Constraints on the co-occurrence of spatial and non-spatial paths in English: A closer look[1]

Yo Matsumoto

1. Introduction

In this paper I would like to examine the occurrences of spatial and nonspatial paths in English sentences. In particular, I will examine the validity of the Unique Path Constraint proposed by Goldberg (1991), which constrains the cooccurrences of spatial and nonspatial paths in English. I will point out that this constraint must be revised to incorporate the idea of "single development of change." I will further show that the findings of this paper have interesting implications for the issues concerning the polysemy of verbs and the relationship between (caused) motion constructions and resultative constructions.

2. Spatial and nonspatial path phrases and the Unique Path Constraint

There are a family of constructions that involve path of some sort. They include Intransitive Motion Construction and Caused Motion construction in (1) as well as Intransitive and Transitive Resultative Constructions in (2) (Boas 2003, Broccias 2003, Goldberg 1995, Goldberg and Jackendoff 2004, Iwata 2006, 2008a, Leek 2000, Levin and Rappaport Hovav 1995, Matsumoto 1997, 2002, Rappaport Hovav and Levin 2001, Rhode 2001, Simpson 1983, Talmy 1985, etc.).

(1) Intransitive Motion and Caused Motion Constructions

a. *Susan ran into the forest.*

b. *Bill kicked the ball out the window.*

(2) Intransitive and Transitive Resultative Constructions

a. *Susan ran herself to exhaustion.*

b. *Bill kicked John black and blue.*

One thing important is that resultative constructions involve a change of state, which can be regarded as a metaphorical change of location (e.g., Lakoff). For this reason I will use the term nonspatial path phrases to refer to those result phrases in (2).

Goldberg (1991) has observed that something interesting is found in the cooccurrences of spatial

and nonspatial path phrases in these constructions. Consider her examples like the following.

(3) Two spatial paths

**Bill sent his book to Sarah to Susan.*

(4) Two non-spatial paths

**He wiped the table dry clean.*

(5) Mixture of spatial and nonspatial paths

a. **The vegetables went from crunchy into the soup.*

b. **Joe kicked the suitcase open to Bill.*

c. **I kicked him out of the room black and blue.*

d. **That got him out of jail out of solitude.*

In (3) we see that a clause cannot have two spatial paths, or goals in this case. In a similar way, example (4) seems to suggest that a clause cannot have two nonspatial goals. In addition we see in (5) that one cannot have spatial and nospatial path phrases at the same time at least in these cases.

These observations have led her to propose the Unique Path Constraint or the UP Constraint, stated in (6).

(6) **The Unique Path Constraint** (Goldberg 1991: 368-369)

If an argument X refers to a physical object, then more than one distinct path cannot be predicated of X within a single clause. The notion of a single path entails two things.

1) X cannot be predicated to move to two distinct locations at any give time t.

2) The motion must trace a path within a single landscape.

This constraint has subsequently been discussed in Horita 1995, Ueno 1997, Lupsa 2003, Takao 2005, Iwata 2006, 2008a, etc.[2]

This constraint says that there is only one path expressed in a clause, not that there is only one path phrase. Path here is defined as the trajectory of motion or change. So multiple path phrases are accepted as long as they describe one path, as shown in (7).

(7) a. *She kicked him out of the house through the back door.* Goldberg 1991

b. *The liquid froze solid into a crusty mass.* Goldberg 1991

c. *John sent the letter to New York to Bill.* Gruber 1976

d. *Bill received it from New York from Bill.* Gruber 1976

In these examples, the second path phrases specify in detail the path described by the first path phrases, and therefore do not constitute counterexamples to the constraint. Nor is example (8) a counterexample, since those phrases describe one spatial path.

(8) *They drove from LA to Denver to Chicago to New York.*

There is an alternative constraint dealing with a similar range of data, namely Single Delimiting Constraint, proposed by Tenny (1994):

(9) **Single Delimiting Constraint:** The event described by a verb may only have one measuring-out and be delimited only once.

Goldberg (1991) has already shown that this constraint cannot work, citing the fact that the real constraint seems to be placed on paths, not endpoints, given that (10b) is as unacceptable as (10a).

(10) a. **She kicked him black and blue to the door.*
b. **She kicked him black and blue toward the door.* (Goldberg 1991)

In addition, there are examples in which two endpoint phrases cooccur with one predicate, as in (11).

(11) a. *He stirred up the mixture smooth.* (Bolinger 1971)
b. *I wadded up the paper loose.*

I will not further discuss this constraint of Tenny's, although her examples are discussed when relevant.

3. The Unique Path Constraint reexamined

3.1. Counterexamples

Let us first examine the validity of the original formulation of the UP Constraint. Possible counterexamples to this constraint have been discussed in the literature. Goldberg herself notes examples like the following:

(12) a. *Wipe it shiny clean*
b. *She stood up tall.*

She claims that the second adjective in (12a) "further specifies" the state represented by the first, and does not constitute a counterexample in this sense, in the same way as (7) above. (11b) involves a change of posture, and not a change of state or location, and therefore, she claims, the UP Constraint is not relevant. We will come back to these examples below.

There are real counterexamples to the original formulation not explainable in the way above. Two of them are given in (13).

(13) Change of location + change of state

a. *John went out of sight off into the crowd.*

b. *I sliced the cheese into thick pieces into the bowl.*

Sentences in (13) involve two path phrases, one indicating the path of change of location, and the other, the path of change of state. (14) below are sentences that Iwata (2006, 2008a) cites. He notes that such counterexamples are found only in a certain kind of resultative construction, an issue to be discussed later in Section 6.2.

(14) a. *Kicked the radiator and screamed as the bonnet fell shut on his fingers.* (BNC)

b. *The door swung open inwards into the bedroom.*

My examination of COUBLD corpus, which is a 53 million word corpus of British, American and Australian Englishes, both written and spoken, has found many examples similar to (13) that run counter to the original formulation. Some of them are shown below (subcorpus codes are given in parentheses).

(15) location + state (simultaneous)

a. *He had been sentenced to death, spared at the last minute, and then sent far away into exile.* (ukb)

b. *Cut white meat off chicken into small pieces ...* (tim)

c. *that was the moment a leg became detached and a small spring-loaded contrivance rolled out of sight into the gutter.* (ukm)

d. *So a day later I was whisked out of isolation into the main ward where I was able to watch Dempsey and Makepeace.* (sun)

e. *the tide turned and swept the car back into shore to safety* (sun)

f. *And just six minutes later, Hopkin grabbed the second when he worked himself free into space just inside the Borobox and drilled home a 16-yard rocket.* (tod)

(16) location + state (successive)

a. *Their mother jumped to safety from a bedroom window at the back of the house.* (sun)

b. *... they can heat the Earth's upper atmosphere, causing it to expand and slowly drag satellites out of orbit and down to their obliteration.* (ukb)

c. *My entire defense papers and files have been confiscated and have gone out of my control and into somewhere where any of the authorities have access to them*. (ukm)

Examples in (15) describe location and state at roughly the same time. Examples in (16) involve spatial and nonspatial phrases describing location or state at successive periods of time.

