. Evaluating the argument status of the result phrase will allow us to determine what the analysis of the phrase should be: *argument*, *adjunct* or *added argument*. The tests can give us insight into how the result phrase behaves both syntactically and semantically, which will allow us to gain insight into how we understand such phrases. I will investigate the resultative using the semantic categorizations laid out in Goldberg and Jackendoff (2004), specifically along the dimensions of property/path and agentive/non-agentive[1].

(1) Kim hammered the metal flat.

(2) The river froze solid.

Before we can discuss the status of the result phrase according to the tests, we must first discuss what is meant by the terms *argument* and *adjunct*. These two terms have been discussed at length in the literature, however, no consensus has been reached as to the exact formal definition. For example, given the textbook definitions below, we could define arguments[2] as either the frequently obligatory elements (3), the elements which are closely associated with the main predicate (4), the minimally involved elements (5), the elements which denote the properties of or are involved in the predicate (6), the elements which participate in the predicate relation (7) or the elements which are directly involved in the predicate (8).

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[1]The agentive/non-agentive distinction is termed causative/non-causative in Goldberg and Jackendoff (2004). The terms agentive/non-agentive were chosen here because all resultatives are causative in nature.

[2]The verb's *arguments* can be further sub-divided into its *subject* and its *complements*. The textbook definitions given in (3)–(8), describe both *arguments* and *complements*, and it is important to note that both of these concepts fall under the umbrella term *arguments* in this paper.

(3) "Adjuncts are always optional, whereas complements are frequently obligatory. The difference between them is that a complement is a phrase which is selected by the head, and therefore has an especially close relationship with the head; adjuncts, on the other hand, are more like bolt-on extra pieces of information and don't have a particularly close relationship with the head." (Tallerman, 2005, p. 98)

(4) "This distinction between arguments and adjuncts is important, but not always easy to make. The basic difference is that arguments are closely associated with the meaning of the predicate itself, while adjuncts are not." (Kroeger, 2004, p. 10)

(5) "The arguments are the participants minimally involved in the activity or state expressed by the predicate." (Haegeman, 1994, p. 44)

(6) "Verbs and adjectives, and some nouns, express properties of things [...] or relationships between things [...]. The arguments are the phrases that denote the things that have such properties or are involved in such relationships." (Culicover, 1997, p. 16)

(7) "The entities (which can be abstract) participating in the [predicate] relation are called arguments." (Carnie, 2007, p. 51)

(8) "From a semantic perspective, subjects and complements share in common the fact that they generally represent entities directly involved in the particular action or event described by the predicate: to use the relevant semantic terminology, we can say that subjects and complements are arguments of the predicate with which they are associated. [...] An expression which serves to provide (optional) additional information about the time or place (or manner, or purpose etc.) of an activity or event is said to serve as an adjunct." (Radford, 2004, pp. 3–4)

According to these definitions, adjuncts could be defined as the optional elements (3), the elements which are not closely associated with the main predicate (4), the elements added to a predicate (5), the elements which are not involved in the predicate (6) and (8), or the elements which do not participate in the predicate relation (7). The basic definition of adjuncts would then be "the things which are not arguments," but this is not without its issues.

The distinction between arguments and adjunct has been seen as tenuous over the years, and many options have be put forward to deal with this difficult concept, including completely discarding the distinction (Vater, 1978; Przepirkowski, 1999), changing where the lines between the two concepts occur (Borgonovo and Neeleman, 2000; Zaenen and Crouch, 2009), and proposing a third category for phrases (Kay, 2005; Needham and Toivonen, 2011). This paper proposes to utilize the third method, as it maintains the differences which are noted by speakers of

the language, while also allowing for some flexibility within the categorization of phrases.

Researchers have noted that another category of phrase exists, one that is not exactly an argument, but also not exactly an adjunct (Jackendoff, 2002; Zaenen and Crouch, 2009; Needham and Toivonen, 2011). This category, referred to as *derived arguments* by Needham and Toivonen (2011) (*added arguments* by Kay (2005)), is usually either optional or not normally or necessarily associated with the predicate, but nonetheless behaves like arguments when other syntactic or semantic behaviour is considered. An example of this type of category is optional arguments like *a sandwich* in (9) and *the kitchen* in (10).

(9) Kelly ate a sandwich.

(10) Kim cleaned the kitchen.

The result phrase, as we shall see below, is another phrase which can be considered an added argument, as it is syntactically optional and not core to the meaning of the verbal event, and yet it acts in the same manner as arguments when syntactic behaviour is considered. Previous work on the resultative has generally treated the result phrase as an argument (Simpson, 1983; Carrier and Randall, 1992), but there have been exceptions to that generalization, with some researchers noting that the resultative can exhibit adjunct-like behaviour on occasion (Ernst, 2002; Iwata, 2006; Mateu, 2011). The argument-like behaviour of the result phrase follows from the previous treatments of the resultative including Simpson's (1983) XCOMP addition rule and MacGregor's (2009) template approach.

