

Predictivity vs. Stipulativity in the Lexicon

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This paper discusses the balance which must be made in the lexicon between the capture of generalisations about word use and the reflection of idiosyncratic word use, through the example of the resultative construction. The syntax and semantics of that construction are considered in detail, as is the felicity of a range of instantiations of the construction. The conclusions drawn from this analysis emphasise that the balance of information in the lexicon must be carefully considered. This is particularly true in the context of the various knowledge sources which influence the interpretation and use of a word. Pragmatic reasoning and linguistic conventionalisation are argued to influence the structure of information in the lexicon.

1. INTRODUCTION

The lexicon is the repository of word-specific information. It includes representations of the syntax and semantics associated with individual words. It also might include *generalisations* which can be made about word use and *idiosyncrasies* associated with the behaviour of specific words. It is important to identify regularities where they exist, in order to account for predictivity and systematicity in language use, and to provide a basis for natural language processing systems which efficiently accommodate the flexibility of word use. It is equally important to accurately reflect individual word usage, in order to explain particular interpretations of a word in specific contexts. These two requirements, predictivity and stipulativity, place competing demands on the lexicon, and must be carefully balanced.

I will look in this paper at the balance between predictivity and stipulativity in the lexicon, with particular reference to the phenomenon of the *resultative construction*. I will argue that the lexicon does not exist in isolation of other cognitive processes and that word use is not determined solely at the lexical level. Pragmatic reasoning, based on discourse coherence and world knowledge, will be shown to play an important role in interpretation, and to influence where the line between predictivity and stipulativity must be drawn. Furthermore, linguistic conventionalisation will be shown to affect what information must be explicitly represented in the lexicon and the level of generality of lexical regularities. The consideration of the impact of these various knowledge sources on interpretation will influence the structure of the lexicon, and will lead to a model which provides a fuller account of the resultative data.

2. THE RESULTATIVE CONSTRUCTION

The resultative construction will be examined in detail in this paper, as an illustrative example of the competing demands of predictivity and stipulativity on a lexical representation for verbs which can appear in this construction. The construction is composed of a verb plus its arguments and an additional unsubcategorised phrase (either an adjective phrase [AP] or a prepositional phrase [PP]) which expresses a result state of the event expressed by the verb. This result state is predicated of one of the verbal arguments, or in some cases of an unsubcategorised noun phrase [NP] which is also inserted (1c). Examples of the construction appear in (1).¹ For the purposes of this paper, I will restrict my discussion to what have been called “unergative” resultative constructions (Levin and Rappaport Hovav 1995), in which a transitive or intransitive verb is followed by an overt NP and a result phrase.²

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¹My annotations: italics indicate an argument of the main verb which is also the subject of the resultative predicate; underlining indicates something that is not an argument of the main verb, but which is the subject of the resultative predicate. Additionally, in what follows I use a ‘*’ to indicate ungrammatical sentences, ‘#’ to indicate pragmatically infelicitous sentences, and ‘?’ to indicate sentences of questionable grammaticality.

²For a discussion of the “unaccusative” resultative constructions (e.g. *The river froze solid*) and in particular manner of motion verbs in that construction (e.g. *John danced to the window*), please see Verspoor (1997). It is argued there that these instances of the construction are

- (1) a. John hammered *the metal* flat.
- b. John sneezed the tissue off the table.
- c. John laughed himself silly.

2.1. PREDICTIVITY OF RESULTATIVES

In this section, I will show that felicitous instances of the resultative construction display strict uniformity. Their syntactic form does not vary, and there is a clear syntax to semantics mapping associated with the construction, so that verbs appearing in this construction take on a very specific meaning. I will argue below that this meaning cannot follow from purely compositional interpretation, and that this implies that the resultative construction must be considered a special form-meaning pair which must be explicitly licensed in the grammar of a language,³ following Goldberg (1995). As such, it reflects a generalisation about a particular set of sentences licensed by a language. The existence of this generalisation suggests predictivity: any set of words satisfying the syntactic constraints of this construction should be interpretable with the meaning corresponding to the construction.

2.1.1. SYNTACTIC FORM

One of the most salient properties of the resultative construction is its fixed form. The form, and its associated variations, are summarised in (2), where **ResP** is the resultative phrase.