How frequent are such examples? In the entire COBUILD corpus 272 combinations of *out of* and *into* phrases are found, and 9 out of them (3 percent) are the combinations of spatial and nonspatial path phrases. Some nonspatial phrases co-occur with change-of-location phrases more often than others: 50 tokens of *to safety* out of 285 occur with a spatial path phrase; *out of sight* is another phrase that frequently occurs with spatial phrases. Such combinations of spatial and nonspatial path phrases are by no means a negligible phenomenon.

One may add here that state phrases are not the only nonspatial path phrases cooccurring with spatial phrases. Another kind of phrase is exemplified in (17).

(17) Change of location + "event participation"

He came home to a family dinner.

(17) involves two goal phrases, one is spatial, *home,* and the other is what I call an event participation phrase. An event participation phrase has a preposition *to*, followed by an event nominal, and indicates that a moving person participates in the event as a major participant. The difference between spatial goal and event participation phrase can be seen in the examples in (18): *to dinner* in (18a) is a case of event participation. Note that such an interpretation is not available in (18b), assuming that a gust cannot participate in dinner in the way your guest does.

(18) change of location vs. event participation

a. *A guest came to {our dinner table / dinner}.*

b. *A gust came to {our dinner table / *dinner}.*

Examples of event phrases occurring with spatial path phrases include the following found in COBUILD corpus.

(19) location + event (simultaneous)

a. *It took poor Kawaguchi three hours to cover those two miles, and he staggered into camp to a festive meal of rice with butter and raisins.* (usb)

b. *Alex slowly falls down to the ground to his death.*

(20) location + event (successive)

a. *Basketball star Michael Jordan is sucked down a golf hole into Toon Town ... and into a crazy game with cartoon characters like Bugs Bunny and Goofy. (sun)*

b. *Stephen Bayley gets out of his car and into the buzz of riding around on a scooter. (ukm)*

c. *when his girlfriend jumped to her death from the roof of a London psychiatric hospital ...* (tim)

I will come back to such a phrase in Section 3.3.1. [3]

3.2 Reformulating The Unique Path Constraint

Given that the UP Constraint has genuine counterexamples, how should it be reformulated? When we look at those counterexamples, we notice that change of location and change of state occur as a set *in a single course of development*. In the cases like *sent far away into exile*, for example, one enters a new state as one goes to a new location, as shown in Figure 1.

Figure 1

In the cases like *jumping to safety from a bedroom window,* a change of state also occurs at the same time as a change of location. Unlike the previous example, what are mentioned are a previous location ($location_1$) and a new state ($state_2$), as shown in Figure 2.

Figure 2

This leads us to the revised UP Constraint stated in (21),

(21) **The Single Development Constraint (Revised Unique Path Constraint)**: Within a single clause, all paths (spatial or nonspatial) describing the location or state of the same entity must refer to aspects of a single line of development that the entity follows.

In this new formulation, the notion of "unique path" is retained in the phrase "a single line of development." Two goal phrases would be permitted if they represent results of a single change; cooccurrence of different kinds of paths is also allowed as long as they are part of a single line of development.

One thing we need to consider here is the evidence for the notion of a single line of development. Consider (22).

(22) a. **Joe kicked a suitcase open to Bob.* (Goldberg 1991)
b. *Joe flung the door open right into Bob's face.*

In contrast to (22a), (22b) is acceptable. The difference lies in the notion of a natural single development. It is quite conceivable that the opening of a door leads to the next stage of the door hitting someone's face. Such a scenario is harder to think of for (22a). This contrast supports the relevance of a single development.

Another piece of evidence comes from the contrast in (23).

(23) a. **John kicked Bill black and blue out of the room.* (Goldberg 1991)
b. (?)*John kicked Bill black and blue and {ultimately/eventually} into a hospital room.*

In contrast to (23a), (23b) is judged as much more acceptable. The reason is that the adverb *ultimately* or *eventually* forces the interpretation of being kicked black and blue and going to a hospital forming a single, natural line of development.

3.3 Alternative analysis: spatial use of nonspatial path

One good question to consider seriously here is whether those nonspatial phrases cooccurring with spatial phrases are really nonspatial. It might be the case that those nonspatial path phrases are in fact spatial in nature, and in that case they do not pose a problem for the original UP Constraint.

3.3.1 *to one's death*

In fact, such a possibility has been explored as to the phrase *to one's death.* Goldberg (1991) already noted examples like (24) in which this phrase cooccurs with a spatial path phrase, and argued that *to one's death* is an idiomatic phrase that metonymically stands for 'the place where one dies'.

(24) *He threw himself through the window to his death.*

This view is schematized in Figure 3.

Figure 3

Tsuzuki (2003) examined COBUILD corpus for this phrase, and found that in the majority of cases this phrase occurs with a verb of motion. She supports Goldberg' position, noting that the incompatibility of this phrase with a fake reflexive suggests a pattern allegedly different from resultatives, as shown in (25).

(25) *He jumped (*himself) to his death.*

I agree that *to one's death* is not a resultative phrase. Consider (25), in which the verbs *accompany* and *come* are used to represent motion through time, and here those verbs do not represent the cause of the death, unlike the cases of result phrases.

(26) a. *She continued to visit the inmate, Patrick Sunnier, as his spiritual advisor and accompanied him to his death by lethal injection.*
(http://eny.dioceseny.org/1102/prejean.html)
b. *... he came to his death from a depressed fracture of the skull.*
(http://www.dcnyhistory.org/coroners2.html)

However, *to one's death* is not a pure spatial goal phrase (or temporal goal phrase in the case of (26)), either. If it means 'to the place one dies' one would expect one can say (27a), but this is unacceptable. (27b) suggests that *his death* represents an event, not a place.

(27) a. **He threw himself from the balcony to his death, the place later visited by many of his followers.*
b. *He threw himself from the balcony to his death, a death that was sad to everyone.*

Note also that (28) is unacceptable. If *to one's death* means 'to the place one dies' this is unexpected.

(28) **Mary threw herself to his death.*

In my view, *death* in this phrase represents an event of dying, and *to* indicates the participation in this event, as is the case with examples in (17) – (20) above. Since you can die your own death only,

(28) is unacceptable.

This event participation reading is not limited to the cases where *death* is modified by a possessive pronoun. Other examples include (29).

(29) a. *He threw himself from the balcony to a miserable death.*

b. *A soldier returned from the war in the Persian Gulf to a violent death outside his home in Detroit.* (COBUILD npr)

3.3.2 *out of sight*

Let us consider now another nonspatial phrase *out of sight* to see if it is really nonspatial. Can this phrase be spatial, meaning something like 'to a place you cannot see'? To answer this question you have to know how to tell spatial phrases from nonspatial ones. There is a way to do so. Generally, change of state must be predicated of an argument of a verb, whereas change of location does not have to.

(30) lists possible patterns of the interpretations of result phrases.

