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A COGNITIVE STUDY OF RESULTATIVE CONSTRUCTIONS IN ENGLISH*

1 INTRODUCTION

The present paper deals with the *resultative construction*, which is exemplified in (1).¹ The italicized predicates in (1) are called *resultative complements*, because they describe the resultant state of the object NPs which the actions denoted by the verbs bring about. For example, (1a) means that the pot became clean as a consequence of Mary's scrubbing it.

- (1) a. Mary scrubbed the pot *clean*.
b. Ben painted the door *a pale shade of yellow*.
c. He laughed himself *into a stupor*.

A number of investigations have been made, on the basis of various properties of this construction, from both the syntactic and lexical-semantic perspectives (Halliday 1967, Dowty 1979, Hoekstra 1988, Levin and Rapoport 1988, Aske 1989, Carrier and Randall 1989, 1992, Jackendoff 1990, Goldberg 1991a, 1991b, 1992, and many others). However, none of these studies has sufficiently described and explained its syntactic and semantic properties.

One of the central goals of this paper is, therefore, to propose an alternative analysis of the English resultative construction which overcomes the theoretical and empirical difficulties the previous analyses have encountered. I will argue here that it is possible to explain these properties from a cognitive point of view. The analysis I will propose here makes use of the graphic representation of an integrated cognitive model, based on Langacker's (1990, 1991) *canonical event model* and Croft's (1990,

* This is a slightly revised version of my M.A. thesis, submitted to Osaka University in January 1995. Part of this work was presented at the 12th Annual Meeting of the English Linguistic Society of Japan, held at the University of Tokyo, November 12-13, 1994, and appeared in *English Linguistics* 12, in November 1995. I would like to thank Seisaku Kawakami, Yukio Oba, Michael T. Wescoat, Yoshihisa Nakamura, Naoko Hayase and Kazumi Taniguchi for their constant encouragement and invaluable suggestions and comments. My special thanks are due to Michael T. Wescoat, who kindly and patiently acted as an informant and provided many stylistic suggestions. Of course I am solely responsible for any remaining inadequacies in this work.

¹ The term *resultative* is taken from Halliday (1967). In Halliday's classification, the resultative construction is a type of attributive clause. Halliday defines an attribute as "a characteristic ascribed to one of the participants in the clause; but it is one that relates specifically to the process in question" (p.62).

1991) *causal chain*. Moreover, the cognitive linguistic account will reveal that the manner in which an event is construed determines whether or not the resultative construction may be employed in a given context.

My exposition proceeds as follows: in the next section, I will first enumerate various properties of the resultative construction on which most researchers agree, and then select six representative analyses of this construction and succinctly review them. I will then uncover some overarching problems with all of them, suggesting throughout the discussion the necessity of a more effective analysis to explain the construction. In section 3, I will first introduce two types of cognitive models, the canonical event model proposed in Langacker (1990, 1991) and the causal chain proposed in Croft (1990, 1991). In order to characterize the resultative construction more appropriately, I will further introduce the integrated model newly proposed by Nakamura (1993), a model made by incorporating Croft's notion of causal relations into Langacker's model. Based on the model introduced in section 3, I will in section 4 propose a cognitive model of the resultative construction and then explore how the model can handle various properties of the phenomenon, while accounting for restrictions on a verb, two noun phrases (a subject and an object), and a resultative complement which can appear in a resultative construction. In section 5, I will provide my own solutions to the problems with the previous analyses I pointed out in section 2, on the basis of the cognitive model. Finally, I will summarize the discussions presented in this paper in section 6.

2 PROPERTIES OF RESULTATIVE CONSTRUCTIONS AND PREVIOUS ANALYSES

In this section, I will first introduce the main properties of the resultative construction and then review three syntactic analyses and three lexical-semantic analyses of the phenomenon. I will then point out the problems for which neither syntactic nor lexical-semantic analyses can provide sufficient accounts.

2.1 *Properties of Resultative Constructions*

First, in a resultative construction, mainly, a verb is followed by a noun phrase and a resultative complement which characterizes the state of this noun phrase, a state which results from the action or process described by the verb.

Secondly, the syntactic category of a resultative complement can be AP, PP, or NP, but not VP in English, as shown in (2).²

- (2) a. Sally pounded the meat [_{AP} thin].
- b. John broke the dishes [_{PP} into pieces].
- c. They painted the car [_{NP} a bright shade of red].
- d. *I shot him [_{VP} die/died].

²NP resultative complements are quite rare. Some researchers, therefore, argue that resultative complements must be AP or PP, and deal with a resultative NP like (2c) as an exceptional case.

However, not all strings which meet these conditions are suitable as resultative constructions. Resultative complements apply to direct objects of some transitive verbs as in (2a-c), but they do not apply to others as in (3).

- (3) a. *He watched the TV broken.
 b. *He believed the idea powerful. (Goldberg 1991b: 67)

Thirdly, resultative complements also apply to subjects of some unaccusative intransitive verbs as in (4), but they do not apply to the subjects of all unaccusative intransitive verbs, nor do they apply to the subjects of unergative intransitive verbs, as (5) and (6) suggest.

- (4) a. The water froze solid.
 b. The vase broke into pieces.
 (5) a. *John arrived sick.
 b. *A dreadful storm arose destructive.
 (6) a. *Mary danced tired.
 b. *Richard shouted hoarse.

Fourthly, resultative complements occasionally can co-occur with *fake* objects—so named by Simpson (1983)—of unergative intransitive verbs, as in (7). However, they cannot occur with fake objects of unaccusative intransitive verbs, as (8) shows.

- (7) a. Mary danced herself tired.
 b. Richard shouted himself hoarse.
 (8) a. *John arrived himself sick.
 b. *A dreadful storm arose itself destructive.

With respect to fake objects, many researchers have assumed that the fake object is not an argument of the verb, in contrast to the postverbal NP of transitive verbs. For example, Carrier and Randall (1992) observe that some processes that are taken to apply only to direct internal arguments do not apply to the resultative constructions with fake objects, while they do apply to regular resultative expressions. (We will look into their analysis in the following section.)

Fifthly, most AP resultative complements deal with the endpoint on a scale, as shown by Goldberg (1991a, 1991b) and Napoli (1992).

- (9) a. She wrung the shirt {dry/*damp}.
 b. She watered the tulips {flat/*droopy}.
 c. We heated the coffee {hot/*tepid}. (Napoli 1992: 79)

Finally, we will find the productive use of the resultative construction, although there are differences in judgments of acceptability among speakers in some cases, as in (10) and (11).³

³Carrier and Randall (1989) are more liberal about resultative constructions and regard all

- (10) a. The alarm clock buzzed the whole house awake.
 b. He sang the night club ablaze. (p.c. M. T. Wescoat)
- (11) a. OK/? The rooster crowed the children awake.
 b. OK/??John washed the facecloth dirty.
 c. OK/* It rained the golfcourse useless. (Jackendoff 1990: 227)

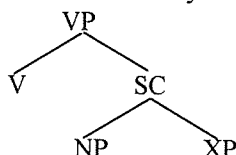
2.2 Previous Analyses

Many researchers have investigated the resultative construction from both the syntactic and the lexical-semantic perspectives. In what follows we will first review how researchers have treated this construction, and then uncover some problems with all of them, both empirical and theoretical.

2.2.1 Syntactic Analyses. In this subsection we will survey three major syntactic analyses which have been proposed, employing the following notions: (a) the *Binary Small Clause Analysis* (van Voorst 1983, Kayne 1985, Sato 1987, Hoekstra 1988, Mulder and Sybesma 1992, etc.), (b) the *Hybrid Small Clause Analysis* (Yamada 1987, Rothstein 1992, etc.), and (c) the *Ternary Analysis* (Simpson 1983, Carrier and Randall 1989, 1992, etc.).

The Binary Small Clause Analysis assigns binary-branching VPs to both transitive and intransitive resultative constructions, as shown in (12). Under the analysis, the postverbal NP is the subject of the resultative complement and it is not an argument of the verb. The resultative complement is embedded within the SC, a sister of the verb.

(12) Binary Small Clause Analysis (XP: a resultative complement)



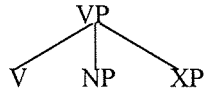
In contrast, the Hybrid Small Clause Analysis assigns a ternary-branching VP to transitive resultative constructions and a binary-branching VP to intransitive resultative constructions, as in (13).⁴ Under this analysis, in the transitive resultative construction the postverbal NP and the resultative complement are potentially arguments of the verb, while in the intransitive one they are not.

sentences in (11) as acceptable, while Jackendoff (1990) regards them as less acceptable or unacceptable.

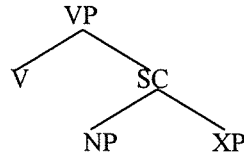
⁴Since the Hybrid Small Clause Analysis itself falls into several versions, I tentatively choose Yamada's (1987) version as a representative.

(13) Hybrid Small Clause Analysis

a. transitive

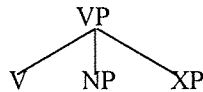


b. intransitive



In the Ternary Analysis, the postverbal NP and the resultative complement are sisters within a ternary-branching VP. Like the Binary Small Clause Analysis, it assigns a single structure to two types of resultative constructions, as shown in (14).

(14) Ternary Analysis



Under this analysis, the postverbal NP can be an argument of the verb. According to Carrier and Randall (1992), in the transitive resultative construction the postverbal NP is an argument of the verb, while in the intransitive one it is not. This is because the intransitive verb does not assign a theta-role to the NP. The resultative complement is the verb's sister and therefore potentially its argument.

Thus, the three syntactic analyses make different predications about the structure of resultative constructions. However, we cannot show which is the correct analysis, because each analysis has some serious problems. For example, the Ternary Analysis and the Hybrid Small Clause Analysis abandon Kayne's (1985) claim that all branching is binary. Hoekstra (1988) argues that the following examples motivate the small clause analysis:

- (15) a. He laughed himself sick.
 b. She laughed him out of his patience. (Hoekstra 1988: 115)
- (16) a. He washed the soap out of his eyes.
 b. They wrung a confession out of him. (ibid.: 116)

In (15) and (16), the postverbal NP has a sensible semantic relationship not with the verb but with the following resultative complement. As a consequence, Hoekstra concludes that the small clause analysis of such constructions seems well motivated from a semantic point of view. However, Carrier and Randall (1989, 1992), supporting the Ternary Analysis, argue that the postverbal NP in a transitive resultative construction is an argument of the verb, thereby accounting for empirical phenomena like (17)-(19).⁵

⁵For more details, see Keyser and Roeper (1984) with regard to Middle Formation and Levin and Rappaport (1986) with regard to Adjectival Passive Formation.