Examples for this paper have been constructed as well as taken from the web, existing literature on both resultatives and argumenthood tests and the Corpus of Contemporary English (COCA) (Davies, 2008). Additionally, the judgements have come from the previous literature, the authors intuition as well as a pilot questionnaire study involving 7 native speakers of English.

This paper is structured as follows: section 2 will discuss the argumenthood tests, and what behaviour is more argument- or adjunct-like; section 3 will discuss the categorizations of the resultative as laid out in Goldberg and Jackendoff (2004); section 4 will discuss how the result phrase patterns on the argumenthood tests discussed in section 2; and section 5 will present some conclusions and future work.

2 Tests for argumenthood

This section will discuss the eight tests for argumenthood to be utilized in this paper: syntactic obligatoriness, core participants, VP preposing, fixed preposition, prepositional content, pseudocleft, uniqueness/iterativity and VP anaphora. These tests all provide insight into the status of the phrase in question, however, none of them is without its drawbacks and no test can be considered a final ruling on the status of a given phrase.

2.1 Syntactic Obligatoriness

Syntactic obligatoriness, along with the core participants test (see subsection 2.2), is one of the most cited ways to distinguish arguments from adjuncts in syntax textbooks (Dalrymple, 2001; Carnie, 2002; Kroeger, 2004). These two tests form the backbone of the definition of what an argument or an adjunct can be.

The syntactic obligatoriness test states that the arguments of a verb are only those elements which are syntactically required, with optional elements being more likely to be considered adjuncts (Jackendoff, 1990; Dalrymple, 2001; Carnie, 2002; Kroeger, 2004; Needham and Toivonen, 2011; Asudeh and Giorgolo, 2012). Thus, given the example in (11), the sentence is grammatical if *on Tuesday* is removed (12), but becomes ungrammatical if *Sam* is removed (13). In this manner, we can say that *Sam* is an argument and *on Tuesday* is an adjunct.

(11) Kelly prodded Sam on Tuesday.

(12) Kelly prodded Sam.

(13) *Kelly prodded on Tuesday.

This test, however, is not without its issues. Like many of the tests for argumenthood, syntactic obligatoriness can only identify one type of phrase some of the time, and does not directly address the other type of phrase. For this test, if an element is obligatory, then it must be an argument, but arguments can also be optional. So, the reverse of this test cannot be stated decisively: if an element is optional, then it *might* be an adjunct.

2.2 Core Participants (Semantic Selection)

As mentioned above, the core participants test (also known as the semantic selection test) is another test which is used to define in general terms what an argument or adjunct is in works on syntax (Dalrymple, 2001; Koenig et al., 2003; Kroeger, 2004). The test relies on the basic judgement of the speaker as to whether or not something is an argument, and is often used hand-in-hand with the syntactic obligatoriness test (see section 2.1). For this test, the speaker decides what elements of an event are semantically required by, or core to the meaning of, the verb (Dowty, 1982; Levin and Rappaport Hovav, 1995; Boland and Blodgett, 2006; Tutunjian and Boland, 2008; Needham and Toivonen, 2011). For instance, in the event described by (14) the verb *kiss* takes two elements to describe a complete event: an agent (or *kisser*) and a patient (or *kissee*), which are considered arguments. Conversely, the time and location mentioned in (14) are not specifically required by the verb *kiss* to describe a complete event, and thus are considered adjuncts.

(14) Sam kissed Rory on Tuesday in the park.

The test is not sufficient on its own to define what should be considered an argument or adjunct, as it can sometimes be too generous. For example, all events take place at some *time* and in some *place* (Dalrymple, 2001, among others), so one could make the argument that these things are core to the meaning of an event. However, time and location are usually considered to be adjuncts, as they are not specifically tied to a single type of event, making them more general than arguments.

Additionally, even though the core participants test may be difficult to apply, as it relies only on the intuition of the speaker, it is nonetheless an important part of the discussion on how to determine if a given phrase is an argument or an adjunct. Each of the textbook definitions in (3)–(8) use the core participants test (and sometimes the syntactic obligatoriness test) to define what should be considered an argument or an adjunct (see also Goldberg (1995), p. 43; Dalrymple (2001); Needham and Toivonen (2011), section 2; and, Toivonen (2013), p. 3, among others.). Furthermore, each time that a verb is referred to as having x number of arguments, the core participants test has been applied without further use of extensive argument-adjunct tests. Thus, the core participants test utilizes "the most basic intuition behind the argument-adjunct distinction" (Needham and Toivonen, 2011, p. 4). Even though this test is cannot give consistent results for either arguments or adjuncts, it does describe what is done by both researchers and users of the language when asked to determine what the arguments of a verb are.