(30) nonspatial phrases (change of state)

a.	***The river*** *froze solid.*	internal (subject)
b.	*He broke* ***the vase*** *into pieces.*	internal (object)
c.	***Bill*** *ran clear of traffic.*	external (subject)
d.	*Bill walked* ***himself*** *to exhaustion.*	fake object
e.	*Susan ran* ***her feet*** *sore.*	fake object

A result phrase can be predicated of either object or subject of a verb. If you want to predicate it of a nonargument of a verb, you need to make it into a fake object, like *her feet* in (30d) (cf. discussion of Direct Object Restriction in Levin and Rappaport Hovav (1995) and Rappaport Hovav and Levin (2001)).[4]

Change of location is different. One can talk about the location of something that does not appear overtly in the syntax. Thus in addition to (31a,b), examples (31c-h) are possible, in which spatial path phrases indicate the spatial paths of something that is not a surface argument of a verb.

(31) spatial phrases (change of location)

a.	*They threw* ***the rope*** *out the window.*	internal (object)
b.	***They*** *followed the star to Bethlehem.*	external (subject)
c.	*He wiped the table off.*	unexpressed (suppressed theme)[5]

d. *Cathie {spat/shot}* *into the hole*. unexpressed (incorporated)

e. *Bill {looked/nodded}* *across the table*. unexpressed (fictive motion)

f. *They hit me* *from behind.* unexpressed (source of action)[6]

g. *Cut the meat* *across the grain*. unexpressed (direction)

h. *Prune this shrub* *to the ground*. unexpressed (range)

Nothing like (31c-h) is found for resultative phrases.

Let us apply this test to *out of sight* in comparison to the spatial phrase *into the air*.

(32) moving entity expressed

a. *The archer shot* ***an arrow*** *into the air*.

b. *The archer shot* ***an arrow*** *out of sight*.

(33) moving entity unexpressed

a. *The archer shot into the air*. (in the sense of (32a))

b. **The archer shot out of sight*. (in the sense of (32b))

Both (32a) and (32b) are acceptable. But when the theme is omitted in (33), *out of sight* cannot be interpreted with respect to the unexpressed moving entity, although *into the air* can. This shows that *out of sight* represents a change of state.

Now (34b) is also not acceptable, unlike (34a).

(34) a. *The archer shot* ***an arrow*** *out of sight into the air*.

b. *??The archer shot out of sight into the air*. (in the reading similar to that of (32a))

This suggests that *out of sight* in these sentences is not spatial, either, which in turn suggests that (34a) involves a change of state as well as that of location.

A similar observation can be made with the verb *fire* used in (35). This verb can take a moving entity as an object, as in (35), and both spatial and nonspatial phrases are compatible in these cases.

(35) moving entity expressed

a. *They fired* ***a cannon ball*** *into the sky*.

b. *They fired* ***a cannon ball*** *out of sight*. (*out of sight* describes the state of the cannon ball)

For some speakers this verb can also have an instrument (e.g., gun, cannon) as its object, with a

moving entity unexpressed, as in (36a). Such speakers can have a goal phrase like *into the sky*, but cannot have *out of sight*, to refer to the path of an unexpressed moving entity, as shown in (36b).

(36) moving entity unexpressed

a. *They fired a cannon into the sky.*

b. **They fired a cannon out of sight.* (in the reading of (35b))

So, *out of sight* indicates a change of state, and not a change of location.

As pointed out above, an object can go out of sight because of its location change, and in this sense a state change is metonymically related to a location change. However, the resultative phrase itself is not a spatial phrase.

4. Previous examples reexamined

Having established that one can mix spatial and nonspatial path phrases under certain circumstances, we need to go back to the sentences that are used to support the original UP Constraint. I will show that many of those unacceptable sentences attributed to the original UP Constraint are unacceptable for some other reasons.

4.1 Sequences of adjectives and compound adjectives

Consider the sentences in (37) (=11a) and (38).

(37) **He wiped the table dry clean.* (Goldberg 1991, Tenny 1994)

(38) a. *washed his face shiny clean* (Goldberg 1991)

b. *nailed the door closed shut*

c. *made her worried sick*

Goldberg rules out (37) by the UP Constraint, and allows (38), saying that the two adjectives represent one state, with the second further specifying the state represented by the first.

However, the real difference between (37) and (38) is that the pairs of adjectives in the latter but not the former are compound adjectives (Adams 2001; *icy-cold, silky-soft, snowy white,* etc.). Evidence for the compound status comes from the following. First, pairs of adjectives in (38) can occur in a complement of a copula without coordination, which is impossible with two independent adjectives, as shown in (39).

(39) a. *They were {shiny clean/closed shut/worried sick}.*

b. **They were {dry clean/tall beautiful}.*

Second, it is not possible for each of the component adjectives to have comparative or superlative forms; instead, it is the whole that is made into those forms, as shown in (40).

(40) a. **They are shinier cleaner.*
b. *They are (even) more shiny clean.*

In the present account, the reason (37) is out is phrase-structural. Given that there is no such compound adjective like *dry clean*, the two adjectives should be syntactically coordinated, but that is not possible without a coordinator. This restriction holds not just in the objective complement like (37) but also in the subjective complement position, as in (41).

(41) a. *He wiped the table dry *(and) clean.*
b. *The table is dry *(and) clean.*

Note that there is no problem with the presence of two different end-state phrases, as long as they are parts of a single development of change and are well-formed in other respects, as shown in (42).

(42) *Roll pizza crust dough as thin as possible into an oval shape.*
(www.cajun-recipes.com/html/bread/40253.htm)

4.2 Coordination of path phrases

Let us take the sentence (43a), and see why this sentence is unacceptable. Interestingly (43b) is acceptable, with a coordinator *and*.

(43) a. **That got him out of jail out of solitude.* (Goldberg 1991)
b. *That got him out of jail and out of solitude.*

We see a similar pattern with spatial *out of*, as shown in (44). (Note that when one drives out of California toward the south, one drives out of the US at the same time.)

(44) a. **They drove out of California out of the US (and entered Mexico).*
b. *They drove out of California and out of the US.*

It seems that this is a part of a general constraint on how one can form a sequence of path phrases. When one has two *out of* phrases referring to two aspects of the same exiting segment of a path, one needs an *and*.

In contrast, *out of* and *into* phrases can be sequenced with or without a coordinator, as shown in (45).

(45) a. *I was whisked out of isolation (and) into the main ward..*

b. *They drove out of California (and) into Mexico.*

While the generalizations for the coordination of path phrases await further examination for an accurate formulation (see Bennett 1975, Declerck 1977, Ostler 1980, Ross 1995, Matsumoto 1997, Eguchi 2002, Bohnemeyer 2003), it is clear that the reason (43a) and (44a) are unacceptable is independent of the issue of unique path.

4.3 Mixture of more than one verb sense

Consider now why sentence (46a) is unacceptable in contrast to (46b).

(46) a. **The vegetables went from crunchy into the soup.* (Goldberg 1991)

b. *They went out of sight off into the crowd.*

(46a) is supposed to be a mixture of the following two sentences (with *to soft* deleted).

(47) a. *The vegetables went from crunchy to soft.*

b. *The vegetables went into the soup.*

The mixture in (46a) is ruled out not just because of the missing *to* phrase (see the next section), but also because of the semantics of the verb *go*. In this regard, observe the following:

(48) a. *All the ingredients **went** into the soup, and the vegetables **went** from crunchy to soft.*

b. **All the ingredients **went** into the soup, and the vegetables, from crunchy to soft.* (in the same reading as (48a))

(48a) has two occurrences of *went.* Now, if these verbs are the same verb, one should be able to gap the second one, given that gapping assumes the identity of verb senses (Matsumoto 2010). However, (48b) is not acceptable. This means that (48) involves two different senses of *go*. This suggests that

(46) above is also unacceptable because it would involve *go* in two different senses.