- (2) **NP_{subject} V NP_{controlled} ResP**
 - a. NP_{controlled} is the object of a transitive verb (as in (1a))
 - b. NP_{controlled} is neither subcategorised by V nor a fake reflexive (as in (1b))
 - c. NP_{controlled} is a fake reflexive, coindexed with the subject NP_{subject}, and V is an unergative intransitive (as in (1c))

There seem to be no valid instances of this construction which vary from this syntactic pattern (this point is also argued by Jackendoff 1990). The sentences in (3) show that the post-verbal NP must be present in order for the resultative construction to be felicitous, while those in (4) show that for intransitive verbs the presence of the post-verbal NP is normally ungrammatical and uninterpretable. Hence the post-verbal NP and the resultative phrase are co-dependent: one cannot be added to a verb's subcategorisation frame without the other.

- (3) a. *John laughed silly. (cf. *John laughed*)
- b. *John hammered flat. (cf. *John hammered, John hammered the metal*)
- c. *John sneezed off the table. (cf. *John sneezed*)
- (4) a. *John laughed himself.
- b. *John sneezed the tissue.

Furthermore, the position of the resultative phrase is fixed relative to adjuncts, as shown by (5)-(6) (assuming readings in which the locational prepositional phrases are verbal modifiers rather than noun modifiers). The resultative phrase can therefore not be accommodated by the same mechanisms as standard adverbial modifiers (as done by Wechsler 1996). Similarly, sentences such as (7a-b) which correspond roughly to the resultative construction yet express that the subject rather than the object undergoes a change, are infelicitous. Sentence (7c) in which the event which resulted in death is phrasal (*drank beer*) is also not grammatical. So even minor variations in the surface form of this construction result in ungrammaticality.

- (5) a. John hammered *the metal* flat in the workshop.
- b. *John hammered *the metal* in the workshop flat.
- c. *John hammered in the workshop *the metal* flat.
- (6) a. John laughed himself silly on Saturday evening.
- b. *John laughed himself on Saturday evening silly.
- c. *John laughed on Saturday evening himself silly.
- (7) a. **John* played (cards) broke.
- b. **John* drank beer to death. (cf. *John drank himself to death*)
- c. **John* drank beer himself to death.

not truly resultative and require a distinct treatment.

³I will avoid cross-linguistic discussion in this paper, concentrating on English resultative construction data.

2.1.2. SEMANTICS

The consistency of the interpretations assigned to the resultative construction, despite the varying syntactic relations between the verbal head and the other constituents of the sentence as outlined in (2), is also striking. Every variation of the construction, in terms of the syntactic relations between the components and the type of resultative phrase, conveys an essentially equivalent underlying meaning. I summarise these in (8).

- (8)
- a. NP_{controlled} is the object of a transitive verb
 - i. John heated *the water* to boiling. [PP]
John caused the water to be boiling by John heating it.
 - ii. John hammered *the metal* flat. [AP]
John caused the metal to be flat by John hammering it.
 - b. NP_{controlled} is neither subcategorised by V nor a fake reflexive (V intransitive)
 - i. John sneezed the tissue off the table. [PP]
John caused the tissue to be off the table by John sneezing.
 - ii. John ran his Nikes threadbare. [AP]
John caused his Nikes to be threadbare by John running.
 - c. NP_{controlled} is a fake reflexive, coindexed with the subject NP_{subject} (V intransitive)
 - i. John cried himself to sleep. [PP]
John caused himself to be asleep by John crying.
 - ii. John laughed himself sore. [AP]
John caused himself to be sore by John laughing.

In each case, the instantiation of the resultative construction expresses a causative change of state which might be paraphrased as follows:

- (9) NP_{subject} cause NP_{controlled} to be in Result State by NP_{subject} V-ing

It is, however, unclear precisely where this causative interpretation of resultatives comes from. Levin and Rappaport Hovav (1995) suggest that it follows directly from the main verb's change in telicity, from a process to an accomplishment, in the context of a resultative phrase. Yet a change of state is not necessarily causative and a telicity shift is therefore insufficient for explaining the specific interpretation of resultatives. This interpretation does not seem to follow from a straightforward compositional analysis of the semantics of the resultative construction, and it must therefore derive from a fixed form-meaning correspondence.

The inadequacy of a compositional analysis for explaining the interpretation of resultatives becomes evident when resultatives are considered in contrast to directed uses of manner of motion verbs. Let us consider two similar examples. (10) is a directed manner of motion construction and (11) is a change-of-state resultative involving the same verb.

- (10) John walked to the store.

- (11) John walked his feet sore.