- (17) Middle Formation
 - i) from transitive resultative verbs
 - a. New seedlings water flat easily.
 - b. Those cookies break into pieces easily.
 - ii) from intransitive resultative verbs
 - a. *Competition Nikes run threadbare easily.
 - b. *Delicate feet walk to pieces easily. (Carrier & Randall 1992: 191)
- (18) Adjectival Passive Formation
 - i) a. the stomped-flat grapes
 - b. the spun-dry sheets
 - ii) a. *the danced-thin soles
 - b. *the run-threadbare Nikes (ibid.: 195)
- (19) Nominal Formation
 - i) a. The watering of tulips flat is a criminal offense in Holland.
 - b. The slicing of cheese into thin wedges is the current rage.
 - ii) a. *The drinking of oneself sick is commonplace in one's freshman year.
 - b. *The talking of your confidant silly is a bad idea. (ibid.: 201)

If it is correct that these formations apply only to verbs which have a direct internal argument, (17)-(19) could be evidence against the Binary Small Clause Analysis. According to Kayne (1985), who argues that extraction from the subject of a small clause is ungrammatical, extraction from the postverbal NP should be blocked in all resultative constructions under the Binary Small Clause Analysis, or in the intransitive ones under the Hybrid Small Clause Analysis.⁶ However, as shown in (20) and (21), transitive and intransitive resultative constructions behave identically with respect to extraction of the subpart of a left branch. Therefore, (20) and (21) could be evidence against the Binary Small Clause Analysis and the Hybrid Small Clause Analysis.

- (20) Extraction from transitive resultative constructions
 - a. The door that I painted the top of *t* red.
 - b. The gang that I shot the leaders of *t* dead.
- (21) Extraction from intransitive resultative constructions
 - a. The Nikes that I ran the soles of *t* threadbare/ragged.
 - b. The gang that I drank the leaders of *t* under the table. (ibid.: 207)

Moreover, Carrier and Randall argue that those two analyses cannot handle the selection of the resultative complements in (22), because under them the verb cannot s-select the resultative complement directly.

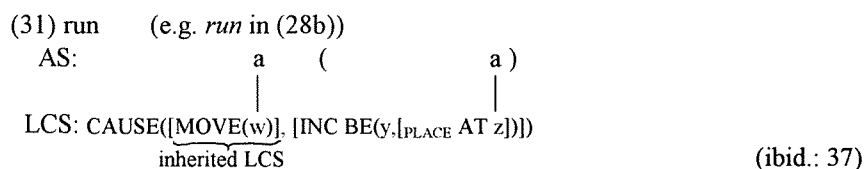
⁶Kayne (1985) argues that extraction from the subject of a SC is ungrammatical:

i) *the man that I consider_{sc}[the brother of *t*][honest]

To account for this, Kayne proposes a condition that prohibits the extraction of a subpart of a left branch.

- ⁷Lexical Conceptual Structure (LCS) is a lexical-semantic representation that takes the form of predicate decomposition, much like Jackendoff's conceptual structure. It is specified in lexical entries of particular verbs.

In order to solve this problem, Carrier and Randall recognize two levels within lexical entries, the Lexical Conceptual Structure (LCS) level and the Argument Structure (AS) level, as well as a set of principles that specify the mapping between these levels.¹⁰ They argue that the differences follow from the interaction of the verbs' LCSs with a set of independent lexical and syntactic principles. For example, (30) and (31) indicate the lexical entries of transitive and intransitive resultative verbs created by Resultative Formation.



- i) Linking Principle 1
Semantic arguments in a higher conceptual clause take precedence over arguments in a lower conceptual clause in linking. (ibid.: 20)
- ii) Linking Principle 2
A bound semantic argument is not linked. (ibid.: 23)

the verb's lexical entry but rather an adjunct, interpreted by what he calls the *Resultative Adjunct Rule* in (32).

(32) Resultative Adjunct Rule

(Jackendoff 1990: 231)

[_{VP} V_h NP_j AP_k] may correspond to

$$\left[\begin{array}{l} \text{CAUSE}([\alpha], [\text{INCH}[\text{BE}_{\text{ident}}([\beta], [\text{AT}[\quad]_k)])]) \\ \text{AFF-}([\quad]^\alpha, [\{\alpha\}]^\beta_j) \\ \text{BY}[\text{AFF-}([\alpha], [\{\beta\}])_h] \end{array} \right]$$

Though his rule is not a lexical rule, the conceptual structure he assumes for resultative constructions is similar to the LCS Levin and Rapoport propose. The two analyses can be regarded as a kind of "Means" analysis. In both these analyses the base verb's LCS is inherited and incorporated into a portion of the resultative LCS designating MEANS introduced under "BY" and the role of Actor or Agent is given to the surface subject in the main conceptual structure. In contrast to them, Carrier and Randall's analysis, a so-called "Agent" analysis, embeds the base verb's LCS within the first argument position of CAUSE and accords no role to the surface subject in the main conceptual structure.

Carrier and Randall (1989) argue that the Agent analysis is superior to the Means analysis and present the following empirical phenomena as evidence for the Agent analysis:

- (33) a. It rained the golfcourse useless.
 b. It snowed the roads slippery.
 c. It thundered the children awake. (Carrier & Randall 1989: 78)
- (34) a. The toast burned *t* black.
 b. The glacier broke *t* in half.
 c. The ice froze *t* solid. (ibid.: 76)

Carrier and Randall point out that these sentences do not have the paraphrases required by the Means analysis: for example, there is no paraphrases for (33a) equivalent to "It made the golfcourse useless by raining," and none for (34a) equivalent to "X made the toast black by burning it." However, these examples do have paraphrases consistent with the Agent analysis: for example, "Its raining made the golfcourse useless" for (33a), and "The toast's burning made it black" for (34a) are acceptable.

As for resultative constructions with weather verbs like (33), Jackendoff argues that they are not acceptable. On the basis of his judgments, he counts the sentences as an argument against the Agent analysis. Moreover, he argues that the structure induced by the Means analysis forms a natural class with other constructions like (35), whereas the structure induced by the Agent analysis does not. (36) indicates that there is no suitable paraphrase parallel in form to that predicted by the Agent analysis in the cases involving accompaniment, like the sentences in (35).

- (35) a. Harold belched his way out of the restaurant.
 b. Bill jumped into Harriet's arms.
- (36) a. Harold's belching made him go out of the restaurant. (wrong meaning)
 b. Bill's jumping made him go/got him into Harriet's arms. (wrong meaning) (Jackendoff 1990: 238)

2.3 Problems with Previous Analyses

We have reviewed six types of previous analyses of resultative constructions, three from the syntactic perspective and three from the lexical-semantic perspective. In this section, I will demonstrate that none of these analyses can describe and explain three important properties of resultative constructions to be illustrated below.

First, let us look at the simple example in (37).

- (37) He threw the suitcase open. (Goldberg 1991a: 371)

As Goldberg (1991a, 1991b) observes, (37) just means that he forcefully opened the suitcase and may not mean that the suitcase was thrown in some direction, although the verb *throw* normally entails that the theme moves along a physical path. If the path is literally expressed alongside the resultative complement, then the sentence becomes unacceptable, as in (38).

- (38) a. *He threw the suitcase open into the room.
 b. *He threw the suitcase into the room open.

The previous analyses, however, provide no tenable account of this phenomenon; on the contrary, most of them do not even mention paths in discussing resultative constructions. Accordingly, the simple example in (37) suggests that we need an analysis of resultative constructions which, unlike the previous analyses, refers to paths in some way or other.

Secondly, let us discuss another property of resultative constructions, which concerns a constraint on AP resultative complements. As Goldberg (1991a, 1991b) and Napoli (1992) observe, most AP resultative complements denote an end of scale, as in (39). The previous analyses completely miss this generation.

- (39) a. She wrung the shirt {dry/*damp}. [= (9a)]
 b. She watered the tulips {flat/*droopy}. [= (9b)]
 c. We heated the coffee {hot/*tepid}. [= (9c)]

Thirdly, let us discuss one more property of resultative constructions, which concerns the acceptability of derived resultative constructions. Consider the following examples:

- (40) a. OK/? The rooster crowed the children awake. [= (11a)]
 b. OK/?? The boxers fought their coaches into an anxious state.
 c. OK/?* In the movie's longest love scene, Troilus and Cressida kiss most audiences squirmily. (Jackendoff 1990: 227)

In (40) the subject of the resultative complement (e.g. *the children* in (40a)) is not a participant of the preceding subevent (e.g. *the rooster crowed* in (40a)). As the array of judgments above indicates, this type of resultative construction exhibits great differences in judgments of acceptability among speakers or dialects. In the case of the following type of resultative constructions, where there is no argument which appears in both of the two subevents and in addition the preceding subevent has no Agent, the acceptability further degrades.

- (41) a. OK/* It rained the golfcourse useless. [= (11c)]
 b. OK/* It snowed the roads slippery.
 c. OK/* It thundered the children awake.

On the other hand, resultative constructions like (42) and (43), where the subject of the resultative complement is the affected object of the preceding subevent or identical with the Agent of that subevent, show no differences in judgments.

- (42) a. John cooked the food black.
 b. She wiped the table clean.
 (43) a. Tom ran himself sick.
 b. Richard shouted himself hoarse. [= (7b)]

These complicated phenomena, however, cannot be dealt with by any of the previous analyses. Recall that they just assume a single uniform rule of resultative constructions which subsumes all cases, making no distinction among them, apart from a two-way distinction between transitive and intransitive resultative constructions. Since the questionable sentences in (40), the very questionable sentences in (41), and the perfect sentences in (43) are all intransitive resultative constructions, even the dichotomous grouping does not help.

In sum, the considerations above have suggested that neither the lexical-semantic nor the syntactic account has achieved a full explanation of the resultative construction and that we need an alternative analysis which can account for these important properties of resultative constructions. In order to describe the construction precisely, I would like to adopt the framework of cognitive linguistics in this paper. Under this framework, it is assumed that the selection of grammatical constructions depends on our construal of a conceived event. Thus, our approach rejects, for example, Carrier and Randall's specific arguments, in which they have used Middle Formation, Adjectival Passive Formation, and Nominalization to argue that the fake object of intransitive resultative constructions is not an argument. Their analysis cannot explain why those processes are not applied to some transitive resultative constructions as in (44), or why given the right context, some middles with fake objects are greatly improved as in (45).

- (44) a. *She kicks black and blue easily. (Middle)
 b. *The shot-dead man (Adjectival Passive)
 c. *The shooting of the man dead (Nominalization)
 (45) Go buy some cheap tires for that scene, those inexpensive tires drive bald
 really quickly. (Goldberg 1991b: 72)

We assume that these phenomena also motivate a cognitive approach. We will in the next section begin by introducing cognitive models required to characterize resultative constructions.

3 THEORETICAL FRAMEWORKS

This section offers outlines of cognitive models proposed by Langacker (1987, 1990, 1991) and of an idealized cognitive model based on energy dynamics proposed by Croft (1990, 1991), and introduces Nakamura's (1993) representation of cognitive structures of events. All the image-schematic notions of the world represented by utilizing the cognitive models will be the basis for elaborating a cognitive model of the English resultative construction and describing various properties of the phenomenon in section 4.

3.1 Langacker's Cognitive Models

In this section, I will briefly review some basic theoretical notions in Langacker (1987, 1990, 1991). Cognitive grammar proposed by Langacker assumes a conceptual view of meaning in which semantic structure is equated with conceptual structure. The semantic structure reflects the inherent ability of speakers to shape and construe a conceived situation in alternate ways.¹¹ The fundamental assumption of cognitive grammar is that grammar provides for the structuring and symbolization of conceptual content. This indicates that different constructions represent different ways of construing and portraying a situation for expressive purposes.