In contrast, one can gap the second *went* in (46b), and say (49), suggesting that the two instances of *go* in this sentence are the same *go* (i.e., *go* in the physical sense).

(49) a. *The students **went** off into the crowd, and some of them **went** out of sight.*

b. *The students **went** off into the crowd, and some of them, out of sight.*

4.4. Properties of a specific construction

Sentences with spatial and nonspatial path phrases may be ruled out because of additional constraints imposed by the specific constructions in which path phrases appear. Consider again (46a) above, repeated here in (50).

(50) **The vegetables went from crunchy into the soup.*

The *from* phrase in this sentence has an adjective in its complement. This is allowed only in what I would call the state-change *from-to* construction, exemplified in (51).

(51) The state-change *from-to* construction

The boy can switch from nice to nasty in seconds.

This construction can occur with verbs like *go, change, switch,* and *turn*, and I will use *go* for consistency.

This construction places very strict restrictions on what can come as the complements of *from* and *to* (in addition to the general constraint like Single Development Constraint). First, the complements of *from* and *to* in this construction a) must be a semantically matching pair (semantic requirement) and b) must be a grammatically matching pair (grammatical requirement).

The semantic match requires the two complements to be in the same semantic domain. (52) involves adjectives of different types and the sentence is not easy to interpret.

(52) ??*She went from tall to stingy.*

The grammatical requirement concerns the grammatical status of the prepositional complements.[7] The state change *from-to* construction can take three types of prepositional complements, exemplified in (53): AP copula complement, NP copula complement, and NP non-copula-complement.

(53) a. *Ken went from poor to rich.* AP Copula Complement

b. *Ken went from a poor man to a wealthy man.* NP Copula Complement

c. *Ken went from poverty to wealth.* NP Non-copula-complement

The first two are called copula complements since there is a missing *being* after the prepositions, which can appear in the construction, as in (54).

(54) a. *Ken went from being poor to (being) rich.*

b. *Ken went from being a poor man to (being) a wealthy man.*

c. **Ken went from being poverty to (being) wealth.*

There are constraints on the combination of the complement types of *from* and *to* phrases. The best is the use of the same type, as in (53). Combinations of a copula complement type and a non-copula-complement type are ruled out, as in (55a,b). Combinations of AP and NP copula complement types are not totally unacceptable and are better if accompanied by *being*, as shown in (55c,d).

(55) a. **He went from poor to wealth.* AP CC + NP NCC

b. **He went from a poor man to wealth.* NP CC + NP NCC

c. *%He went from poor to a wealthy man.* AP CC + NP CC

d. *He went from being poor to (being) a wealthy man.*

Earlier I stated that (50) is supposed to be a mixture of (47a) and (47b), with *to soft* deleted. The resulting sentence (50) has no *to* phrase matching *from crunchy*. This is another reason the sentence in (50) is unacceptable.

Sentence (50) does have an *into* phrase, but this phrase does not count as a good partner of *from crunchy*. A *from* phrase can be paired with an *into* phrase to represent a state change under restricted circumstances. (56) exemplifies the case in which combination is possible.

(56) *He went from a nice guy into a nasty guy.*

Such a *from-into* pair must have complements belonging to the same semantic domain, and further requires both complements to be nominals and not adjectivals, as shown in (57).

(57) a. ??*He went from nice into nasty.*

b. ??*He went from nice into a nasty guy.*

The phrase *into a soup* in (50) satisfies neither semantic nor grammatical requirements, and therefore is not a good partner for *from crunchy*.

4.5. Notes on exceptions

Finally let us examine a case Goldberg has treated as an apparent counterexample to the original UP Constraint. I have already treated examples like (11a) in 4.1, which in fact involve compound adjectives. How about the cases like (11b), repeated here as (58), in relation to which she has stated that change-of-posture verbs do not respect the UP Constraint.

(58) *John stood up tall.*

Although *stand* is a posture verb and not a motion verb, it is still true that *up* in (58) represents a spatial path: John's body does move upward. In the present account, one does not have to make posture verbs exceptional. Cooccurrence is possible in (58) since the spatial path of upward movement and the final state of John being tall form a single development of change: vertical stretch of a body is the final state achieved by the upward movement of standing.

5. More issues

5.1. Additional constraint? The Unique Path-theme Constraint

So far we have argued that there should be one path or one line of development per an entity in a clause. But how many such entities can a clause have? In the original version of UP it was implicit that there can be only one such entity, but is it really the case?

In principle, one should be able to talk about the spatial or nonspatial paths of more than one entity within a clause. As pointed out above, change of state can be predicated of subject or object, and change of location can be predicated of subject, object, or unexpressed entities. And so theoretically change-of-state expressions and path expressions may pick up different entities to relate to.

Our initial hypothesis to consider here is this:

(59) **The Unique Moving Entity Constraint**: A clause can have only one entity (syntactically expressed or unexpressed) with respect to which spatial and nonspatial paths are interpreted.

There are clear counterexamples to this hypothesis. The doubly underlined path phrases represent the paths of an entity different from those of singularly underlined ones.

(60) *from*-phrase representing the source of action

a. *The two men knocked **Tom** down from behind.*

b. *From there can you reach me **the flour** down off the shelf?*

c. *From here they shot **the bird** down from the tree.*

(61) PPs expressing the actual path of an unexpressed entity (that exists in the event frame activated)

*Now he poured **a Coca-Cola glass** half full from a bottle of Jack Daniel's ...*

(62) PPs expressing a fictive path of an unexpressed entity

***The door of the elevator** slid open into the Tascosa Room.*

(63) PPs expressing a fictive path of the focus of attention

From his chair he looked from one face to another.

In (60a), *down* indicates the path of Tom, and *from behind* indicates the path of something else, the action of hitting, or perhaps the path of a hand. In (61) *half full* refers to the state of the glass, and the *from* phrase refers to the path of water, which is unexpressed. In (62) *open* describes the state of a door, and the *into* phrase describes the path of an arbitrary person who may go through the door or the path of vision.[8] (63) involves two different fictive paths (Talmy 2000, Matsumoto 2004), with the first *from* phrase indicating the source of visual emanation and the *from-to* pair indicating the path of the focus of attention (these two fictively moving entities are not expressed syntactically at all). These examples suggest that the initial hypothesis must be abandoned.

There is one common feature in those counterexamples. Interestingly, at least one moving entity in (60) through (63) is syntactically unexpressed as arguments of a verb. This may suggest that the following constraint may hold:

(64) **Unique Path-Theme Constraint:** A clause can have only one "path-theme," or syntactically expressed argument with respect to which all spatial and nonspatial paths are interpreted.

How can this constraint be tested? We have verbs like *chase* in which both subject and object move, and theoretically, spatial path phrases can be predicated of either. (65a) is usually interpreted as indicating the path of the object, and (65b), as indicating the path of the subject.