2.3 VP preposing

The VP preposing test states that an argument must always be moved with a preposed verb, but adjuncts can be left behind (Emonds, 1970; Baltin, 2006; Needham and Toivonen, 2011; Toivonen, 2012). For example, in (15), the argument phrase *a picture* is left behind when the verb is preposed, and the sentence is ungrammatical. While in (16), the adjunct phrase *on Tuesday* is left behind in but the sentence remains grammatical.

(15) *Kylie wanted to draw a picture, and draw she did a picture.

(16) Kelly wanted to run on Tuesday, and run she did on Tuesday.

Thus, the VP preposing test is a good test for determining which elements of a sentence should be considered arguments and adjuncts.

2.4 Fixed preposition

The fixed preposition test posits that argument phrases are more likely to have a fixed preposition, and adjunct phrases are more likely to allow for any number of prepositions to head the phrase (Pollard and Sag, 1987; Wechsler, 1991; Carnie, 2002; Tutunjian and Boland, 2008; Needham and Toivonen, 2011). For instance, in (17) the argument PP must be headed by *on*, while in (18) the adjunct PP can be headed by any of several prepositions.

(17) Kim relies on/*near/*over/*along Kelly.

(18) Kim jogs on/near/over/along the hill.

However, there are notable exceptions to this test, namely locative phrases for verbs like *put*. For instance, in (19), we would expect the locative phrase to be an argument, as it is both a core participant (semantically selected) and syntactically required, passing the two most basic argumenthood diagnostics. However, according to the fixed preposition test, it would less likely be considered an argument, as the preposition is not fixed.

(19) Kelly put the book in/on/beside the box.

In conclusion, this test can aid in correctly identifying arguments, but does not completely define which elements are arguments and which are adjuncts. Although having a fixed preposition is a hallmark of argumenthood, not having one does not mean that the phrase in question is an adjunct.

2.5 Prepositional content

The prepositional content test posits that argument phrases are less likely to utilize the core or basic meaning of the preposition (Pollard and Sag, 1987; Wechsler, 1991; Needham and Toivonen, 2011). For instance, the argument phrase preposition *on* in (20) can be seen as a place holder which does not denote a relationship of being located physically on top of another thing. While the adjunct phrase preposition *on* in (21) does denote being physically on top of something during the verbal action, namely *the sofa*.

(20) Kim turned on the radio.

(21) Kim jumped on the sofa.

However, this test may be problematic, as it can be difficult to discern what the core or basic meaning of a preposition is. For instance, according to the Oxford English Dictionary, the preposition *into* could be defined in many ways, two of which being "in the process of being placed inside of another object" as in (22), and "in the process of being transformed" as in (23) ("into", 2013). However, if only those phrases which have a core or basic meaning for their preposition should be considered arguments, then we would expect *into the box* to be an argument, and *into a butterfly* to be an adjunct, as the location changing meaning of *into* is listed higher in the dictionary entry, and is related to more of the definitions. Additionally, like with the fixed preposition test, there may be issues with locative arguments, like those of the verb *put*, which according to other tests (like the Syntactic Optionality and Core Participants tests) would be considered an argument, but here would be classed as adjuncts.

(22) Kim put the book into the box.

(23) Kelly turned into a butterfly.

In conclusion, this test can aid in correctly identifying arguments, but it does not yield a clear division between arguments and adjuncts. The prepositional content test is only able to state that a lack of content in the preposition means that the phrase is question is likely an argument, but utilizing the semantic content of the preposition does not mean the phrase is an adjunct.

2.6 Pseudocleft

The pseudocleft test posits that adjuncts, but not arguments, can appear after *do* in a VP-focused pseudocleft (Hedberg and DeArmond, 2009; Needham and Toivonen, 2011). For example, in (25) the argument phrase *on Rory* cannot appear after *do*, while the adjunct phrase *at the side of the road* can appear after *do* in (27).

(24) Kim relies on Rory.

(25) *What Kim does on Rory is rely.

(26) Kelly stands at the side of the road.

(27) What Kelly does at the side of the road is stand.

This test is excellent for two reasons: first, it elicits strong intuitions from speakers (Hedberg and DeArmond, 2009, p. 11), allowing for the collection of good judgement data; and second, it demonstrates a clear and definite difference between arguments and adjuncts.

2.7 Uniqueness/Iterativity

The uniqueness/iterativity test posits that argument positions must be filled by one and only one phrase, while adjuncts can be iterated multiple times (Fillmore, 1968; Bresnan, 1982; Pollard and Sag, 1987; Dalrymple, 2001; Zaenen and Crouch, 2009; Needham and Toivonen, 2011). For example, the object argument position cannot be filled by two phrases (*the boy* and *the girl*) (29), but the locative adjunct position in (30) can be filled by multiple phrases (*in the park* and *on the red bench*).