The adverbial phrases in each of these sentences introduce a result state for the walking event — in (10) the result is that John is at the store and in (11) the result is that John's feet are sore. However, in (10) the result state is not directly caused by John but is rather an inference following from the association of an endpoint with the walking event (an inference from the interpretation of the prepositional phrase as a goal). This is in contrast to (11) where John is interpreted as causing the soreness of his feet (whether intentionally or not).

The relevance of this distinction can be seen clearly in comparison with a set of sentences for a non-agentive verb, as in (12)-(13). In this case, the causation component of the interpretation of the resultative construction is incompatible with the main event in the sentence, and the construction is therefore infelicitous.

- (12) The bottle floated to the bridge.

- (13) ??The bottle floated itself broken.

The interpretation of (12) as would be predicted under a compositional analysis assuming that a change of state implies causation is something like *The bottle's floating caused it to be at the bridge*, and that of (13) is *The bottle's floating caused it to be broken*. These two sentences seemingly should be equally (in)felicitous on these interpretations at a pragmatic level, in that a bottle floating causing either a change of location or a change of state

should be equally (im)possible and they should therefore be judged analogously, yet the judgements of these two sentences differ.

I suggest that this difference is due to the association of entirely distinct interpretations with these two constructions, and that therefore the assumption that a change of state always implies causation must be false: (12) actually means *The bottle is at the bridge as a result of it floating* while (13) should mean *The bottle caused itself to be broken by floating*. The use of the resultative construction, then, must be compatible with a causative interpretation for a particular event. As the interpretation of (13) as dictated by the construction is pragmatically incompatible with the specifics of bottles and floating (it is unclear how a bottle floating can cause it to break), the sentence as a whole is infelicitous. On the other hand, the interpretation of (11) as *John caused his feet to be sore by (John) walking* is pragmatically valid and hence perfectly felicitous. Causation is a necessary component of the meaning of the resultative — if the semantics of a particular verb or event are incompatible with that meaning, the construction is infelicitous — and does not simply derive in the fact that it expresses a change of state.

So the resultative construction expresses a relation of causation between the event in the main clause (headed by the verb) and the state expressed by the resultative phrase, in which the subject of the main verb must be interpreted as the *causer*. This is in contrast to other change-of-state constructions which do not express a causative relation.⁴ The implication of this is that the telicity shift which occurs in the resultative construction cannot underly the specific interpretation it is given.

It could be argued that what is reflected by this data is not a causativity relation but rather a volitionality constraint which applies to the resultative construction but not to directed manner of motion constructions. The non-volitionality of bottles with respect to floating (13), etc. could then explain the infelicity of these events in the resultative construction. However, consider the data in (14)-(16) below.

- (14) John cried himself to sleep.
- (15) John laughed tomato soup up his nose.⁵
- (16) The ball squashed *the tin* flat.

In (14) and (15), *John* is not volitional with respect to the crying or the laughing (if he were volitional, it should make sense to say #*John accidentally cried/laughed* but it does not) yet he does instigate a change of state to the state expressed in the resultative phrase by being the agent of the event which leads to the change of state and therefore he causes the change of state. Similarly in (16) the agent of the main event which causes the change of state is clearly non-volitional, as it is inanimate.

The difference in interpretation between these two kinds of constructions becomes even more evident if we consider a verb which seems to be possible in both the directed manner of motion construction and the resultative construction, as in (17).⁶

- (17) a. The clowns swung apart.
- b. The clowns swung themselves apart.

The interpretations of these sentences are closely related, and in fact the meaning of (17a) is entailed by the meaning of (17b). The latter conveys the meaning of the former, with the additional suggestion that the clowns are actively swinging in such a way that they end up apart. That is, (17b) means *The clowns cause themselves to be apart by swinging*, and (17a) simply means *The clowns are apart as a result of their swinging*. Intuitively the resultative construction conveys a certain meaning which the manner of motion sentence does not. The former could be used in a context, such as (18), in which the clowns are not agentive with respect to the swinging, and can therefore not be construed as *causers*, while the latter cannot.

- (18) The director pulled the puppet strings and
 - a. the clowns swung apart.
 - b. #the clowns swung themselves apart.

Consider also the contrast in (19).

- (19) a. The clowns swung over the net.

⁴This difference in meaning is also implicit in the analyses Jackendoff (1990, ch. 10) gives of resultative constructions and of manner of motion verbs.

⁵This example is a modified version of a sentence spoken by Henry Thompson at lunch on 17/4/97: "Make me laugh hot tomato soup up my nose and you'll regret it." Thanks to Claire Grover for spotting it and passing it on.