(65) a. *John chased **the man** out of the garden*

b. ***John** chased the man as far as the gate (and stopped the chase there.)*

c. *??**John** chased **the man** out of the garden as far as the gate.*

Then, can we mix the two and say (65c)? Most of my informants said "probably not". At least for those speakers the Unique Path-theme Constraint cannot be violated.

Other relevant sentences include Tenny's (1994) examples in (66).

(66) a. *%**Jonathan** ran **himself** exhausted to the end of the track.*
b. *%**Sarah** pounded **the pavement** flat to Bloomingdale's.*

In those examples, resultative phrases are supposed to be interpreted with respect to the objects, and the path phrases, to the subject. These sentences are judged as unacceptable by Tenny, though there are some speakers who accept these. For those speakers who do not accept them, Unique Path-Theme Constraint is a real condition.[9]

There are two more sets of examples that may be discussed in relation to the Unique Path-Theme Constraint. Consider first the examples like (67).

(67) a. ***Jonathan** ran **his legs** off to the goal.* (cf. Lupsa 2003)
b. ***Susan** ran **her heart** out to the finish line.*

It looks as if two path phrases are predicated of two different entities in these examples, but those sentences are perfect to all speakers, unlike the sentences above. Those sentences, however, do not in fact involve two different paths. The phrases like *one's legs off* have been claimed to involve an intensifier reading (Jackendoff 1997, Sawada 2000, Boas 2003), which means that these phrases represent manners of motion, and not the change of state of the body part. In fact you can say (68) to mean that Jonathan ran with full strength for the entire period, and so no change of state is involved.

(68) a. *Jonathan ran his legs off from the bridge to the finish line.*
b. *Jonathan ran his legs off for the full 30 minutes.*

Also relevant are examples like (69), which involve spatial and nonspatial paths, one of which is lexicalized into a verb. (69a) has a change of state in a verb, with a change of location expressed in its argument, while (69b) has a reverse situation.

(69) a. *The cook cracked the egg into the bowl.* (Levin and Rappaport Hovav 1995)
b. *The door fell shut.* (Goldberg 1991, Iwata 2008a)

In discussing (69a), Levin and Rappaport Hovav (1995) have pointed out that a change-of-state verb *crack* and a path phrase *into the bowl* represent changes of different entities: it is the eggshell which was cracked, and its content which went into a bowl. Levin and Rappaport Hovav state that a change-of-state verb is compatible with a change-of-location phrase when the object NP can refer to two different entities in this way. Similarly, (69b) may involve two different entities referred to by *the door*: Iwata (2008a) claims that it is a door barrier that fell, and the door aperture that got shut. (A similar situation holds of sentences like *bang the can out empty* and *pour the glass out dry* (Bolinger 1971), which involve a container and its content. In those cases, both paths appear as arguments of a verb.)

These examples may appear to be counterexamples to the Unique Path-theme Constraint, given the presence of two path-related entities. However, this is in fact not the case. The Unique Path-theme Constraint talks about a unique syntactically expressed argument, not a unique entity in the world. The Unique Path-theme Constraint is not violated if the two entities whose paths are described are expressed by a single argument or if one of them is left overtly unexpressed. (69a) is the former case, given that the nominal *the egg* conveniently describes the eggshell and/or its content. If *the egg* is replaced by another phrase which can refer to only one of them (e.g., *the eggshell*), (69a) is unacceptable in the intended reading.[10]

It is also not true that change-of-state verbs are compatible with path phrases only when they are interpreted with respect to different entities. Levin and Rappaport Hovav (1995) claim that if the object NP does not have dual referents, such a sentence is ruled out, citing the sentence in (70a). However, a similar sentence (70b) is perfectly fine (see also Goldberg 2001). Sentences in (71) are other examples in which a change-of-state verb cooccurs with a spatial path phrase.

(70) a. **Susan broke a mirror into a trash box.*
b. *Susan broke the chocolate into the bowl.*

(71) a. *They frightened the children away.*
b. *Small boulders melted out of glacier ice.*

The difference between (70a) and (70b) is consistent with the Single Development Constraint above: chocolate being broken and moving into a bowl are changes in a natural sequence, but such an interpretation is not readily available to (70a).[11]

5.2 Cooccurrence restrictions as a reflection of semantic structure well-formedness

We would like to briefly discuss the possibility that the original UP Constraint or the Single Development Constraint may be reduced to a general constraint placed on the semantic structure

involving motion and physical and metaphorical paths. This possibility is explored by Ueno (1997, 2003). Working within Jackendoff's (1983) framework, where spatial and nonspatial GO and PATH functions have different semantic feature subscripts (e.g., spatial, possessional, etc.), Ueno states that motion-related sentences must have GO and related PATH functions match in their subscripts. This requires that verbs representing spatial motion cooccur only with spatial path phrases, and spatial path phrases, only with spatial path phrases, etc. He claims that such a constraint makes the original UP Constraint unnecessary.

In the present account, some verbs and some constructions do have such requirement. We have seen that motion verbs in metaphorically extended meanings cannot cooccur with spatial paths, and the state-change *from-to* construction has a semantic constraint involving a common semantic domain for their complements (in addition to a grammatical one). (In fact, Ueno uses sentences with the state-change *from-to* construction to argue for his claim.)

However, the present paper has found that restrictions are weaker in other cases; verbs representing physical motion can occur with spatial and nonspatial phrases, as in phrases like *sent far away into exile* and *roll out of sight off into the gutter*. This means that those verbs of physical motion are neutral for the nature of the cooccurring paths.

In general, it is doubtful that such identity of the type of path is required as a general constraint on clause meanings. What is required is the lack of incompatibility, not identity (see Weinreich 1966 on the nature of feature compatibility in stating cooccurrence restrictions).

It is possible, however, that the Single Development Constraint above is part of some other general constraint on the possible meanings of lexical verbs in English and perhaps in other languages as well.[12] This, however, is beyond the scope of this paper.

6. Single Development Constraint and Implications for Construction Grammar

6.1. Lexical Polysemy vs. Construction

In this section I will discuss some issues in Construction Grammar to which the present work is relevant.

One issue in Construction Grammar is where polysemy lies: in the verb, or in the construction. Goldberg's (1995, 2006) position is that verbs have identical meanings across different constructions, reducing verbal polysemy. Other scholars, like Boas (2003) and Iwata (2005, 2008b), give a more role to the verbs and say that there are more cases of polysemy in the lexicon. Taken in relation to examples treated in this paper, the issue is whether the same verb in the (caused) motion construction and the resultative construction has the same meaning.

This paper has found that some verbs occur with spatial and nonspatial path phrases at the same time. Does that mean that those verbs have an identical meaning across the boundary of the (caused)

motion construction and the resultative construction?

My answer is yes for cases where two kinds of paths can cooccur. As pointed out above, the two instances of *went* in (73) have the same meaning, as evidenced by the gapping test in (74a). In such a case, the two kinds of phrases in (73) can cooccur in the same clause, as in (74b).

(73) *The students **went** off into the crowd, and some of them **went** out of sight.*

(74) a. *The students **went** off into the crowd, and some out of sight.*

b. *The students **went** out of sight off into the crowd.*

The same can be said of *kick, drag* and *drive* in (75). These sentences show that they have identical meanings when they occur with spatial phrases and when they occur with nonspatial path phrases. These verbs can mix those spatial and nonspatial path phrases in a clause (see (14b), (23b)).