(28) Kelly kissed the boy.

(29) *Kelly kissed the boy the girl.

(30) Kelly kissed the boy in the park on the red bench.

This test can be understood in terms of the principle of Coherence in Lexical Functional Grammar (LFG) (Kaplan and Bresnan, 1982). In LFG, a f(unctional)-structure is coherent if and only if the elements (specifically, argument functions) which are required by the predicate are the only elements found in the f-structure (Kaplan and Bresnan, 1982, pp. 211-212).Since arguments are the elements which are required by the predicate, we can see that these two principles can be combined to demonstrate both this test and the semantic selection/core participants test. According to the Principle of Coherence argument positions can only be filled once, as they are only required once. Thus, the argument positions must be unique and cannot be iterated.

2.8 VP anaphora (Do-So)

The VP-anaphora, or "do-so," test states that argument phrases cannot be added to verb phrase anaphoric "do-so" clauses, while adjuncts can (Lakoff and Ross, 1966; Baker, 1978; Radford, 1988; Hedberg and DeArmond, 2009; Needham and Toivonen, 2011). For example, if we attempt to add *the wall* to the sentential anaphor in (31) the sentence becomes ungrammatical. However, if the added phrase is an adjunct, as in *on Wednesday* in (32), the sentence remains grammatical.

(31) *Cathy kicked the ball and Kelly did so the wall.

(32) Kelly swam on Tuesday and Rory did so on Wednesday.

The do-so test, along with the pseudocleft test, is extremely effective for getting naive judgements from participants (Hedberg and DeArmond, 2009). However, it is not without its detractors, including Miller (1991) as well as Przepirkowski (1999), who dedicates an entire chapter of his thesis to discussion of the test and its benefits and shortcomings, including the nonparallelism of *do so* in the passive as well as other languages.

3 Classes of English Resultatives

The English resultative can be divided into four classes using the semantic criteria laid out in Goldberg and Jackendoff (2004): agentive property (33), non-agentive property (34), agentive path (35) and non-agentive path (36).

(33) Bill watered the tulips flat.

(34) The pond froze solid.

(35) Bill rolled the ball down the hill.

(36) The ball rolled down the hill.

Goldberg and Jackendoff (2004) use these four categories to describe what they call the "resultative family of constructions", a collection of related constructions which fall loosely under the umbrella of the resultative. All of the resultative family members can be interpreted as a main action occurring and a secondary condition coming to be because of that action. However, the addition of the transition to location (or path) resultatives is a departure from the usual set of sentences considered in the resultative literature, adding a layer to the investigation that is useful to consider.

One major element of the definition of the resultative is the requirement that the main predicate causes the secondary predicate to occur. Kratzer (2005) discusses this at length, noting that the causation not only must be there, but must also be direct, with no intervening states occurring between the main event and the result. For example, Kratzer (2005) discusses a German version of the sentence in (37) (but the arguments are still valid in English) and states that if Kelly drinks all the available water earlier in the day, then she cannot be considered to have *drunk the teapot dry*. What matters for the resultative is that the main event, the *drinking* in this instance, directly cause the secondary event. Thus the only way that one can *drink the teapot dry* is to drink all the tea, and thus directly cause the teapot to become empty.

(37) Kelly drank the teapot dry.

All of the classes of the resultative above comply to this restriction: the tulips became flat because Bill watered them; the pond became solid because it froze; and, the ball ended up at the bottom of the hill because it rolled (whether Bill did the rolling, or it just happened to start rolling on its own). In this way, they can all be considered resultatives. However, there are differences between the property and path resultatives, and, as we shall see below, there is a difference between the two categories which is visible in their syntactic behaviour and which may lead us to treat them differently when we devise a complete treatment of all forms of the resultative.

4 The resultative and the argumenthood tests

Three types of test results must be discussed: those which classify the resultative in all forms as an adjunct, those which classify the resultative in all forms as an argument, and those which classify the property and path resultatives differently. The adjunct-type test is the syntactic obligatoriness test. The argument-type tests are the VP preposing, pseudoclefting, and do-so tests. Finally, the group of tests which classify the path and property resultatives differently from each other are the fixed preposition, prepositional content and uniqueness tests.

4.1 Core Participants (Semantic Selection)

Before the other groups of tests can be discussed, we must first discuss the inconsistent results for the core participants test. For this test, the resultative seems to pattern inconsistently overall. We can come up with one verb that entails a change in state or location and one that does not for three of the four categories: agentive property (38) and (39), agentive path (41) and (42), and, non-agentive path (43) and (44) resultatives. Only the non-agentive property resultatives (40) seem to be the exception to this rule.