In cognitive grammar, linguistic *predications* (or meanings) are characterized via the imposition of a figure/ground organization relative to one or more cognitive domains (or *bases*) of varying degrees of complexity.¹² ¹³ One part which stands out from the base is called the *profile*, and the semantic value of a linguistic expression is determined by the relationship between profile and base.

Langacker (1990) argues that "among these domains are certain abstract but none the less powerful folk models pertaining to the make-up of our world, the transmis-

¹¹This ability is known as *imagery*, which is regarded as fundamental to understanding grammatical organization.

¹²The analytical distinction between figure and ground goes back to the Gestalt psychologists of the early twentieth century. Figure-ground differentiation is the simplest and most primitive form of perceptual organization.

¹³A conception evoked as part of an expression's meaning is referred to as a *cognitive domain*.

sion of energy and its role in driving events, and the nature of canonical action” (p.215). The cognitive models fundamental to our experience and our conception of the world underlie the prototypical values of certain grammatical constructs pertaining to clause structure. He also notes that we tend to organize our conceptions of prototypical actions and events in terms of a *canonical event model*. The model contributes “the notion of an event occurring within a setting and a viewer (V) observing it from an external vantage point” (1991: p.286), as reproduced in Figure 1.

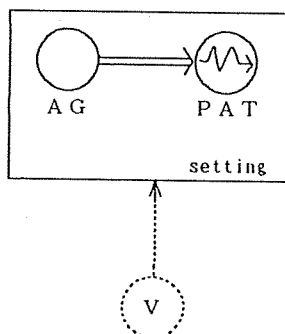


FIGURE 1

(Langacker 1991: 285)

The canonical event model is constructed by combining the *billiard-ball model* and the *stage model*. The canonical event model inherits from the billiard-ball model the minimal conception of an *action chain*, in which one discrete object transmits energy to another through forceful physical contact.¹⁴ In Figure 1, the “head” of the action chain is characterized as an agent (AG) that transmits energy (indicated by the double arrow), and its “tail” as a patient (PAT) that undergoes a resultant change of state (indicated by the wavy arrow).¹⁵

The billiard-ball model is “a fundamental cognitive model that conceives the world as being populated by discrete physical objects that move about and interact energetically when they come into contact” (1991: p.545). On the other hand, the stage model is a cognitive model which idealizes our observation of external events. In the stage model, an observer focuses attention on an action or event as if it were on stage, which can be taken as a type of *setting* within which the *participants* interact and the event takes place.¹⁶ Moreover, Langacker notes that we have a conception of certain typical roles that participants play in events, namely *role archetypes* such as agent, patient, experiencer, and instrument. The main role archetypes can be defined as follows:

¹⁴The action chain represents the following configuration of interactions: one participant transfers energy to a second, thus inducing a reaction whereby it in turn transfers energy to a third, and so on indefinitely.

¹⁵The initial object in an action chain is referred as its *head*, and the final objects, as its *tail*.

¹⁶Setting is “a global, inclusive region within which an event unfolds or a situation obtains” (Langacker 1991: p.553). On the other hand, a participant is “an entity thought of as participating in a relationship” (ibid.: p.550). Participants occupy setting or location, and interact with one another.

- (46) a. *Agents* are prototypically human entities which volitionally initiate physical activity by means of the transmission of energy to other participants.
- b. *Patients* are prototypically inanimate entities that absorb the energy transmitted via externally initiated physical contact and thereby undergo an internal change of state.
- c. *Instruments* are prototypically physical objects manipulated by an agent in the transmission of energy toward a patient.
- d. *Experiencers* are prototypically humans engaged in mental activity.
- e. *Movers* are prototypically entities that undergo a change of location.

Various facets of such a complex conceptualization as the canonical event model are reflected in the typical structure of a full finite clause. Such a clause is analyzed as profiling a process that is construed as constituting a single event. The participant/setting organization imposed by the model corresponds to "the difference between the nominal arguments of a verb and certain clause-level adverbial modifiers (particularly adverbs of time and place)" (1990: p.216). Furthermore, the figure/ground organization bears a relation to the selection of subject and object in finite clauses. For example, let us consider the profiled process in an action chain which involves an interaction between three participants, whose roles are Agent (*Floyd*), Instrument (*the hammer*), and Patient (*the glass*). We can describe this process in various expressions, as in (47), according to how we construe the process.

- (47) a. Floyd hit/broke the glass with the hammer.
- b. The hammer hit/broke the glass.
- c. The glass (easily) broke.
- d. Floyd hit the hammer against the glass. (Langacker 1990: 220)

It is clear from such examples that the selection of the subject or the object is not invariably associated with any single role archetype. These examples are diagrammed in Figure 2.

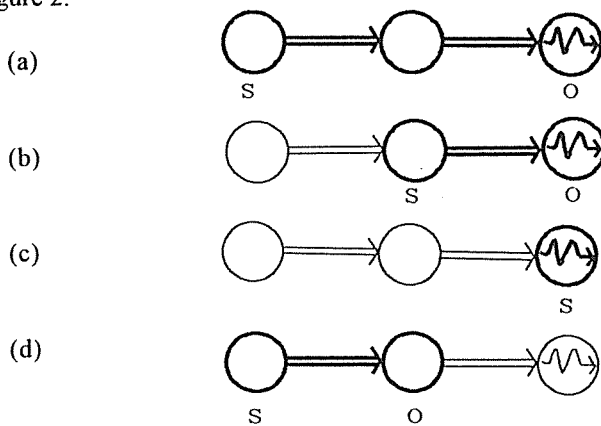


FIGURE 2

(ibid.: 221)

This diagram shows that the selection of the subject and object is rather linked with the relative salience which the figure/ground organization brings about. Langacker proposes the following definitions of the subject and object:

- (48) a. The *subject* is “the *head* of the profiled portion of the action chain, i.e., the participant that is farthest *upstream* with respect to the energy flow.”
 b. The *object* is “the *tail* of the profiled portion of the action chain: the participant distinct from the subject that lies the farthest *downstream* in the flow of energy.” (Langacker 1990: 220)

3.2 Croft's Causal Chain Model

In this section, let us review another type of cognitive model proposed by Croft (1990, 1991), who very explicitly identifies the conceptual basis of transitivity as causal and proposes another type of cognitive model, i.e. the *causal chain*. He defines the causal chain as “a series of causally related events such that the endpoint or affected entity of the causally preceding atomic event is the initiator of the next atomic causal event” (1991: p.169).

Croft argues that a simple event consists of three segments, (i.e. CAUSE, BECOME, and STATE), and that the causal-aspectual type of the verbs (causative, inchoative, and stative) reflects what portion of the three segmented chain is selected, as illustrated in Figure 3 of which (a)-(c) correspond to the verbs shown in (49a-c) respectively:

- (49) a. causative: The rock broke the window.
 b. inchoative: The window broke.
 c. stative: The window is broken. (Croft 1990: 53-54)

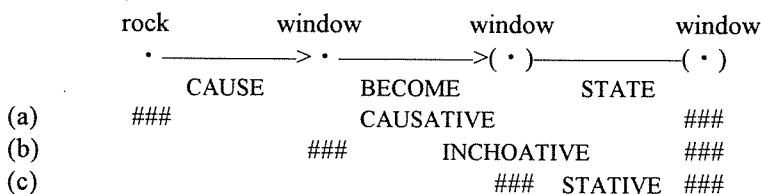


FIGURE 3 (###: verb segment delimiter)

Figure 3 shows us that the causative, inchoative, and stative event types are not independent. The causal event in (49a) involves the whole of the causal chain, whereas the inchoative event in (49b) involves the last two segments, and the stative event in (49c) only the last segment. The semantics of the three types of events can be summarized as follows:

- (50) a. The *causative* event implies “direct human causation, with the attendant properties of intention and responsibility.”

- b. The *inchoative* event implies “a certain kind of process, but without any implication of an external (human) cause.”
- c. The *stative* event implies “an inherent property, without any implication as to the kind of process involved.” (Croft 1990: 65)

In fact, the causal chain model allows us to unify these three event types into one.

For the thematic roles, in general, Agent is defined as “the initiator of an act of volitional causation” and Patient as “the endpoint of an act of physical causation” (p.176). Other thematic roles are defined relative to their positions on the causal chain.¹⁷

Croft also argues that the causal chain model of event structure provides the major structure to an idealized cognitive model of a single event. He summarizes the properties of the idealized cognitive model for simple events, as follows:

- (51) a. Simple events are segments of the causal network.
- b. Simple events involve individuals acting on other individuals (transmission of force).
- c. Transmission of force is asymmetric.
- d. Simple events are non-branching causal chains.
- e. Simple event structure consists of the three-segment causal chain: cause-become-state.
- f. Simple events are endpoint-oriented: possible verbs consist of the last segment (stative), the second and last segments (inchoative), or the whole three segments (causative).
- g. Simple events are autonomous, that is, they can be isolated from the rest of the causal network. (ibid.: 66)

3.3 *The Integrated Cognitive Model*

The two foregoing theoretical notions and cognitive models give us an appropriate means of analysis for various constructions, but it seems that neither model is sufficient for an analysis of the resultative construction. Langacker’s model cannot represent a resultant state, and Croft’s model has trouble handling the difference in meanings between verbs in the same event type. Nakamura (1993) also takes these problems into consideration and proposes another cognitive model, as sketched in Figure 4, by incorporating Croft’s notion of causal event into Langacker’s action chains in order to augment its efficiency.¹⁸

¹⁷Oblique case markings divide themselves into two types: those that represent participants that precede the object in the causal chain and those that represent participants that follow it.

¹⁸The action chain and the causal chain idealize an event as driven by the interaction among individual objects, that is, they are both based on the same view of events. Consequently, it is possible to incorporate them. Nakamura’s (1993, 1994) model was originally proposed to represent a network of various grammatical constructions in a comprehensive manner. See Nakamura (1993, 1994) for details.



FIGURE 4

There are two differences in form between Langacker's model and this model. First, a change of state (i.e. wavy arrow) is represented outside a participant (a Patient), whereas it is represented inside a Patient in Langacker's model. Secondly, in Nakamura's model a resultant state can be represented after the change of state. These changes of representation allow us to unify the two foregoing cognitive models into one. In this model, the three types of events Croft has proposed are represented as follows:

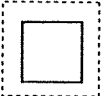
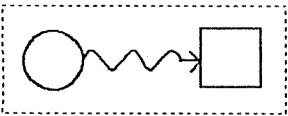
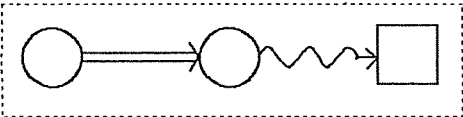
- (a) Stative event (e.g. The door is open.)

- (b) Inchoative event (e.g. The door opened.)

- (c) Causative event (e.g. John opened the door.)