(75) a. *John **kicked** Bill black and blue, and Bob into a hospital.*

b. *They can slowly **drag** some satellites out of orbit, and others down to their obliteration.*

c. *His queer behavior **drove** Susan mad, and Kathie out of their house.*

However, this cannot be generalized too far. We have seen that *go* in *go from nice to nasty* is different from the spatial *go*. The same is true of *go* in *go mad*, as suggested by (76).

(76) a. *Bill **went** mad, and eventually he **went** out of the house.*

b. **Bill **went** mad and eventually out of the house.*

c. **Bill **went** mad, and Susan, out of the house.*

The same is true of the verb *throw* in (77) and *turn* in (78).

(77) a. *Someone **threw** a bomb into the street, and **threw** the crowd into chaos.*

b. **Someone **threw** a bomb into the street, and the crowd into chaos.*

(78) a. *Mary **turned** around, and Bill **turned** into Voldemort.*

b. **Mary **turned** around, and Bill into Voldemort.* (cf. Iwata 2008b)

In such cases we do have polysemy at the lexical level. This means that metaphor or the mapping from change of location to change of state is in the verb in these cases.

6.2. Types of resultatives and their relationship to (caused) motion constructions

The present discussion also points to a new understanding of the types of resultative constructions and their relationship to (caused) motion constructions. There are different subtypes of resultative constructions (e.g., Washio 1997, Iwata 2006, 2008a). It has been suggested in the literature that counterexamples to the original UP constraint are found only in a certain kind of resultative construction. Iwata (2008a) claims that the UP Constraint is not applicable to what he calls Non-Argument Structure Construction-based (Non-ASC-based) Resultatives (cf. Iwata 2006). Iwata's examples include (79).

(79) a. *I should be bound even tighter to my mother.* (BNC)
b. *The door swung open inwards into the bedroom.*

Iwata (2008a) suggests that *tighter* in (79a) further specifies the endstate coded by the verb. He claims that resultative phrases in such sentences are introduced not through an Argument Structure Construction (Resultative Construction in this case) but through the verb. He also claims that (79b) is similarly classified as Non-ASC-based Resultatives in that *open* further specifies a change implied. He argues that the UP Constraint is applicable to ASC-based Resultatives, in which verbs do not encode a change of state to be elaborated by the resultative phrases.

The counterexamples to the original UP Constraint that we have seen in this paper are not restricted to Iwata's Non-ASC-based Resultatives. We have seen that counterexamples do exist in his ASC-based resultatives, with verbs like *kick* in (23).[13] Moreover, Iwata assumes that unacceptable sentences that Goldberg used for her formulation are instances of ASC-based resultatives and therefore subject to the UP Constraint. We have argued that many of those unacceptable sentences are ruled out for reasons unrelated to the issue of the UP Constraint.

Instead, the discussion in the preceding section suggests that a different typology of resultative constructions can be made on the basis of the application of the Single Development Constraint (Matsumoto 2007): resultatives with physical verbs and those with metaphorical change-of-state verbs, exemplified in (80) and (81), respectively.

(80) a. *Jack went out of sight.*
b. *Cut the white meat into pieces*
c. *John kicked the man black and blue.*

(81) a. *Kathie went mad.*
b. *He turned into Voldemort.*
c. *Spectators were thrown into confusion.*

Resultatives with physical verbs include 1) resultatives with (caused) motion verbs, as in (80a), 2) resultatives with physical change-of-state verbs, as in (80b), and 3) resultatives with action verbs, as in (80c). In this type, nonspatial path phrases can cooccur with spatial phrases as long as Single Development Constraint is satisfied. The role of metaphor in those resultatives is quite limited. The only aspect that is metaphorical in (80) is that resultative nonspatial path phrases (e.g., *into pieces*) are metaphorically spatial, and the verbs are not metaphorical at all. The relationship between those resultatives and (caused) motion constructions may be better characterized as metonymical, in that a state change in such examples cooccurs with a location change.

The resultatives with metaphorical change-of-state verbs in (81) are different. In those cases nonspatial path phrases cannot occur with spatial path phrases. In those, the verbs are not used in their physical meanings but in metaphorically extended meanings specialized for change of state. In these sentences, metaphor is in the verb, unlike (80).

Another question one might discuss is the difference between the resultative constructions with physical verbs in (80) above and (caused) motion constructions. Sentences with cooccurring spatial and nonspatial path phrases are in a sense instances of the two constructions at the same time. Does this mean that these two kinds of constructions are in fact (not just related but) identical?

These two constructions may be instances of a general construction, but they have to be distinguished at least at a finer level of a construction hierarchy. The two constructions differ crucially in the range of possible interpretations for their path phrases. As I have shown, path phrases in motion and caused motion constructions can be interpreted with respect to an unexpressed entity as well as subjects and objects, while this is not possible with resultative constructions with physical verbs (Sec 3.3.2). This is clear evidence to distinguish between the two.

The remaining question, then, is what construction are sentences like *He was sent far away into exile* instances of. The best answer I have now is that it is a blend of the caused motion and transitive resultative constructions. Such a blend is possible when the same verb can appear in both constructions.

7. Conclusion

In this paper I examined the cases in which spatial and nonspatial paths cooccur within a clause. The Unique Path Constraint, which was proposed to rule out such cooccurrences, must be reformulated as the Single Development Constraint that allows a mixture of spatial and nonspatial path phrases in a blended construction when they are a part of a single line of the development of a change. At least for some speakers, there is an additional constraint called the Unique Path-theme Constraint. Some of the previously explained unacceptable examples are ruled out for some other reasons. There is evidence for both reduction and recognition of lexical polysemy in verbs used in resultative/(caused)

motion constructions, and furthermore, resultative constructions can be classified depending on whether they allow cooccurrences of spatial and nonspatial paths.

References

Adams, Valerie. 2001. *Complex words in English*. Harlow: Longman.

Basilico, David. 1998. Object position and predication forms. *Natural Language and Linguistic Theory* 16. 541-595.

Bennett, David. 1975. *Spatial and temporal uses of English prepositions.* London: Longman.

Boas, Hans Christian. 2003. *A Constructional Approach to Resultatives*. Stanford, CA: CSLI Publications.

Bohnemeyer, Jürgen. 2003 The unique vector constraint: The impact of direction changes on the linguistic segmentation of motion events. In Emile van der Zee and John Slack (eds.), *Representing direction in language and space, pp.* 86-110*.* Oxford: Oxford University Press.

Bolinger, Dwight. 1971. *The phrasal verb in English*. Cambridge, MA: Harvard University Press.

Broccias, Cristiano. 2003. *The English change network: Forcing changes into schemas*. Berlin: Mouton.

Croft, William. 1991. *Syntactic categories and grammatical relations: The cognitive organization of information.* Chicago: University of Chicago Press.

Declerck, Renaat. 1977. The superfluity of a 'path' case in English and the analysis of complex movement expressions. *Leuvense Bijdragen* 66. 129-154.

den Dikken, Marcel. 1995. *Particles: On the syntax of verb-particle, triadic and causative constructions*. Oxford: Oxford University Press.