(38) Kim hammered the metal flat. [AgProp: ADJ]

(39) Sam broke the vase into pieces. [AgProp: ARG]

(40) The river froze solid. [NonAgProp: ARG]

(41) Bill rolled the ball down the hill. [AgPath: ARG]

(42) Bill pushed the ball down the hill. [AgPath: ADJ]

(43) The truck rolled into the garage. [NonAgPath: ARG]

(44) Kelly floated into the lagoon. [NonAgPath: ADJ]

In these examples, the verbs *hammer, push, knead* and *float* do not seem to entail a result state/location, thus marking these result phrases as more adjunct-like. Conversely, the verbs *roll, break* and *freeze* do seem to entail an end state/location, thus marking these result phrases as more argument-like. The only result phrase which seems to pattern consistently is the unaccusative. The reason for this is unclear, but we theorize that it may have to do with the class of unaccusative verbs used in the resultative all being change-of-state verbs, which necessarily encode a change, and would then be considered argument-like. However, we will leave finding the exact nature of this encoded change to future research.

4.2 Syntactic Obligatoriness

The syntactic obligatoriness test classifies the result phrase, in all forms, as an adjunct. The result phrase is optional in all of the types discussed here, and optionality is the hallmark of adjuncts according to this test. Looking at each type individually, we can see that the agentive property (45), non-agentive property (46), agentive path (47) and non-agentive path (48) resultatives all remain grammatical whether or not the result phrase is present.

(45) Kim hammered the metal (flat). [AgProp: ADJ]

(46) The river froze (solid). [NonAgProp: ADJ]

(47) Bill rolled the ball (down the hill). [AgPath: ADJ]

(48) The truck rolled (out of the garage). [NonAgPath: ADJ]

4.3 VP preposing

For the VP preposing test, the resultative patterns with arguments in all its forms: agentive property (49) and (50), non-agentive property (51), agentive path (52) and non-agentive path (53).

(49) *Kim wanted to hammer the metal flat, and hammer the metal she did flat. [AgProp: ARG]

(50) *Kim wanted to break a pot into pieces, and break a pot she did into pieces. [AgProp: ARG]

(51) *The river needed to freeze solid, and freeze it did solid. [NonAgProp: ARG]

(52) *Bill wanted to kick the ball into the net, and kick the ball he did into the net. [AgPath: ARG]

(53) *The truck needed to roll into the garage, and roll it did into the garage. [NonAgPath: ARG]

Overall, this test places the resultative firmly in the argument category, showing the opposite pattern to the syntactic obligatoriness test.

4.4 VP anaphora (Do-So)

For the VP anaphora test, the resultative patterns with arguments in all its forms: agentive property (54) and (55), non-agentive property (56), agentive path (57) and non-agentive path (58).

(54) *Kim wiped the counter clean and Sam did so dry. [AgProp: ARG]

(55) *Kim broke his cup into shards and Sam did so in half. [AgProp: ARG]

(56) *The vase broke into 6 pieces and the pot did so in half. [NonAgProp: ARG]

(57) *Bill pushed a friend into the house and Sammy did so into the garage. [AgPath: ARG]

(58) *The truck rolled into the garage and the bus did so down the street. [NonAgPath: ARG]

Like the VP preposing test, the VP anaphora test shows the opposite pattern to the syntactic obligatoriness test, classifying the result phrase in all four types of resultative as an argument.

4.5 Pseudocleft

For the pseudocleft test, the resultative patterns with arguments in all its forms: agentive property (59) and (60), non-agentive property (61), agentive path (62) and non-agentive path (63).

(59) *What Kim did flat was hammer the metal. [AgProp: ARG]

(60) *What Kim did into pieces was break the vase. [AgProp: ARG]

(61) *What the river did solid was freeze. [NonAgProp: ARG]

(62) *What Bill did into the goal was kick the ball. [AgPath: ARG]

(63) *What the truck did into the garage was roll. [NonAgPath: ARG]

Like the VP preposing and VP anaphora tests, the pseudocleft test classifies the result phrase in all four types of resultative as an argument, demonstrating an opposition to the syntactic obligatoriness test

4.6 Fixed preposition

For the fixed preposition test, the resultative patterns differently for property and path resultatives. For property resultatives (agentive property (64), non-agentive property (65)), the pattern is one of argumenthood. For path resultatives (agentive path (66) and non-agentive path (67)), however, the pattern is more adjunct-like.

(64) Kim kneaded the dough into a ball/*onto a square. [AgProp: ARG]

(65) The vase broke into pieces/to bits/*across pieces. [NonAgProp: ARG]

(66) Bill rolled the ball down the hill/across the road. [AgPath: ADJ]

(67) The truck rolled out of the garage/into the garden. [NonAgPath: ADJ]

The difference between path and property resultatives here, however, may be a consequence of the difference between properties and paths in general. There are very few English prepositions which can encode a stative interpretation, but there are many prepositions which can encode a location or path. Given this, it is unsurprising that paths would lack fixed prepositions, as it is the preposition which is encoding the type of path under consideration, and there are many different types of paths to encode.