FIGURE 5

(Nakamura 1993: 249)

In this integrated model, a circle symbolizes the initial state of a participant, a square the ultimate state. The double arrow indicates a transmission of energy, while the wavy arrow indicates a non-energetic change of the state. Each chain is enclosed in a dashed square, which represents cognitive scope.¹⁹ Moreover, a figure/ground organization is incorporated in this model. The figure is depicted with bold lines, and the ground, with lighter lines. As Langacker (1990) has pointed out, the relation between the profile and base determines the semantic value of a linguistic expression. This model, therefore, will give us an effective means of handling various constructions.²⁰

Let us briefly look at how this model handles linguistic predications. For example, in the case of transitive verbs, e.g., *kill* and *kick*, the ungrammatical sentence (52a)

¹⁹ Cognitive scope is the portion which a predication specifically invokes and relies upon for its characterization.

²⁰ Nakamura (1993) makes a very interesting study of semantic relations between various types of constructions by employing the integrated model. See Nakamura (1993) for details.

indicates that *kill* specifies the change of state and the resultant state, whereas (52b) indicates that *kick* does not. (52c) indicates that *kill* does not specify the transmission of energy.

- (52) a. *John killed the dog, but it didn't die.
 b. John kicked the dog, but it didn't die.
 c. John killed the dog by kicking it. (ibid.: 254)

The specified portion is represented in boldfaced line as figure, while the unspecified portion is represented in lightfaced line as ground. The construals (or cognitive structures) of the two types of transitive verbs are illustrated as follows:

- (53) x kill/open/break y

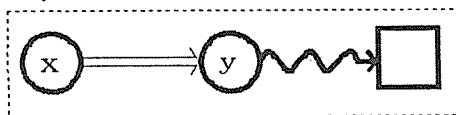


FIGURE 6

(ibid.: 254)

- (54) x kick/hit y

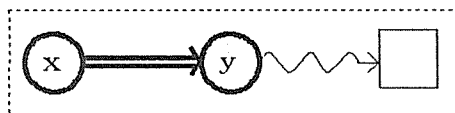


FIGURE 7

(ibid.)

In the case of intransitive verbs, for example, *open*, the construals are represented as sketched in Figure 8.

- (55) y open

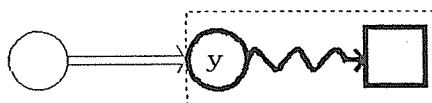


FIGURE 8

(ibid.:259)

Let us compare Figure 8 with Figure 6. The difference between them is due to a difference in the cognitive scope. Thus the intransitive verb, *open*, implies neither Agent nor the transmission of energy. Based on this integrated model, I will in the next section explore the construal of the resultative construction.

4 COGNITIVE MODEL OF THE RESULTATIVE CONSTRUCTION

Given the basic conceptions and framework of cognitive grammar in the previous section, I will explore how we recognize an event in using the resultative constructions, and propose a cognitive model of the English resultative constructions enough to provide an account of their properties and restrictions.

4.1 *The Cognitive Model Representing the Resultative Construction*

In the resultative construction, the action denoted by a verb has an effect on an entity denoted by a postverbal NP. As a result, the entity undergoes a change of state which a resultative complement characterizes. Thus we can understand this situation from the perspective of cognitive grammar as follows: there is a transmission of energy from a participant (an Agent) to another participant (a Patient), and the participant which receives the energy reaches the ultimate state.²¹ Based on Nakamura's (1993) representation of cognitive structures, we will represent the following situation within a cognitive scope as the cognitive model of the resultative construction: a double arrow which denotes the transmission of energy reaches the Patient from the Agent and a wavy arrow which denotes a non-energetic change of the state reaches the resultant state.

Moreover, resultative constructions normally imply that the causation is direct and that no intervening time in a causal sequence is possible, as shown in (56) and (57).

- (56) a. Tom shot Bill dead.
- b. *In a forest, Tom shot Bill dead in a hospital.
- (57) a. Tom ate himself sick.
- b. *Yesterday Tom ate himself sick today.

(56a) cannot be used to mean that Tom shot Bill in a forest and Bill later died in a hospital. Hence, we cannot give different spatial settings to the verb and the resultative complement, as in (56b). Similarly, (57a) cannot be used to mean that Tom ate himself or that something he ate made him sick. Rather, it means that Tom's continuous eating immediately made him sick. We cannot also give different temporal settings to the verb and the resultative complement, as in (57b). This implication is a characteristic of resultative constructions. If these sentences just implied the causation, it would not be necessary for it to be limited to the direct one. We can give different settings to a predicate of cause, for example, *cause*, and a predicate of effect, *break*, in a sentence which expresses a causation, as in (58).

- (58) At noon, Sam caused my balloon to break some time later by setting it on the hot sand under the blazing sun.

Thus, we can claim that the event denoted by a resultative construction is recognized as an event which takes place in one setting of space and time.²²

In accord with the fact mentioned above, I would like to diagram a cognitive

²¹I basically follow the terminology and classification of the semantic roles of participants in Langacker (1991).

²²This is the point where a cognitive model of the resultative construction I propose is different from one proposed by Nakamura (1993). I think a notion of setting is very important in order to account for acceptability of various resultative constructions, in particular, the derived resultative constructions.

model of a resultative construction, as in Figure 9. Note that what Figure 9 shows is a prototypical cognitive model involving an Agent and a Patient.

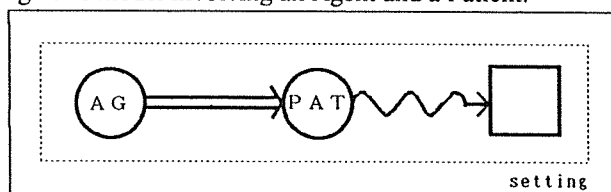


FIGURE 9

The tail of the chain is the resultant state described by a resultative complement in the model. The Agent, the Patient and the resultant state are all included in its scope and the whole chain within the scope is surrounded by one setting. Furthermore, the whole chain within the scope is prototypically given greater salience via profiling.

Recall that Agents are prototypically human entities which initiate actions by means of the transmission of energy to other participants along the chain, whereas Patients are prototypically inanimate entities which receive energy and are affected in some way by the energy flow. According to Langacker (1990), a subject, as figure within the profiled relationship, is the most prominent participant, whereas a direct object is the second most prominent participant, i.e., a prominent participant lying downstream from a participant subject, either in the flow of energy or in some abstract analogue. Accordingly, the Agent is a subject, and the Patient is an object in Figure 9.

This cognitive model can predict the various properties of a verb, two noun phrases (a subject and an object), and a resultative complement in the resultative construction. We will further examine this in what follows.

4.2 Implications for Verb Types

Not every verb can enter into the resultative construction. Rapoport (1993), for example, argues that a verb which can appear in the resultative construction must have two properties: it must necessarily entail an effect on or a contact with its object and it must be a verb of process or activity, whether transitive or intransitive. Obviously, such properties cannot be read off of the syntactic level, since they are not, for example, related to a particular syntactic structure. These properties are related to the meaning of the verb and account for the ungrammaticality of (59) and (60).

- (59) a. *I shot at the wolf dead.
 b. *Medusa saw the hero stiff. (Rapoport 1993: 170)
- (60) a. *I lit the match smoky/hot/black.
 b. *I hit three people unconscious/upset. (ibid.: 171)

According to Rapoport (1993), the verbs in (59), *shoot at* and *see*, do not necessarily entail an effect on their objects, and so resultative constructions based on them are ungrammatical. The verbs in (60), *light* and *hit*, entail an effect on, or contact with,

²³ The best-known aspectual classification is that of Vendler (1967), which was extended in Dowty (1979). Vendler distinguishes four classes of verbs in terms of the internal temporal organization of the event or state of affairs denoted by the verbal predicate: states, activities, accomplishments, and achievements. States (e.g., *know, like, exist, be tall*) have no internal temporal differentiation, i.e. there is no clear beginning or end. Activities (e.g., *run, watch, dance, talk*) have no natural endpoint, but they are energetic. The first two categories are different from accomplishments (e.g., *swim a mile, walk a block, build*) in that the latter have a defined endpoint. Achievements (e.g., *reach, die, notice a picture*) also have a culminating point, but they are a punctual occurrence without duration.

- (66) a. Gray sprayed the paint on the wall.
[all the paint used, but perhaps not all the wall covered]
b. Gray sprayed the wall with the paint.
[all the wall covered, but perhaps not all the paint used] (ibid.)

As for the same problem, Nakamura (1993) also remarks that prepositional object constructions denote an event, where energy is not transmitted to the object, or the object is not affected by the designated action. For example, the following sentences mean that the subjects could neither gain nor reach the objects:

- (67) a. He grabbed at the chance of going.
b. He snatched at the book but I did not let him get it.
c. He clutched at the branch but he could not reach it.
- (McArthur 1981: 191)

Accordingly, a prepositional object construction cannot participate in a resultative construction, because no energy is transmitted from an Agent to a Patient, as sketched in Figure 10.

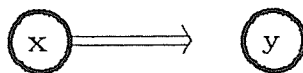


FIGURE 10: x shoots at y

Let us turn to the prepositional objects in (68). They are different from the preceding case, because they are not normally allowed to follow the verbs without the prepositions, as in (69).

- (68) a. The professor talked to us.
b. They laughed at John.
(69) a. *The professor talked us.
b. *They laughed John.

Nevertheless, prepositional objects cannot appear in resultative constructions.²⁴

- (70) a. *The professor talked to us into a stupor.
b. *They laughed at John off the stage.
- (71) a. The professor talked us into a stupor.
b. They laughed John off the stage.

This follows from the fact that the object must of necessity follow the verb directly in the resultative construction. Thus, a conception of the transmission of energy plays an important role in this construction.

²⁴ In syntactic framework, examples like (70), where a PP rather than an NP follows the verb, are ungrammatical because the resultative complement does not govern its potential subject by the c-command requirement on predication.

Moreover, this conception succeeds in excluding stative verbs from the resultative construction, as in (72), because a construal of stative verbs does not include the transmission of energy.

- (72) a. *The Loch Ness monster appeared famous.
 b. *The Statue of Liberty stood green.
 c. *Jesus lived into a legend.
 d. *The tenants remained triumphant.
 e. *The queen reigned popular.
 f. *The identical twins differed to astonishment.
 g. *The POW's survived into frustration. (Carrier & Randall 1989: 98)

4.2.2 *Transitive Verbs.* A clause that has both a subject and a direct object is said to be transitive. Langacker (1990) argues that a prototypical transitive clause profiles an action chain involving the transmission of energy from subject to object, with former being agentive and the latter undergoing a change of state. In the present framework, those transitive verbs are viewed as causative events. Note that the base of the resultative construction is also the causative *construal* (or cognitive structure). There are, in fact, many transitive verbs which can participate in the resultative construction as follows:

- (73) a. I kicked the door open.
 b. Mary broke the vase into pieces.
 c. Tom painted the door red.

Though the construals depend on the verbs, the base of transitive verbs such as *kick* and *break* is certainly the causative base, repeated here as Figure 11.

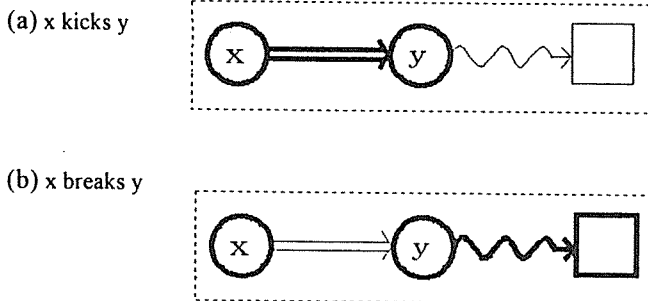


FIGURE 11

This might follow that all verbs which have the causative base can appear in the resultative construction. The meaning of a verb, however, depends not only on the base but also on profiling. For example, the transitive verb *touch* has a causative base, but it cannot normally participate in the resultative construction, as in (74).