Eguchi, Takumi. 2002. Coordination of path phrases in English. *English Linguistics* 19.142-160.

Goldberg, Adele E. 1991. It can't go down the chimney up: Path and the English resultative. In *Proceeding of the Seventeenth Annual Meeting of the Berkeley Linguistics Society*, 368-378.

Goldberg, Adele E. 1995. *Constructions: A Construction Grammar approach to argument structure*. Chicago: University of Chicago Press.

Goldberg, Adele E. 2001. Patient arguments of causative verbs can be omitted: the role of information structure in argument distribution. *Language Sciences* 23. 503–524.

Goldberg, Adele E. 2006. *Constructions at work: The nature of generalizations in language.* Oxford: Oxford University Press.

Goldberg, Adele E. and Jackendoff, Ray. 2004. The English resultative as a family of construction. *Language* 80. 532-569.

Gruber, Jeffrey S. 1976. *Lexical structures in syntax and semantics.* Amsterdam: North-Holland.

Horita, Yuko. 1995. A cognitive study of resultative constructions in English. *English Linguistics* 12. 147-172.

Iwata, Seizi. 2005. The role of verb meaning in locative alternations. In Mirjam Fried and Hans C. Boas (eds.), *Grammatical constructions: Back to the roots*, pp. 101–118. Amsterdam: John Benjamins.

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

Iwata, Seizi. 2008a. *A door that swings noiselessly open may creak shut*: Internal motion and concurrent changes of state. *Linguistics* 46. 1049–1108.

Iwata, Seizi. 2008b. *Locative alternation: A lexical-constructional approach.* Amsterdam: John Benjamins.

Jackendoff, Ray. 1983. *Semantics and cognition*. Cambridge, MA: MIT Press.

Jackendoff, Ray. 1997. Twistin' the night away. *Language* 73. 534-59.

Kay, Paul. Ms. Argument structure: Causative ABC constructions.

Keyser, Samuel J. and Thomas Roeper. 1992. Re: The abstract clitic hypothesis. *Linguistic Inquiry* 23. 89-125.

Lakoff, George. 1993. *Contemporary Theory of Metaphor*. In Andrew Ortony (ed.), *Metaphor and Thought*, 202-251. Cambridge: Cambridge University Press.

Leek, Frederike van der. 2000. Caused-motion and the 'bottom-up' role of grammar. In Ad Foolen and Frederike Van der Leek (eds.), *Constructions in cognitive linguistics: Selected papers from the Fifth International Cognitive Linguistics Conference*, 301-331. Amsterdam: John Benjamins.

Levin, Beth, and Malka Rappaport Hovav. 1995. *Unaccusativity: At the syntax-lexical semantics interface*. Cambridge. MA: MIT Press.

Levin, Beth, and Peter Sells. 2009. Unpredicated particles. In Linda Uyechi and Lian Hee Wee (eds.), *Reality exploration and discovery: Pattern interaction in language and life,* 303-324. Stanford, CA: CSLI Publications.

Lupsa, Cornelia Daniela. 2003. Second delimiters as subject oriented resultative phrases. *Exploration in English Linguistics* 18. Tohoku University.

Matsumoto, Yo. 1997. Kuukan idoo no gengo hyoogen to sono kakuchoo [Linguistic expressions of motion and their extensions] In Shigenori Tanaka and Yo Matsumoto, *Kuukan to idoo no hyoogen* [Expressions of space and motion]. Tokyo: Kenkyusha.

Matsumoto, Yo. 2002. Shieki-idoo-koobun ni okeru imiteki-seiyaku [Semantic constraints on the caused motion construction]. In Yoshiki Nishimura (ed.), *Jishoo-koozoo* [Event structure]. Tokyo: University of Tokyo Press.

Matsumoto, Yo. 2004. Nihongo no shikaku-hyoogen ni okeru kyokoo idoo [Fictive motion in Japanese expressions of vision]. *Nihongo-Bunpoo* 4. 111-128.

Matsumoto, Yo. 2007. Subclassifying 'resultative constructions': A closer look. Paper presented at the 10th International Cognitive Linguistics Conference, Krakow, Poland.

Matsumoto, Yo. 2010. Tagisei-to Kategorii-koozoo [Polysemy and category structure]. In Harumi Sawada (ed.), *Go-bun-to bunpoo-kategorii* [Word, sentence and grammatical categories]. Tokyo: Hituzi.

Oehrle, Richard Thomas. 1976. *The grammatical status of the English dative alternation*. Ph. D. dissertation, MIT.

Ostler, Nicholas D. M. 1980. Origins, orientations and endpoints: evidence for a finer analysis of thematic relations. *Studies in English Linguistics* 8 (Tokyo).

Rappaport Hovav, Malka and Beth Levin. 2001. An event structure account of English resultatives. *Language* 77: 766-797.

Rohde, Ada. 2001. *Analyzing PATH: The interplay of verbs, prepositions and constructional semantics.* Ph. D. Dissertation, Rice University.

Ross, Haj. 1995. A first crosslinguistic look at paths: The difference between end-legs and medial one. In Lynn Eubank, Larry Selinker, and Michael Sharwood Smith (eds.), *The current state of interlanguage: Studies in honor of William E. Rutherford*, 273-285. Amsterdam: John Benjamins.

Sawada, Shigeyasu. 2000. The semantics of the 'body part off' construction. *English Linguistics* 17. 361-385.

Takao, Takayuki. 2005. Eigo no nijuu-mokutekigo-koobun ni okeru keiro-hyoogen no kanoosei [Possibilities of path expressions in the English ditransitive construction]. *Eigo Seinen* 150, 12: 724-726.

Talmy, Leonard. 1985. Lexicalization patterns: semantic structure in lexical forms. In Timothy Shopen (ed.), *Language typology and syntactic description,* Vol. 3: *Grammatical categories and the lexicon*, 57-149. Cambridge: Cambridge University Press.

Talmy, Leonard. 2000. *Toward a cognitive semantics*, Vol. II: *Typology and process in concept structuring*. Cambridge, MA: MIT Press.

Tenny, Carol. 1994. *Aspectual roles and the syntax-semantics interface.* Dordrecht: Kluwer.

Tortora, Christina M. 1998. Verbs of inherently directed motion are compatible with resultative phrases. *Linguistic Inquiry* 29. 338-45.

Tsuzuki, Masako. 2003. Three kinds of resultatives: *to death, to one's death* and *dead*. In Shuji Chiba et al. (eds.), *Empirical and theoretical investigations into language: A festschrift for Masaru Kajita*, 447-761. Tokyo: Kaitakusha.

Ueda, Masanobu. 2004. A Usage-based analysis of the English ditransitive construction. *Tsukuba English Studies* 22. 205-220

Ueno, Seiji. 1997. Gainenkoozoo ni taisuru tekikakusei-seiyaku to tanitsu-keiro-seiyaku [Well-formeddness constraints on conceptual structure and the Unique Path Constraint]. *JELS* 14.

Ueno, Seiji. 2003. *Nihongo no kuukan-hyoogen to idoo-hyoogen no gainen-imiron-teki kenkyu.* [A conceptual-semantic study of Japanese spatial expressions and motion expressions]. Unpublished Dissertation, Osaka University.