⁶Thanks to Joan Maling for the suggestion of this example.

- b. The clowns swung themselves over the net.

(19a) is highly ambiguous due to the nature of *over*: the PP could be expressing either the location of the swinging event, a point on or the direction of the path along which the swinging occurs, or a result phrase. On the other hand, (19b) is not ambiguous. The PP in that case can only be interpreted as a result phrase.

The element of causation conveyed by the resultative construction cannot be derived solely from the constituents of the sentence: a causative element of meaning arises, seemingly without explanation. The parallel directed manner of motion sentences have essentially the same components as the resultatives — both constructions involve a result state or location being predicated of the referent of a noun phrase, and the structures are similar — yet the meanings of the two constructions differ. As a result, the meaning of the resultative construction does not seem to lend itself to a solely compositional treatment. The explanation which I would like to put forward (following Goldberg 1995) is that this meaning comes directly from the semantics of the *construction* in which the words appear.

2.2. STIPULATIVITY OF RESULTATIVES

Despite the consistency of both the syntactic form and the interpretation of resultatives, the resultative construction is actually a highly idiosyncratic phenomenon. Certain resultative phrases occur with great frequency with a range of verbs, suggesting that the sentences in which they appear are examples of a productive phenomenon. However, these examples are in fact instances of semantically restricted conventionalised phrases which constrain the productivity, and reduce the predictivity, of the resultative construction. Consider the data in (20)-(21).

- (20)
- a. i. He laughed himself to death.
 - ii. *He laughed himself dead.
 - b. i. He laughed himself to sleep.
 - ii. *He laughed himself sleepy/asleep.
 - c. i. He laughed himself out of a job.
 - ii. *He laughed himself jobless/unemployed.
 - iii. *He laughed himself out of the room/down the hall.
 - d. i. He laughed himself silly.
 - ii. He laughed himself faint/dizzy.
 - iii.??He laughed himself tired.
 - e. i. They laughed John out of the room.
 - ii. #They tittered John out of the room.
 - iii. #They laughed John into the room/down the hall.
 - iv. #They insulted John out of the room.
- (21)
- a. i. He danced himself to fame.
 - ii. *He danced himself famous.
 - b. i. He danced his feet sore.
 - ii. *He danced his feet to soreness.
 - iii. ?He danced himself sore.
 - iv. *He danced himself crippled.

On the basis of these examples, it can be concluded that there are clearly specific lexical and semantic constraints on the resultative construction which must be identified and incorporated into any treatment which hopes to achieve a complete model of the construction.

Even minor variations in some component of a felicitous resultative construction can result in an infelicitous instance. The variations displayed in (20a-b) and (21a) are straightforward syntactic substitutions, where the resultative phrases have the same semantics but different syntactic form. Each variation conveys the same result state, yet they differ in grammaticality.

Semantic variations are equally problematic. In (20c-e) and (21b), resultative phrases are exchanged for syntactically identical but semantically distinct, albeit closely related, phrases of the same syntactic type, a verb is interchanged with a semantically related verb, or a reflexive of one sort is exchanged for another reflexive, and each variation results in infelicity.

The idiosyncratic nature of these constructions suggests that an analysis of resultatives which focuses solely on syntactic constraints or solely on semantic constraints is inadequate to fully account for their behaviour. Furthermore, it is difficult to imagine on what basis such constraints might be defined, given the subtlety and apparent unsystematicity of the variations which result in infelicity of these constructions, as evidenced by the examples here. In addition, note that judgements of these sentences appear to vary among speakers of English, suggesting that any hard constraints on the instantiation of the construction would in any case need to be defeasible by some mechanism.

So how might the restrictions on the productivity of this construction be explained? The conventionality of the resultative construction must be acknowledged. Certain uses of the resultative construction seem to be restricted solely on the basis of partially lexicalised instances of the resultative construction, which, like idioms, allow little variation in their component parts. These lexicalised instances may differ between speakers; this explains judgement differences and follows from the notion of conventionalisation (conventions derive from usage experience rather than from principles governing usage). Thus some mechanism for encoding conventional constraints is needed. That is, *stipulativity* must play a role in lexicon design — the idiosyncratic uses of individual words in particular constructions must be recorded.

2.3. SUMMARY

We have identified several properties of the resultative construction. They can be summarised as follows:

- The construction has a fixed syntactic form.
- This form holds irrespective of the standard subcategorisation of the main verb in the construction.
- The construction has a fixed interpretation.
- The interpretation of the construction does not seem to follow directly from compositional processes.
- Many potential instantiations of the construction are infelicitous.