- (74) a. *Midas touched the tree {golden/into gold}.
 (Carrier & Randall 1989: 97)
 b. *The magician touched her dumb.
 (Nakamura 1994: 6)
 c. *I touched the door open.

This is because the verb doesn't profile the transmission of energy and the change of state. It indicates just the contact with an entity, as sketched in Figure 12.²⁵

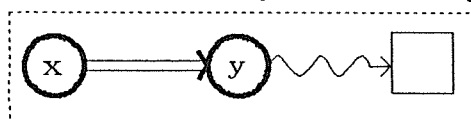


FIGURE 12: x touches y

Transitivity is a matter of degree and depends on the meanings of the clause as a whole. Even if a resultative complement is added to the construal of *X touches Y*, it doesn't match the cognitive model of the resultative construction.

Moreover, there are many transitive clauses that do not appear to involve a transmission of energy from subject to object, even in an abstract or metaphorical sense. Prominent examples include clauses describing perception, emotion, or cognition:

- (75) a. Several sightseers saw the monkeys in the mountain.
 b. I heard a loud voice.
 c. John loves Beethoven.
 d. He has always feared mice.
 e. She could not understand his conduct.
 f. I have carefully considered your offer.

Langacker (1990) assumes that the subjects in these sentences are Experiencers (i.e., they engage in some type of mental activity), and that the object is totally unaffected by the designated process. He regards this type of clause as "an extension from the transitive-clause prototype" (1991: p.304).

The interactions in (75) can be represented as follows, where the broken arrow indicates the mental contact of the Experiencers with the objects of perception, emotion, or conception:

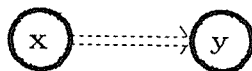


FIGURE 13: x sees y

Though the subjects (Experiencers) of these verbs carry out the requisite mental activity, the objects are neither "energy sinks" nor affected participants. Adding a resultative complement to a mental verb is, therefore, inconsistent with the resultative

²⁵ I make use of the representation proposed in Nakamura (1994) for the verb *touch*'s construal. The verb *touch* profiles only part of the double arrow, as diagrammed in Figure 12. Compare Figure 12 with Figure 11(a).

construction, as in (76).

- (76) a. *Medusa saw the hero into stone. (Hoekstra 1988: 118)
 b. *Harry liked Betty to desperation. (Jackendoff 1990: 231)
 c. *She understood his conduct worthy.
 d. *He watched the TV broken. [= (3a)]
 e. *He believed the idea powerful. [= (3b)]

In order to explain the unacceptability of cases like (74) and (76), Simpson (1983) and the others invoke a notion of affectedness: since these verbs do not in general affect their objects, they never appear in resultative constructions. However, the notion of affectedness does not explain a contrast in the following examples:

- (77) a. *Over the course of many years, tourists' backs have touched the statue's nose smooth.
 b. Over the course of many years, tourists have touched (= patted, stroked) the statue's nose smooth.
 (78) a. *The appraisers felt the rug threadbare through their shoes.
 b. Trying to determine its worth, the appraisers felt the rug threadbare.
 (79) a. *The botanists smelled the moss dry from across the room.
 b. The botanists smelled (= sniffed) the moss dry.
 (Carrier & Randall 1989: 98)

According to Carrier and Randall (1989), these pairs do not differ with respect to affectedness: for example, the statues are no more affected by the tourists' touching them purposely than accidentally in (77). The affectedness condition says that these verbs should not form a resultative construction. These verbs, however, do appear in resultative constructions, but only on their intentional reading, as in (77b), (78b) or (79b).

There are two ways to transmit energy, i.e. physically or metaphorically. Let us regard the intention as metaphorical energy, which is able to let an object change and undergo a change of state. The verb *see* in (76a) does not depend on the will, whereas we can regard *stare* in (80) as an intentional act. Therefore, the verb can appear in a resultative construction, as in (80).

- (80) a. We stared her into confusion. [= (61)]
 b. ??Tom stared him {dumb/speechless}.

In sum, even if the construal of a verb, which has a causative base, does not profile the transmission of physical energy that brings about the resultant state, we can understand that the subject's intention is a kind of energy in some context. In that case, since the portion of the transmission of energy is profiled, the verb can co-occur with a resultative complement, as in (77b), (78b), (79b) or (80).

4.2.3 *Intransitive Verbs.* Let us turn to intransitive verbs. They seem to lack a transmission of energy in their construals. Following Perlmutter and Postal (1984), we will here divide intransitive verbs into two classes, i.e. unaccusative verbs and unergative verbs. The examples in (81) are unaccusative verbs and those in (82) are unergative verbs.

- (81) a. break, burn, close, freeze, fall, melt, sink, etc.
 b. appear, arise, arrive, be, exist, occur, remain, etc.
- (82) bark, bow, cough, cheat, cry, dance, hammer, jog, knock, laugh, pray, shout, sleep, speak, talk, think, walk, etc.

Here construals of these intransitive verbs are regarded as construals of a *thematic relationship*.²⁶ Under our framework, this thematic relationship is sketched as Figure 14.



FIGURE 14

We will see in what follows that unaccusative and unergative verbs are different in reference to energy in construals, though both construals are thematic relationships. The difference will be an important factor in deciding which verb can participate in resultative constructions.

Let us first look into unaccusative verbs. Many unaccusative verbs as in (81a) can be used either transitively or intransitively without any difference in form. These verbs display an ergative pattern in which the semantic role of the intransitive subject matches that of the transitive object, as in (83). We will tentatively label these verbs as unaccusative verbs of the *freeze* type here.

- (83) transitive : John froze the ice cream solid.
 intransitive : The ice cream froze solid.

The other unaccusative verbs, e.g. (81b), can be used only intransitively, as in (84). We will label these verbs as unaccusative verbs of the *arrive* type.

- (84) transitive : *A captain arrived the steamer in harbor.
 intransitive : The steamer arrived in harbor.

I suppose that unaccusative verbs of the *arrive* type are reasonably viewed in the present framework as single-participant thematic processes whose construal is *absolute*, because the verbs cannot be used transitively. As for an absolute construal, Langacker (1991) offers the following account:

²⁶Langacker (1991) describes a thematic relationship as a comparatively simple, conceptually autonomous relationship involving just a single participant.

[An absolute construal is] the construal of a relationship (especially a conceptually autonomous thematic relationship) without any salient reference to causation or the energy that drives or sustains it. (Langacker 1991: 543)

In other words, to the extent that the autonomous event component is evoked or profiled independently, its construal is said to be absolute. He further argues that “an absolute construal...does not imply that the motion is conceived as being inherently non-energetic, but rather that only the thematic process itself (i.e. the movement per se) is saliently evoked and placed in profile” (p.390). Thus, in the case of the verb *arrive*, its construal is absolute and it specifies the goal (i.e. a kind of a resultant state), as sketched in Figure 15.

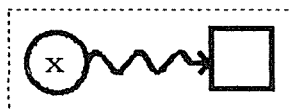


FIGURE 15: x arrives

Even if a resultative complement (and a reflexive) is added to this type of unaccusative verb, the sentence will be ungrammatical, as in (85).

- (85) a. *John arrived sick. [= (5a)]
 b. *John arrived himself sick. [= (8a)]

This is because the new construal made by adding a resultative complement is inconsistent with a cognitive model of the resultative construction.

On the other hand, unaccusative verbs of the *freeze* type can be used transitively. The difference between an intransitive verb and a transitive verb is the difference in scope. In the case of the *freeze* type, since its construal has a causative base, it excludes the transmission of energy from an Agent out of the scope when used as an intransitive verb, whereas the transitive verb *freeze* involves it within the scope. Thus a construal of the verb *freeze* is different from a construal of *arrive* in base, shown as Figure 16 (transitive) and Figure 17 (intransitive).²⁷

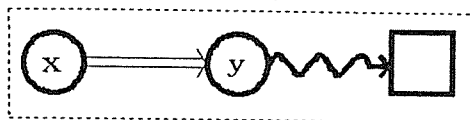


FIGURE 16: x freezes y

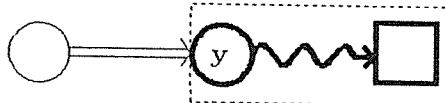


FIGURE 17: y freezes

²⁷ The transitive verb *freeze*, diagrammed in Figure 16, does not specify the transmission of energy. This is because we can freely specify the way of transmitting energy by adding a *by*-phrase, as (i) shows:

(i) John froze the ice cream by exposing it to Dry Ice.

If a resultative complement is added to this type of unaccusative verb, the verb can appear in the resultative construction, while the sentences are not prototypical resultative constructions.

- (86) a. The water froze solid. [=(4a)=(62a)]
 b. The vase broke into pieces. [=(4b)]

In this case, since the head of a profiled portion of action chain is selected as a subject, a Patient is selected as a subject within the limited scope consisting of two segments, as shown in Figure 18.²⁸

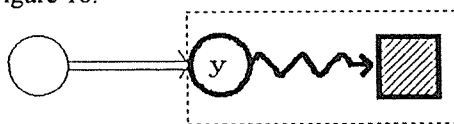


FIGURE 18: y freezes ZP (ZP: a resultative complement)

Thus it is unaccusative verbs of not the *arrive* type but the *freeze* type that can appear in resultative constructions. This is because the cognitive structure of *freeze* subsumes the portion of the transmission of energy from an Agent even though it is outside of the scope, whereas the *arrive* type imposes an absolute construal on the movement it designates. This tells us that even in the case of intransitive verbs the problem of whether they can appear in resultative constructions has an important relation to the problem of whether the verb has a construal including the transmission of energy or not.

Let us now turn to unergative verbs. These verbs cannot appear in resultative constructions only by adding a resultative complement, as shown in (87).

- (87) a. *Bill danced sick.
 b. *Richard shouted hoarse. [=(6b)]
 c. *She slept sober.
 d. *Bill ran breathless.
 e. *He read asleep.

The construal of unergative verbs is also a thematic relationship, but it is not an absolute construal. Many unergative verbs are verbs in which the same participant both undergoes the thematic process and supplies the energy that brings it about. For instance, the subject of *run*, *walk*, *jump*, or *dive* not only moves through space but also carries out a pattern of muscular exertion to propel itself along this path. Thus the subject itself is both an energy source and an energy sink, as diagrammed in Figure 19.

²⁸In Figure 18, the shaded portion indicates that a resultative complement (e.g. *solid*) further modifies the resultant state a verb (e.g. *freeze*) specifies.

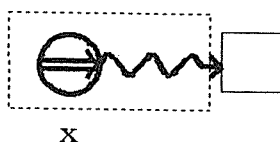


FIGURE 19: x dances

Recall that an energy source is distinct from an energy sink in the prototypical cognitive model of the resultative construction, as Figure 9 depicts. That is, it is necessary that energy is transmitted not internally but externally in order to bring about a resultant state denoted by an added resultative complement. Accordingly, we can mentally restructure the conceived event diagrammed in Figure 19, as sketched in Figure 20. Figure 20 indicates that physical or volitional energy is transmitted from one participant (a subject) to itself (a dummy object) externally.