4.7 Prepositional content

Like the fixed preposition test, the pattern for the prepositional content test is different for property and path resultatives. For property resultatives (agentive property (68), non-agentive property (69)), the pattern is one of argumenthood. For path resultatives (agentive path (70) and non-agentive path (71)), however, the pattern is more adjunct-like.

(68) Kim kneaded the dough into a ball/*onto a square. [AgProp: ARG]

(69) The vase broke into pieces/to bits/*across pieces. [NonAgProp: ARG]

(70) Bill rolled the ball down the hill/across the road. [AgPath: ADJ]

(71) The truck rolled out of the garage/into the garden. [NonAgPath: ADJ]

Also like the fixed preposition test, this difference between property and path result phrases may have more to do with the difference between properties and paths in general than the difference between the two types of resultative. These two tests both focus on the fixed elements which come with phrasal verbs like *depend on* or *rely on*, but do not take into account the fact that locational arguments do exist, like the second post-verbal argument of *put*. For these locational arguments, there must be semantic content in the preposition, as that is one way English encodes location: *into the garden* is necessarily different from *across the garden* because the prepositions encode a locational difference.

4.8 Uniqueness/Iterativity

Uniqueness is another test in which the property and path resultatives pattern differently. Both agentive (72) and non-agentive (73) property resultatives do not allow for multiple results to be specified. However, agentive (74) and non-agentive (75) path resultatives do seem to allow for multiple results to be specified at first glance, thus making them more adjunct-like.

(72) *Sally hammered the metal flat into a disc. [AgProp: ARG]

(73) *The jar burst open into flames. [NonAgProp: ARG]

(74) Sally pushed the cup off the table onto the floor. [AgPath: ADJ]

(75) The ball bounced down the hill along the path. [NonAgPath: ADJ]

However, the story is not as straight-forward as it would seem at first glance, as there may be an explanation which has more to do with the type of phrase in general rather than the type of resultative we are considering. The difference between property and path resultatives in this case may come down to the difference between properties and paths in general. It is generally true of properties that there

cannot be two of them at the same time, but a path can continue to be further specified by additional information, and it is this continued specification that we are seeing in (74) and (75). In fact, if we restrict ourselves the interpretation that the path is multiply specified and not further specified, then we cannot accept the examples in (74) and (75) as grammatical.

Additionally, there are situations where a property can be further specified, and in those cases multiple examples of attested resultative sentences are available on the web. For example, if the property of being flat can be further specified by the shape it becomes, then (76) is acceptable, while (77) is not, as the shape cannot be further specified by the state (as a circle is a two-dimensional object which cannot be anything but flat).

(76) Kim rolled the dough flat into a circle. [AgProp: ADJ]

(77) *Kim rolled the dough into a circle flat. [AgProp: ARG]

4.9 Summary

Overall, there were three ways in which the resultative patterned on the argument-hood tests, as shown in table 1. If we set aside the inconsistent core participants test, we are left with one test which classifies the result phrase as an adjunct (syntactic obligatoriness), three tests which classify all types of result phrase as arguments (VP preposing, VP anaphora and pseudocleft), and three tests which, at least marginally, demonstrate a difference between property and path result phrases (prepositional content, fixed preposition and uniqueness/iterativity).

Table 1: Argument-Adjunct test results by Semantic Type

Test	Agentive Property	Non-agentive Property	Agentive Path	Non-agentive Path
Core Participants	inconsistent	Arg	inconsistent	inconsistent
Syntactic Obligatoriness	Adj	Adj	Adj	Adj
VP preposing	Arg	Arg	Arg	Arg
VP anaphora	Arg	Arg	Arg	Arg
Pseudocleft	Arg	Arg	Arg	Arg
Fixed Preposition	Arg	Arg	Adj	Adj
Prepositional Content	Arg	Arg	Adj	Adj
Uniqueness / Iterativity	Arg	Arg	Adj	Adj

However, as discussed above and in the next section, the differences between the property and path resultatives may have more to do with the differences between properties and paths in general than a resultative-specific difference.

5 Path and property resultatives

Together, these tests demonstrate a possible difference between property and path resultatives. However, the behaviour of the result phrase for the group of tests which seem to demonstrate a difference between properties and paths can be explained by the properties of both the tests themselves and path phrases in general. The fixed preposition and prepositional content tests both are designed to test for the status of prepositions in phrasal verbs, and not for general prepositions, so they expect the preposition to be both fixed and semantically bleached. Since path phrases denote the direction of travel using their preposition, there is both semantic content and variability in the PP no matter what kind of sentence the path is being used in. Additionally, both of these tests state that a phrase is more likely to be an argument/adjunct, not that the phrase in question should definitely be considered an argument/adjunct (Needham and Toivonen, 2011) and failing them does not mean that the phrase in question is not an argument, only potentially an adjunct.