Washio, Ryuichi. 1997. Resultatives, compositionality and language variation. *Journal of East Asian Linguistics* 6:1-49.

Wechsler, Stephen. 1997. Resultative predicates and control. *Proceedings of the 1997 Texas Linguistics Society Conference*, 307-21. (Texas linguistic forum 38.) Austin: University of Texas.

Weinreich, Uriel. 1966. *Explorations in semantic theory*. The Hague: Mouton.

---

[1] This paper is a modified version of a paper presented at the annual meeting of Kansai Linguistics Society in 2005 and at the 4th International Conference of Construction Grammar held at the University of Tokyo in 2006. This paper has a long history of about 20 years, and has been aided by many people. I would like to thank Adele Goldberg for her interest in this work over the years. My gratitude is also due to Seizi Iwata for his discussion of relevant issues. Special thanks go to my informants who offered to help at various stages: Amanda Brown, Mary Dalrymple, Paul Kroeger, Stephen Lauer, Kevin Varden, Woody Woodbridge, and lots of others. All errors are mine.

[2] The "entailments" or subconditions mentioned in the formulation above do not seem to capture all cases that Goldberg is supposed to capture. The first subcondition refers to the prohibition against two goals achieved simultaneously. However, some of her examples involve aspects of a path other than a goal. For this reason, the first subcondition must be formulated more appropriately as follows: An argument of a verb cannot be described as moving along more than one path at the same period (or at least for an overlapped period). The second one is meant to prohibit the mixture of segments of a path that differ in the ontological categories (e.g., location, state, event). Thus, it might be rephrased as follows: All segments of a path must be of the same ontological category. Note also that Goldberg's subconditions alone sanction the case in which an object moves along two different paths (of perhaps different ontological categories) for nonoverlapping periods of time. In addition, the formulation in (6) does not mention how many Xs a clause can have, an issue to be discussed in Section 5.1.

[3] For lack of space I do not discuss issues related to multiple paths in ditransitive construcitons (see Takao 2005), in which recipients can cooccur with path phrases, as in (i).

(i) a. *Hey, toss me that wrench up, will you?* (Oehrle 1976, den Dikken 1995)
b. *Throw me up a ham sandwich.* (Keyser and Roeper 1992)
c. *Can you pass me that big folder off the floor?*
d. *We will send every stockholder a paycheck off to his holiday resort.* (Haider 1992)
e. *Joe threw Jerry a long pass into the end zone.*

Data that should be discussed include the following, in which a dative NP (representing an intended recipient; see Kay MS) cannot cooccur with phrases indicating actual path/recipient.

(ii) **Joe threw Jerry a long pass into the interceptor's hands.*

[4] The following sentence might be regarded as counter to the generalization here, since the resultative phrase is interpreted as indicating the state of the slices of meat, rather than the whole meat.

(iii) *Jonathan sliced the meat thin.*

However, the phrase *thin* is grammatically predicated of the object NP, and in this sense this sentence is not counter to the generalization being made here.

[5] Other examples of this type include *bang the can out* and *pour the glass out.* See Bolinger (1971) and Levin and Sells (2009) for examples like these.

[6] This kind of element is termed as the 'location of protagonist' in the current FrameNet list of Extra-thematic frame elements.

[7] Gruber (1976) discusses other kinds of the grammatical requirements of this construction.

[8] Note that the spatial path phrase in this example does not describe the path of the door, given that it

is a sliding door, unlike the door in (14b).

[9] The data above is somewhat murky. It may be the case that the Unique Path-theme Constraint is related to processing difficulty.

[10] In contrast to (69a) where *egg* cannot be replaced by *eggshell* without changing its meaning, both *window* and *windowpane* are acceptable in (iv) for the same situation, calling for an account of the difference.

(iv) *The {window/windowpane} fell shut.*

[11] It may be the case that a constraint specific to resultative and caused motion constructions may also be at work in (70). Observe the following sentence, which suggests that path phrase must include an immediate result in this caused motion sentence (see also Goldberg 1995, 2001).

(vi) *John wiped crumbs {off the table/*onto the floor/off the table onto the floor/onto his palm}.*

Note that in this case the verb does not code a change of state or location and therefore the nonoccurrence of *onto the floor* cannot be attributed to the sequencing of changes.

[12] The Single Development Constraint may be related to Croft's (1991:173) view that a simple event involves a nonbranching causal chain (cf. Horita 1995). However, I will not go into the relationship of the constraint and causal chain in this paper.

[13] Iwata (personal communication) has now independently reached the conclusion that exceptions to the UP Constraint are found both in his ASC-based and non-ASC-based resultative constructions.

Abstract

The coocurrences of spatial and nonspatial path phrases in English clauses are examined. Examples are found that run counter to the Unique Path Constraint, proposed to rule out such cooccurrences (Goldberg 1991). To account for such examples, a reformulation of the constraint is proposed, in the form of the Single Development Constraint, which allows a mixture of spatial and nonspatial path phrases if they are a part of a single line of the development of a change. Some of the previously explained unacceptable examples are ruled out for reasons unrelated to the issue of the Unique Path. The study also suggest that there is evidence for both reduction and recognition of lexical polysemy in verbs used in resultative/motion constructions, and furthermore, that resultative constructions can be classified depending on whether they allow cooccurrences of the two kinds of paths.

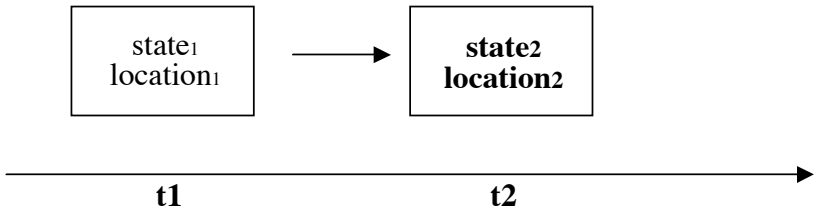

Figure 1. Change and state and change of location: simultanous

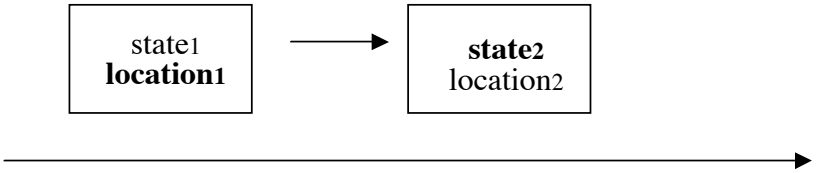

Figure 2. Change and state and change of location: successive

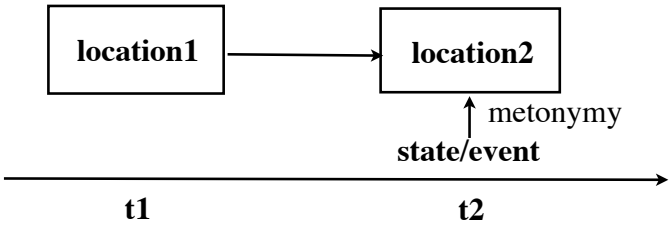

Figure 3. *through the window* *to his death*: Goldberg's view