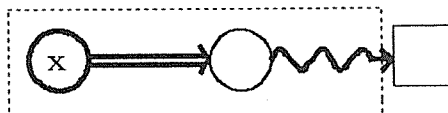


FIGURE 20: x dances

When an unergative verb is found in the resultative construction, we find that a fake object is added to the verb as well as a resultative complement, although the verb normally does not take an object, as in (88).²⁹

- (88) a. Richard shouted (*himself).
 b. He laughed (*himself).
 c. John walked (*his feet).
 d. She cried (*her eyes).

Thus a resultative complement can be predicated of a subject of an unergative verb through the use of a fake reflexive or an inalienably possessed NP (e.g. a part of subject's body), as in (89) and (90).

- (89) a. Mary danced herself tired. [=(7a)]
 b. Richard shouted himself hoarse. [=(7b)=(43b)]
 c. He laughed himself into a stupor. [=(1c)]
 (90) a. John walked his feet sore.
 b. She cried her eyes red.

In this case, a fake reflexive or an inalienably possessed NP has to be coreferential to the subject, because this type of resultative construction supposes the cognitive model diagrammed in Figure 21 reflecting Figure 19 and Figure 20.

²⁹This statement excludes so-called "cognate objects", as in *John laughed a big laugh*.

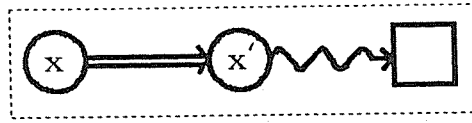


FIGURE 21: x dances x'(or y) ZP

Alternatively, a resultative complement may be predicated of a non-subcategorized object found with an unergative verb, as in (91).

- (91) a. They danced their competitors out of the contest.
- b. The child cried her mother into submission.
- c. The drill sergeant shouted the troop into a frenzy.

(p.c. M. T. Wescoat)

However, the facts in (92) indicate that the use of a non-subcategorized object is limited:

- (92) a. *I danced John sick.
- b. *Eveline shouted the child hoarse.

We will, therefore, handle this use as an extension from more grammaticalized pattern of fake objects in our framework. (We will look into this in section 5.3.)

4.2.4 Summary. Having examined which type of verbs can appear in the resultative construction, we come to realize that the notion of energy plays an important role in this construction. In the case of transitive verbs, since the base of their construals is a causative form (i.e. it consists of three portions), profiling needs to be taken into consideration. Profiling in the construal depends on the event represented by using the verbs. If the verb designates the transmission of energy which can bring about a resultant state, it can appear in the resultative construction.

In the case of intransitive verbs, the *freeze* type of unaccusative verbs can occur in the resultative construction, because their construals can subsume the portion of the transmission of energy outside of the scope. Unergative verbs can also occur in the resultative construction, because one participant both undergoes the thematic process and supplies the energy that brings it about. However, since the energy is transmitted internally, a fake object needs to be added as well as a resultative complement in order to be consistent with the cognitive model shown in Figure 9.

Thus, we can summarize the description about verbs as follows:

- (93) If a verb's construal includes a transmission of physical or metaphorical energy (within or without the scope) and profiles a portion of a non-energetic transition of the state or a portion of the state, the verb can occur in resultative constructions.

This succeeds in excluding verbs with prepositional objects, stative verbs and the *arrive* type of unaccusative verbs from the resultative construction.

4.3 Implications for Noun Phrases

According to Croft (1990), it is required that causally related events share participants since the participant at the endpoint of one event is the initiator of the next, causally connected, event. In a resultative construction, it is necessary that an Agent and a Patient already exist in the cognitive scope as shown in Figure 9, excepting unaccusative verbs of the *freeze* type. (In the case of these intransitive verbs, only Patient exists in the scope, because the Agent is excluded from the scope.) We can, therefore, predict that the following sentences are ungrammatical as resultative constructions:

- (94) a. *Mary laughed silly.
- b. *Peter ate full.
- (95) a. *The ice froze itself solid.
- b. *He kicked the box Bill down the stairs.

(94a-b) are ungrammatical, because sentences lack one participant, i.e. Patient. (95a-b) are also ruled out, because they have two distinct Patients.

Moreover, our approach can apply to the sentences in which an object disappears or is created as a result of the action denoted by a verb, as in (96)-(103).

- (96) *He deleted a whole file useless. (p.c. M. T. Wescoat)
- (97) *They destroyed/demolished the building into bits. (Kageyama 1994: 189)
- (98) *I exploded the bomb to smithereens. (Napoli 1992: 82 note 21)

Since each object in (96)-(98) ceases to exist and does not undergo any other change, it is incompatible with a resultative construction. Similarly, since each object in (99)-(103) is created and does not undergo any change, it is also incompatible with a resultative construction.

- (99) *Graham Bell invented the telephone useful.
 - (100) *He created a drama famous. (p.c. M. T. Wescoat)
 - (101) *He dug a hole deep. (Kageyama 1994: 189)
 - (102) *The archaeologist excavated the temple {clean/bare}.
 - (103) *The coroner exhumed the corpse {visible/accessible}.
- (Napoli 1992: 82 note 21)

Figure 22 shows that the energy flow is broken, because the object of “creation” verbs or “disappearance” verbs cannot exist throughout the activity denoted by the verbs.



FIGURE 22

However, we cannot simply claim that two types of verbs, i.e., “creation” verbs and “disappearance” verbs, are excluded from resultative constructions. This is because the same verb can be understood to express different semantic relationships to its object. For example, the verb, *erase*, in (104) might be a kind of “disappearance” verb, but the semantic relationship between the verb and its object in (104a), *erase* and *the blackboard*, is different from the one between *erase* and *the word* in (104b). (104a) means that Paul erased something from the blackboard, whereas (104b) means that he erased the word itself.

- (104) a. Paul erased the blackboard.
- b. Paul erased the word.

As for resultative constructions, the resultative construction based on (105a) is grammatical, but the one based on (105b) is ungrammatical as follows:

- (105) a. Paul erased the blackboard clean.
- b. *Paul erased the word useless.

Since the verbs are same in (a) and (b), an analysis based on the verb classes such as “disappearance” verb and “creation” verb cannot account for the difference of grammaticality between (a) and (b). Similarly, the analysis is not viable in (106) including the verb, *paint*:

- (106) a. The artist painted a Rembrandt black.
- b. *The artist painted a picture black.

(Carrier & Randall 1989: 138 note 104)

(106a) means that the artist put black paint on a painting by Rembrandt. (106b) might mean that he created a picture, so that it became black. Not an analysis based on the verb classes but our approach can appropriately predict the difference of grammaticality between (106a) and (106b). Since the object in (a), *a Rembrandt*, already exists, it can undergo a change of state. However, since the object in (b), *a picture*, comes to existence, it does not undergo any change of state before it appears. The situation in (a), therefore, matches up to the resultative construction, but the one in (b) is contradictory to adding a resultative complement.

Let us next discuss instrumental-subject resultative constructions. Goldberg (1991b) argues that instrumental-subject resultative constructions are normally unacceptable, as in (107)-(108).

- (107) *The feather tickled her silly.
- (108) *The hammer pounded the metal flat. (Goldberg 1991b: 80)

However, we find some instrumental subjects acceptable.

- (109) Mary's stick knocked John unconscious.
- (110) The jackhammer pounded us deaf.

Under our framework, an Instrument is an inanimate object manipulated by an Agent to affect a Patient and it lies between the Agent and the Patient in a cognitive model, so that the Instrument is most naturally construed as an entity which brings about a direct effect on the Patient. However, instruments cannot normally carry out activities described by verbs without the Agent's responsibility involved. Especially, in resultative constructions, an Agent plays an important role as an energy source which causes a resultant state. It may, therefore, be necessary for instrumental-subject sentences to have extra meanings. We assume, then, that instrumental-subject resultative constructions are allowed as non-prototypical ones, as far as they are construed as referring to a situation in which the Patient is more affected by the Instrument than by the Agent.³⁰

4.4 *Implications for Resultative Complements*

As we have seen in section 2.1, the state denoted by resultative complements is not the Agent's state but the Patient's one, as in (111)-(114).

- | | |
|--|--|
| (111) I wiped <u>the table</u> <u>clean</u> . | (cf. *I wiped the table <u>sweaty</u> .) |
| (112) We cooked <u>the food</u> <u>black</u> . | (cf. *We cooked the food <u>sick</u> .) |
| (113) Mary danced <u>herself</u> <u>tired</u> . | (cf. *Mary danced <u>tired</u> .) |
| (114) Tom shouted <u>himself</u> <u>hoarse</u> . | (cf. *Tom shouted <u>hoarse</u> .) |

In Figure 9, the resultant state follows a Patient, so that we can account for the property that resultative complements are object-oriented. Moreover, many researchers have observed that APs, PPs, and only a few NPs can be resultative complements. However, in our model a resultant state is indicated as a square without any distinction of category. In what follows, we will look into these resultative complements respectively, and show that our representation is sufficient to handle the resultative complements.

4.4.1 AP Resultative Complements. Let us consider AP resultative complements first. It has been said that AP resultative complements in *-ing* and *-ed* are incompatible with resultative constructions as follows:

- (115) a. The gardener watered the tulips {*flattened/*wilting/flat/soggy}.
- b. The jockeys raced the horses {*exhausted/*sweating/thirsty/hungry /sweaty}.
- (Carrier & Randall 1992: 212 note 43)

For *-ed* forms, a past participle describes a completed state. Since a resultative complement also describes a state, past participles might become a candidate for AP resultative complements. Nevertheless, they are incompatible with our cognitive model of resultative constructions, because they imply that a state was completed before some temporal reference point. Resultative constructions using *-ed* resultative

³⁰M.T. Wescoat suggested that (109) means that human cannot do so, but the stick can.

complements should suggest that the action of the verb results in the object already being in some particular state. For example, (116) suggests that the meal was blackened at some earlier time as a result of her cooking it.

(116) *Katharine cooked the meal blackened.

This situation is causally too strange to be described by the resultative construction. Our approach thus can exclude this type of AP resultative complement. However, adjectives such as ones with syllabic *-ed*, of course, can appear in resultative constructions.

(117) We ran our Nikes ragged. (Carrier & Randall 1989: 132 note 56)

For *-ing* forms, Smith (1983) claims that *-ing* adjectives are not allowed because they designate events rather than states. If this claim is correct, our model could exclude *-ing* adjectives, because they don't designate states. However, some *-ing* adjectives are allowed, as in (118).

- (118) a. She painted the robot frightening.
 b. A sorcerer was hired to charm all the boring princes more {interesting/fascinating/intriguing}.
 c. She painted her face simply stunning.
 d. Don Juan wined and dined his women willing.
 e. With the right kind of marijuana, people can smoke themselves {daring/loving/dashing}. (ibid.: 51)

Carrier and Randall (1989) claims that these *-ing* adjectives are allowed since they designate states, despite their morphology. Thus we can not restrict resultative APs morphologically. Rather, we simply claim that APs which can designate a resultant state are allowed. A morphological restriction prohibiting *-ing* and *-ed* resultative complements would be incorrect.