6 Conclusions and Future Work

In conclusion, this paper has shown that the result phrase of the English resultative should be considered an derived (or added) argument of the verb, as it fails the tests quoted in definitions of argumenthood (like those in (3)–(8)), but patterns like an argument on all of the other tests. Additionally, a potential difference between property and path result phrases was explored. However, that difference was not specific to the resultative, and stemmed rather from the general differences between properties and paths as well as the expectations of the tests themselves.

Within the LFG framework, this research opens the door for continued research into the ways that added arguments can be treated. This work will create a principled was to determine which constructions should be treated with a lexical rule or LFG template (Dalrymple et al., 2004; Asudeh, 2012; Asudeh et al., 2013), and which should be placed in the set of all ADJ functions in the f-structure. Future projects could include different methods of dividing the resultative for application these tests, determining the most effective method for incorporating the added elements and designing LFG templates for the resultative which will reflect the differences between arguments and added arguments while still demonstrating their common properties.

References

Asudeh, Ash. 2012. *The Logic of Pronominal Resumption*. Oxford University Press.

Asudeh, Ash, Dalrymple, Mary and Toivonen, Ida. 2013. Constructions with Lexical Integrity. *Journal of Language Modelling* 1, 1–54.

Asudeh, Ash and Giorgolo, Gianluca. 2012. Flexible Composition for Optional and Derived Arguments. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG12 Conference*.

Baker, Carl L. 1978. *Introduction to Generative Transformational Syntax*. Englewood Cliffs, New Jersey: Prentice-Hall.

Baltin, Mark. 2006. The Nonunity of VP-Preposing. *Language* 82(4), 734–766.

Boland, Julie E. and Blodgett, Allison. 2006. Argument status and PP-attachment. *Journal of Psycholinguistic Research* 35(5), 385–403.

Borgonovo, Claudia and Neeleman, Ad. 2000. Transparent adjuncts. *The Canadian journal of linguistics* 45(3-4), 199–224.

Bresnan, Joan. 1982. Control and complementation. *Linguistic Inquiry* 13(3), 343–434, also in Joan Bresnan, ed. 1982. The Mental Representation of Grammatical Relations, Chapter 5, pp. 282–390. Cambridge, MA: The MIT Press.

Carnie, Andrew. 2002. *Syntax: A Generative Introduction*. Blackwell Publishers Inc.

Carnie, Andrew. 2007. *Syntax: A Generative Introduction*. Introducing Linguistics, Blackwell Publishing, second edition.

Carrier, Jill and Randall, Janet H. 1992. The Argument Structure and Syntactic Structure of Resultatives. *Linguistic Inquiry* 23(2), 173–234.

Culicover, Peter. 1997. *Principles and parameters: an introduction to syntactic theory*. Oxford Textbooks in Linguistics Series, Oxford University Press, Incorporated.

Dalrymple, Mary. 2001. *Lexical-Functional Grammar (Syntax and Semantics, Volume 34) (Syntax and Semantics)*. Academic Press.

Dalrymple, Mary, Kaplan, Ronald M and Holloway King, Tracy. 2004. Linguistc Generalizations Over Descriptions. In *On-line Proceedings of the LFG2004 Conference*, pages 199–208, CSLI Publications.

Davies, Mark. 2008. *The Corpus of Contemporary American English: 450 million words, 1990-present*. Available online at http://corpus.byu.edu/coca/.

Dowty, David. 1982. Grammatical Relations and Montague Grammar. In Pauline Jacobson and Geoffrey K. Pullum (eds.), *The Nature of Syntactic Representation*, pages 79–130, D. Reidel Publishing Company.

Emonds, Joseph. 1970. *Root and structure-preserving transformations*. Ph. D.thesis, MIT.

Ernst, Thomas. 2002. *The syntax of adjuncts*, volume 96 of *Cambridge Studies in Linguistics*. Cambridge University Press.

Fillmore, Charles. 1968. The Case for Case. In Emmon Bach and Richard Harms (eds.), *Universals in Linguistic Theory*, pages 1–90, New York, New York: Holt, Rinehart and Winston.

Goldberg, Adele E. 1995. *Constructions*. The University of Chicago Press.

Goldberg, Adele E. and Jackendoff, Ray. 2004. The English Resultative as a Family of Constructions. *Language* 80, 532–568.

Haegeman, Liliane. 1994. *Introduction to Government and Binding Theory Second Edition*. Blackwell Publishers Inc.

Hedberg, Nancy and DeArmond, Richard C. 2009. On complements and adjuncts. *Snippets* 19, 11–12.

"into". 2013. *Oxford English Dictionary Online*. Oxford University Press, http://www.oed.com/viewdictionaryentry/Entry/98530.

Iwata, Seizi. 2006. Argument resultatives and adjunct resultatives in a lexical constructional account: the case of resultatives with adjectival result phrases. *Language Sciences* 28, 449–496.

Jackendoff, Ray. 1990. *Semantic Structures*. MIT Press.

Jackendoff, Ray. 2002. *Foundations of Language: Brain, Meaning, Grammar, Evolution*. Oxford University Press.

Kaplan, Ronald M and Bresnan, Joan. 1982. Lexical Functional Grammar: A Formal System for Grammatical Representation. In Joan Bresnan (ed.), *The Mental Representation of Grammatical Relations*, pages 173–281, The Massachusetts Institute of Technology.

Kay, Paul. 2005. Argument Structure Constructions and the Argument-Adjunct Distinction. In Mirjam Fried and Hans Boas (eds.), *Grammatical Constructions: Back to the Roots*, pages 71–98, Benjamins.

Koenig, Jean-Pierre, Mauner, Gail and Bienvenue, Breton. 2003. Arguments for adjuncts. *Cognition* 89, 67–103.

Kratzer, Angelika. 2005. Building Resultatives. In Claudia Maienborn and Angelika W. Leisten (eds.), *Event Arguments: Foundations and Applications*, pages 177–212, Niemeyer.

Kroeger, Paul. 2004. *Analyzing Syntax: A Lexical-Functional Approach*. Cambridge: Cambridge University Press.

Lakoff, George and Ross, John R. 1966. Criterion for Verb Phrase Constituency. Technical Report NSF-17, Aiken Computation Laboratory, Harvard University.

Levin, B. and Rappaport Hovav, M. 1995. *Unaccusativity: At the Syntax-Lexical Semantics Interface*. Linguistic Inquiry Monographs, MIT Press.

MacGregor, Elizabeth. 2009. *Using Templates to Account for English Resultatives*. Masters Thesis, University of Essex.

Mateu, Jaume. 2011. Conflation and incorporation processes in resultative constructions. In Dins V. Demonte and L. McNally (eds.), *Telicity, Change, and State: A Cross-Categorial View of Event Structure.*, pages 252–278, Oxford University Press.

Miller, Philip H. 1991. *Clitics and Constituents in Phrase Structure Grammar*. Ph. D.thesis, niversity of Utrecht, the Netherlands.

Needham, Stephanie and Toivonen, Ida. 2011. Derived Arguments. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG11 Conference*, pages 401–421, CSLI Publications.

Pollard, Carl Jesse and Sag, Ivan A. 1987. *Information-based syntax and semantics*. Sanford, CA: Center for the Study of Language and Information.

Przepirkowski, Adam. 1999. *Case Assignment and the Complement-Adjunct Dichotomy*. Ph. D.thesis, University of Tbingen.

Radford, Andrew. 1988. *Transformational grammar: A first course*, volume 1. Cambridge University Press.

Radford, Andrew. 2004. *Minimalist syntax: Exploring the structure of English*. Cambridge University Press.

Simpson, Jane. 1983. Resultatives. In Lori S. Levin, Malka Rappaport and Annie Zaenen (eds.), *Papers in Lexical-Functional Grammar*, pages 143–157, Bloomington: Indiana University Linguistics Club.

Tallerman, Maggie. 2005. The Celtic Languages. In Guglielmo Cinque and Richard S. Kayne (eds.), *The Oxford Handbook of Comparative Syntax*, pages 839–879, Oxford: Oxford University Press.

Toivonen, Ida. 2012. Between arguments and adjuncts. Paper presented at the International conference of Nordic and General Linguistics. Freiburg, Germany.

Toivonen, Ida. 2013. English Benefactive NPs. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG13 Conference*.

Tutunjian, Damon and Boland, Julie E. 2008. Do we need a distinction between arguments and adjuncts? Evidence from psycholinguistic studies of comprehension. *Language and Linguistics Compass* 2(4), 631–646.

Vater, Heinz. 1978. On the Possibility of Distinguishing between Arguments and Adjuncts. In Werner Abraham (ed.), *Valence, Semantic Case and Grammatical Relations*, volume 1 of *Studies in Language Companion Series*, pages 21–46, John Benjamins B. V.

Wechsler, Stephen. 1991. *Argument structure and linking*. Ph. D.thesis, Stanford University.

Zaenen, Annie and Crouch, Dick. 2009. OBLs hobble computations. In Miriam Butt and Tracy Holloway King (eds.), *The Proceedings of the LFG '09 Conference*, pages 644–654, Trinity College, Cambridge, UK.