4.4.2 PP Resultative Complements. According to Aske (1989), there are two types of directional or path phrases in English. One is a mere locative, i.e. *locative path* phrase, and the other one is a telic non-verbal predicate, i.e. *telic path* phrase. The locative path phrase adds the path or one-dimensional region in which the activity took place, as in (119).

- (119) a. Lou ran in the park(0Dim-LOC).
 b. Lou ran through the park(1Dim-LOC = PATH).
 c. Pat went up the ladder. (Aske 1989: 6)

On the other hand, the telic path phrase, though similar in form, predicates an end-of-path of location/state of the figure, besides the path of motion, as in (120).

- (120) a. Pat swam into the cave(INTO THE CAVE).
 b. The leaf blew off the table(OFF THE TABLE). (ibid.: 6)

It is probably easy to see that not a locative path phrase but a telic path phrase can be add to a verb as a resultative complement, as the following data show:

- (121) a. They laughed Mary {*on the stage/off the stage}.
 b. The man smashed the glass {*in pieces/into pieces}.
 c. Mary bullied John {*in leaving/*at leaving/ into leaving}.

This is because the telic phrase can predicate a state of the figure (i.e. postverbal noun) as an end-of-path. We do claim that only PPs which denote an ultimate state can occur in resultative constructions.

4.4.3 *NP Resultative Complements.* As it turns out, resultative NPs are quite rare. A NP is not normally allowed to be added to a verb as a resultative complement, as in (122), because a noun profiles a thing, not a state.

- (122) a. *The baker pounded the dough a pancake.
 b. *She ground the coffee beans a fine powder.
 (Carrier & Randall 1989: 45)

Ineligible NPs in (122) will be allowed only if they are embedded within a resultative PP, as in (123).

- (123) a. The baker pounded the dough into a pancake.
 b. She ground the coffee beans {into/to} a fine powder. (ibid.: 45)

However, a very few NPs can be resultative complements.³¹

- (124) a. Ben painted the door a pale shade of yellow. [= (1b)]
 b. They painted the car a bright shade of red. [= (2c)]
 c. She painted her barn a revolting shade of green.

Let us suppose that this type of noun is semantically close to adjectives and describes a state. If this supposition is correct, we will not need to make an exception for this type of NP.

4.4.4 *Summary.* We indicated a resultant state denoted by a resultative complement as a square in Figure 9. Though many researchers have mentioned that APs, PPs, and only a few NPs can be resultative complements, we can claim that only resultative complements which denote a state can appear in the resultative construc-

³¹Yamada (1987) supposes that the exceptional NP, such as *a pale shade of yellow*, has the following internal structure:

[_{AP} [_{QP} a pale shade of] [_{A'} yellow]] (p.76, fn.10)

tion irrespective of morphology or syntactic category, as observed in the foregoing three subsections.

5 AN ANALYSIS BASED ON THE COGNITIVE MODEL OF THE RESULTATIVE CONSTRUCTION

In this section I will show that our analysis based on the cognitive model of the resultative construction (i.e. Figure 9) solves the problems with the previous analyses pointed out in section 2.3.

5.1 *A Notion of Path*

Croft (1990), who proposed the causal chain, assumes that “there is an experiential relation between motion and causation that strongly suggests the path-based metaphors in which direction of motion is extended to direction of causation” (p.197). Thus, the chain denoting the directionality of motion and the one denoting the directionality of causation are on different levels. This idea may be reflected in the following *Unique Path constraint* proposed in Goldberg (1991a):

(125) *Unique Path constraint*

If an argument X refers to a physical object, then more than one distinct path cannot be predicated of X within a single clause. (ibid.: 368)

She goes on to argue that “the notion of a single path entails two things: 1) X cannot be predicated to move to two distinct locations at any given time *t*: 2) The motion must trace a path within a single landscape” (ibid.: 368). The Unique Path constraint is applied to metaphorical changes of location as well as literal ones. For a resultative complement, she argues that it is interpreted as a metaphorical path. Therefore, the constraint can account for certain co-occurrence restrictions. For example, resultative complements cannot co-occur with directionals, because the directionals coding a change of physical location would code a distinct path from the resultative complements coding a change of state:

(126) *Ann kicked her black and blue down the stairs. (ibid.: 369)

Resultative complements also cannot co-occur with ditransitives, as in (127).

(127) *Mary threw Joe a cake; golden. (Goldberg 1991b: 86)

Moreover, as Simpson (1983) and Goldberg (1991a) point out, resultative complements cannot occur with directed-motion verbs when used literally.

- (128) a. *John took the child ill. (meaning the child became ill because of the traveling)
 b. *She ascended sick. (meaning the ascension made her sick) (ibid.: 86)

Note that we can also explain these co-occurrence restrictions by means of the cognitive model in Figure 9. In (126), the chain denoted by the verb is construed as a branching chain, because one resultative complement codes a metaphorical path and the other codes a physical one. The chain in (127) is also construed as a branching one, because there are two distinct objects (Patients), i.e. *Joe* and *a cake*. Moreover, (128) is ungrammatical, because each verb in (128) specifies a certain physical location within its scope and therefore its physical location does not accord with a resultant state denoted by the resultative complement. However, many verbs coding just a physical path, i.e. directed-motion verbs, are used metaphorically to code a change of state.

- (129) a. The milk went sour.
 b. John fell asleep.
 c. The mechanic brought many machines into play.

In (129a), the milk doesn't literally go anywhere, but metaphorically moves into the state of sourness. Similarly, in (129b) John doesn't literally fall anywhere, but metaphorically falls into a state of sleep and in (129c) the machines are not literally brought anywhere, but metaphorically are brought to the state of play. When used in this way, these verbs imply no physical path. The difference between (128) and (129) is whether a verb specifies a physical location as well as a physical path, or codes only a physical path.

Let us first discuss a problem with the previous analyses, repeated here as (130).

- (130) He threw the suitcase open. [=(37)]

As observed in section 2.3, (130) cannot mean that the suitcase was thrown in some direction, although *throw* normally entails the movement of the theme along a physical path. Rather (130) just means that he forcefully opened the suitcase. In our framework, this can be explained as follows: *throw* can imply no path when used with a resultative complement, in order to avoid the conflict with the metaphorical path coded by the resultative complement, *open*. It is possible, because *throw* codes a physical path only. Therefore, (130) does not mean that the suitcase moved somewhere literally. Of course, the resultative complement cannot co-occur with a directional phrase, although it is conceivable that a suitcase could be thrown into the room and open simultaneously, as in (131).

- (131) a. *He threw the suitcase open into the room. [=(38a)]
 b. *He threw the suitcase into the room open. [=(38b)]

Thus a path denoted by a verb must not be distinct from a path denoted by a resultative complement within a cognitive model.

Then, let us consider how our approach would handle the co-occurrence of two resultative complements in a resultative construction as in the following:

- (132) a. He washed his face shiny clean.
 b. He nailed the door closed shut.
 (Goldberg 1991b: 371, emphasis mine)

In these cases, one resultative complement serves to modify the other, and together they form a single constituent.³² That is, they can be metaphorically understood in terms of a single path. Similarly, we find that if one resultative complement is understood to further specify the other, two resultative complements can co-occur, because they define a single path:

- (133) a. He pounded the dough flat into a pancake-like state.
 b. The liquid froze solid into a crusty mass. (ibid.: 371, emphasis mine)

On the other hand, we can successfully disallow the following sentences.

- (134) a. *She kicked him bloody dead.
 b. *He wiped the table dry clean. (ibid.: 370, emphasis mine)

This is because two resultative complements designate two distinct changes of state. Therefore, the chain is construed as a branching one in the cognitive model of these resultative constructions.

In sum, we have seen that it is necessary to mention a notion of path in discussing resultative constructions. A path defined by a verb and a resultative complement (or two resultative complements) must be a single path in a resultative construction. That is, a chain must be a non-branching chain in a cognitive model of a resultative construction.

5.2 Restrictions on AP Resultative Complements

The type of resultative complements that can appear in resultative constructions is fairly limited, as in (135).

³²We will consider two constituency tests to demonstrate our claim that the string *shiny clean* forms a single constituent in (132a). First, *shiny clean* may occur in the *both...and* construction, which is known to require in general that its conjuncts be single constituents:

(i) He washed his face *both shiny clean* and more importantly free of blemish- causing oil.
 (p.c. M. T. Wescoat)

Next, right node raising is known to affect only single constituents, and *shiny clean* may occur in critical position in this construction:

(ii) He washed his face and Mary scrubbed her hands *shiny clean*. (p.c. M. T. Wescoat)

Thus, the two foregoing constituency tests lead the same conclusion that the string *shiny clean* is indeed a single constituent.

- (135) a. *He drank himself {funny/happy}.
 b. *He wiped it {damp/dirty}.
 c. *He hammered the metal {beautiful/safe/tubular}.

(Goldberg 1991b: 82)

In this section, we will first look at a restriction on AP resultative complements proposed by Goldberg (1991a) and Napoli (1992). As they have pointed out, most AP resultative complements denote an end of scale, as in (136) and (137). However, they give us no sufficient explanation and motivation for this tendency.

- (136) a. She wrung the shirt {dry/*damp}. [= (9a)= (39a)]
 b. She watered the tulips {flat/*droopy}. [= (9b)= (39b)]
 c. We heated the coffee {hot/*tepid}. [= (9c)= (39c)]
 (137) a. The joggers ran the pavement {thin/*worn}.
 b. The king laughed himself {sick/?slightly nauseous}. (Napoli 1992: 79)

We will, therefore, try handling this restriction in our approach here. Let us begin with the effect of an added resultative complement. Here it should be noted that the terms, *bounded* and *unbounded*, have been used in discussions of verbal aspect. In particular, achievement and accomplishment senses of verbs are classified as bounded, and activity and stative senses of verbs are classified as unbounded.

For a resultative complement, it has been said that an unbounded event denoted by activity verbs comes to be considered as a bounded event when a resultative complement is added. In order to show this fact, we will use two types of phrases, i.e., “for X time” and “in X time”, as a diagnostic for aspectual difference. According to Dowty (1979), *in*-phrase is used as a diagnostic for accomplishments or achievements (i.e. a bounded event), while *for*-phrase is used as a diagnostic for activities (i.e. an unbounded event). The following examples (138)-(140) indicate that resultative constructions have the delimited event readings:

- (138) a. He pushed the door {for/*in} 10 minutes.
 b. He pushed the door open {*for/in} 10 minutes.
 (139) a. Mary wiped the table {for/*in} 5 minutes.
 b. Mary wiped the table clean {*for/in} 5 minutes.
 (140) a. The professor talked {for/*in} an hour.
 b. The professor talked us into a stupor {*for/in} an hour.

The following examples show that resultative constructions are not consistent with *while*-readings:

- (141) a. ?? While she sang the baby to sleep, I fell asleep.
 b. ?? While she roared herself hoarse, she fainted.

Thus the facts in (138)-(141) indicate that resultative complements serve to delimit the events.

As sketched in Figure 9, the event represented by resultative constructions is an

event which occurs in one setting. Consequently, it is fair to say that an added resultative complement must delimit the boundary of the unbounded event. In the case of PP resultative complements, for the same reason PPs which indicate a telic path tend to be used as resultative complements. Moreover, it is possible to create circumstances in which PPs do relate to points on a scale, as in (142).

- (142) a. Sue talked Paul {into a stupor/*into slight disorientation}.
 b. Paul cried himself {to sleep/*to rest}. (Napoli 1992: 80)

However, as Napoli points out, PP resultative complements are not so readily interpreted as indicating points on a scale, because PPs tend to express a different type of activity rather than degrees of a single type, as follows:

- (143) She ripped the book {to tatters/in half}.

To get back to the AP resultative complements, even if a resultative AP which does not deal with the endpoint, i.e. *sick* and *hoarse*, is used in a resultative construction, it is interpreted as delimiting the clear boundary beyond which the activity cannot continue.

- (144) a. He ate himself sick.
 b. He talked himself hoarse.

(144a) implies that he ate to a point where he could eat no more, and (144b) implies that he talked to a point where he could talk no more. Since *sick* and *hoarse* are normally gradable adjectives, they can appear *ceteris paribus* with quantifying phrases, e.g., *a little*, as in (145).

- (145) a little sick/hoarse (cf. ?a little sober/flat/asleep/awake)

However, when they appear in resultative constructions, they receive a non-gradable interpretation, as shown in (146).

- (146) a. ?He ate himself a little sick.
 b. ?He talked himself a little hoarse. (Goldberg 1991b: 84)

We can, therefore, claim that the reason why AP resultative complements like *damp*, *droopy*, and *tepid* in (136) are ungrammatical is not only because they do not deal with the endpoint on a scale, but also because they cannot be interpreted as delimiting the clear boundary beyond the activity cannot continue; one can easily continue the activity beyond the state of affairs such as being *damp*, *droopy*, and *tepid*.

The view presented here also allows an account of the fact that not *individual-level* resultative complements but *stage-level* resultative complements, in the sense of Carlson (1977), are possible in resultative constructions.

- (147) a. John laughed himself {sick/*intelligent}.
 b. John ate himself {full/*tall}.
 (148) a. *He drank himself {funny/happy}.
 b. *He hammered the metal beautiful.

According to Carlson, predicates are classified into two groups: stage-level predicates are those which apply to spacio-temporal “stages” of individuals and are temporally bounded, and individual-level predicates are those which apply to individuals themselves and have temporally unbounded property. Since resultative complements serve to delimit the event, only stage-level resultative complements can occur in resultative constructions. If individual-level resultative complements describe a temporary state in some context, they may appear in resultative constructions, as in (149).

- (149) John laughed himself stupid.

The resultative complement *stupid* in (149) denotes a temporal state of stupidity, although it is normally a qualitative adjective.

On the other hand, in the case of the verbs which specify the resultant state, the event denoted by them is a bounded event. The added resultative complements, therefore, do not need to delimit the event. Actually, we can find gradable resultative complements with such verbs, e.g. *paint*, as in (150).

- (150) a. Ben painted the door a pale shade of yellow. [=(1b)=(124a)]
 b. I painted the door pinkish.

Moreover, the examples (151a-b) show that the acceptability is affected by whether we are led to focus on the endpoint of activity of the verb. The addition of *up* gives us an endpoint for the activity of scrubbing. In contrast to *shiny*, the resultative *clean* has a natural endpoint, so that it can be used without *up*, as in (151c).

- (151) a. *That pot sure scrubbed shiny.
 b. That pot sure scrubbed up shiny, didn't it?
 c. That pot sure scrubbed clean. (Napoli 1992: 81)

Thus, in the case of the verbs which specify the resultant state, resultative complements do not need to act as delimiters, but the resultative complements which we can add to the verbs are restricted semantically.

- (152) a. He broke the vase open.
 b. *He broke the vase worthless.

In (152), the resultative complement *open* further modifies the broken state, whereas *worthless* designates a distinct change of state. Furthermore, such resultative complements have to add new information to the sentences. The (a) cases in (153)-(155) are odd, because the state which the verb specifies and the one denoted by the resultative complement overlap, resulting in redundancy. In the contrast of the (a)

(153) a. #The artist sharpened her pencils sharp.
b. The artist sharpened her pencils {into fine points/good and sharp}.
(Carrier & Randall 1989: 93)

(154) a. #The gardener watered the tulips wet.
b. The gardener watered the tulips {wetter than I would have/good and wet}.
(ibid.: 93)

(155) a. #The workers unloaded the truck empty.
b. The workers unloaded the truck completely empty. (ibid.: 96)

5.3 The Derived Resultative Constructions and Their Acceptability

(156) a.OK/? The rooster crowed the children awake. [= (11a) = (40a)]
 b.OK/? The boxers fought their coaches into an anxious state. [= (40b)]
 c.OK/? In the movie's longest love scene, Troilus and Cressida kiss most audiences squirmly. [= (40c)]

(157) a.OK/* It rained the golfcourse useless. [= (11c) = (41a)]
 b.OK/* It snowed the roads slippery. [= (41b)]
 c.OK/* It thundered the children awake. [= (41c)]

(158) a. Mary laughed herself silly.
b. He sang himself crazy.

(159) a. John walked his feet sore. [= (90a)]
b. She cried her eyes red. [= (90b)]

Following these data, it is, therefore, assumed that these judgments of acceptability depend on whether it is difficult (or easy) for us to cognitively construe the subject and object as an Agent and a Patient respectively. In fact, there seems to be the following gradation of acceptability in relation to the types of fake objects of

intransitive resultative constructions (according to Levin and Rappaport (1995)):

(160) fake reflexive > inalienable NP > others

To be sure, the derived resultative constructions with other non-subcategorized object NP seem to be relatively restricted, as in (161) and (162).

(161) *I danced John sick. [= (92a)]

(cf. I danced myself sick. / I danced my toes sore.)

(162) *Eveline shouted the child hoarse. [= (92b)]

(cf. Eveline shouted herself hoarse.)

In the case of fake reflexives or inalienable NP, it is easier to causally relate the preceding subevent denoted by a subject and a verb with the following subevent denoted by an object and a resultative complement, because the subject (Agent) is identical with the object (Patient). However, in the case of (156), (157), (161), and (162), there is no common participant in the two subevents. Thus we need to employ other factors, e.g., our encyclopedic knowledge, the pragmatic factors, a certain context and so on, in order to relate them. In that case, a setting of an event represented by the resultative construction provides a clue to the connection between the two subevents. It is, therefore, assumed that cognitive plausibility raises the acceptability of (163) and (164).

(163) a. He washed the soap out of his eyes. [= (16a)]

b. They wrung a confession out of him. [= (16b)]

c. The sopranos sang us sleepy. (Hoekstra 1988: 116)

(164) a. The alarm clock buzzed the whole house awake. [= (10a)]

b. He sang the night club ablaze. [= (10b)]

c. They danced their competitors out of the contest. [= (91a)]

d. The child cried her mother into submission. [= (91b)]

e. The drill sergeant shouted the troop into a frenzy. [= (91c)]

We handle this use as an extension from more grammaticalized pattern of fake objects in our framework, and the fact that we can find these arbitrary relationship between the two subevents in the restricted setting also supports the cognitive analysis of resultative constructions.

6 CONCLUSION

In this paper we have shown that a cognitive analysis employing a cognitive model has an advantage over previous analyses in order to account for various properties of resultative constructions. By assuming the cognitive model in Figure 9, we have incorporated the three following notions in our analysis: a notion of the transmission of energy, a notion of path, and a notion of bounded/unbounded. We will summarize below the consequence that this study has brought about by using these notions.

First, a notion of transmission of energy has close relation to the types of verbs which can appear in resultative constructions. If a verb has a causative base including the transmission of energy from Agent to Patient, it can appear in a resultative construction, as in (165).

- (165) Tom shot Bill dead. [=(56a)]

Similarly, only intransitive verbs which have a construal including a transmission of energy, as in (166), or whose restructured construals are causative ones, as in (167), can appear in resultative constructions.

- (166) The water froze solid. [=(4a)=(62a)=(86a)]
 (167) a. Richard shouted himself hoarse. [=(7b)=(43b)=(89b)]
 b. She cried her eyes red. [=(90b)=(159b)=(167b)]

This notion can exclude unaccusative verbs of the *arrive* type like (168) and stative verbs like (169) from this construction.

- (168) a. *John arrived sick. [=(5a)=(85a)]
 b. *John arrived himself sick. [=(8a)=(85b)]
 (169) a. *The Loch Ness monster appeared famous. [=(72a)]
 b. *The Statue of Liberty stood green. [=(72b)]

Moreover, the following cases are unacceptable, because energy which causes the resultant state is not transmitted from the Agent to the Patient:

- (170) a. *I shot at the wolf dead. [=(57a)=(63a)]
 b. *They laughed at John off the stage. [=(70b)]
 (171) *They destroyed the building into bits. [=(97)]
 (172) *He created a drama famous. [=(100)]

Even verbs which do not normally involve the transmission of energy can co-occur with resultative complements, if the subject's intention is regarded as a kind of energy in some context.

- (173) a. *Medusa saw the hero into stone. [=(76a)]
 b. We stared her into confusion. [=(61)=(80a)]
 (174) a. *Over the course of many years, tourists' backs have touched the statue's nose smooth. [=(77a)]
 b. Over the course of many years, tourists have touched the statue's nose smooth. [=(77b)]

Secondly, a notion of non-branching path also plays an important role in this construction. This notion can account for the property that only the object NP can control the resultative complement, as shown in (175).

- (175) We cooked the food black. (cf. *We cooked the food sick.) [= (112)]

Moreover, it can account for several co-occurrence restrictions on resultative complements. For example, resultative complements cannot co-occur with directionals, ditransitives, or directed-motion verbs when used literally.

- (176) *Ann kicked her black and blue down the stairs. [= (126)]
 (177) *Mary threw Joe a cake golden. [= (127)]
 (178) *John took the child ill. [= (128a)]

Furthermore, our analysis including a notion of a single path can also handle the restriction on the co-occurrence of two resultative complements, as in (179).

- (179) a. He washed his face shiny clean. [= (132a)]
 b. *She kicked him bloody dead. [= (134a)]

Thirdly, a notion of bounded/unbounded can account for the tendency of AP resultative complements like (180).

- (180) a. She wrung the shirt {dry/*damp}. [= (9a)=(39a)=(136a)]
 b. John laughed himself {sick/*intelligent}. [= (147a)]

For PP resultative complements, it can also account for the reason why not locative but telic path phrases are used in resultative constructions, as in (181).

- (181) They laughed Mary {*on the stage/off the stage}. [= (121a)]

Finally, the cognitive approach can motivate the differences in judgments of acceptability of the derived sentences.

- (182) a. OK/? The rooster crowed the children awake. [= (11a)=(40a)=(156a)]
 b. OK/?/? The boxers fought their coaches into an anxious state. [= (40b)=(156b)]

Thus, in this paper we have considered the resultative constructions in English from the perspective of cognitive grammar and have shown that the cognitive analysis can precisely describe various properties of resultative constructions and account for the reason why some resultative constructions are acceptable, while others are not. In addition, the argument presented here makes it clear that we can further apply the cognitive approach to a broader coverage of linguistic phenomena beyond the ones dealt with in this paper.

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