Any valid model of the resultative construction must accommodate each of these properties. The first four points involve the predictivity of the phenomenon, while the last point highlights that there is as well a stipulative aspect which must be taken into consideration.

3. THE RULES + EXCEPTIONS MODEL OF THE LEXICON

The traditional lexical model for handling phenomena which have both predictive and stipulative aspects, such as the resultative construction, has two components: (1) Rules defining productive usage extensions and (2) Lexical entries specifying usages for individual words which override those predicted by the rules. This model, applied to the resultative construction, would include lexical rules for mapping any verbal argument structure to the [NP V NP ResP] structure, with the associated change in interpretation.

There are, however, several obvious problems with this approach.

Firstly, the lexical rules would hugely over-generate resultative constructions (i.e. many uses of the resultative construction would be licensed which are infelicitous). This problem could be overcome with the incorporation of semantic or syntactic constraints in the lexical rule definitions, but as we have seen above these are unsystematic and inadequate for modelling the relevant data. It might also be overcome through the existence of “negative” lexical entries, or lexical entries which characterise a verb usage which should be *disallowed*. Given the wide range of variation across instances of this construction, this solution would be extremely inefficient.

Secondly, the model assumes a static lexicon in which every instance of the resultative construction is accounted for either by a rule or by an exception. This is insufficient in the face of novel usages.

Thirdly, and most generally, the model ignores the fact that certain exceptions may have an explanatory basis, and that therefore not all exceptions should be individually encoded but they should rather follow from a general statement of a category of exceptions. I will argue below, for instance, that pragmatic reasoning influences the interpretation of the resultative construction and that acknowledgement of this influence removes the need for all infelicitous resultatives to be specified lexically — many can be ruled out on the basis of a pragmatic constraint.

In Section 5 I will consider an alternative to this model of the resultative construction.

4. THE ROLE OF PRAGMATICS

Pragmatics plays an important role in the felicity of resultative constructions. Discourse coherence is essential. This was observed by Simpson (1983), who suggested that only predicates consistent with a change of state can occur in the resultative construction. I suggest that this notion of a predicate's "consistency" with a change of state is relative to the discourse context in which the predicate appears. Thus the contrast between examples (20e.i) and (20e.iii), repeated here, can be explained on the basis of discourse coherence.

- (20e) i. They laughed John out of the room.
 iii. #They laughed John into the room/down the hall.

The discourse must support a link between the cause and the effect expressed in the resultative construction. In the case of (20e.iii), there is no obvious way in which laughing at someone can cause that person to go into a room or down a hall, while it is more clear how the laughing can cause that person to go *out* of the room where people are laughing at him. This example also shows clearly that discourse coherence constraints interact with conventionality: there are certain cause-effect links which must be conventionalised in world knowledge.

Wechsler (1996) has argued that the resultative construction is subject to a lexical semantic constraining, in which a result phrase in a resultative construction must be compatible with a 'canonical' (or intended) end result associated with the main verb. Verspoor (1997), however, argues that this constraint is in some cases too restrictive and in others not restrictive enough. I suggest instead that the semantic restrictedness of the resultative construction hinges in part on the requirement of establishing a causal relation between the main event expressed in the sentence and the result state, and that this occurs at the pragmatic rather than lexical level. This enables us to account for sentences such as (22)-(23), accommodating various kinds of result phrases for a given main verb, without restricting *a priori* potential instantiations of the construction. These restrictions will depend solely on discourse coherence and reasoning on world knowledge.

- (22) a. John hammered *the metal* flat/*safe/*red.
 b. John hammered *the metal* into a triangle/smooth/shiny/into the ground.
 (23) a. John chiseled *the ice* smooth/into a bird/onto the floor.
 b. John chiseled *the ice* *cold/*shiny.

This requirement would also allow us to account for situations in which pragmatics ameliorates a particular sentence. For example, in a context such as (24), the sentence (24c), infelicitous in a context-neutral environment (see (22a)), seems to be completely felicitous. Here the context allows us to establish a natural causal relation between hammering and the metal being safe. I will discuss this further in Section 5.2.1.

- (24) a. The slide at the park had a section which had come loose.
 b. Several children had hurt themselves on the protruding edge.
 c. In order to prevent further injuries, John hammered the metal safe.

5. THE BALANCE BETWEEN PREDICTIVITY AND STIPULATIVITY

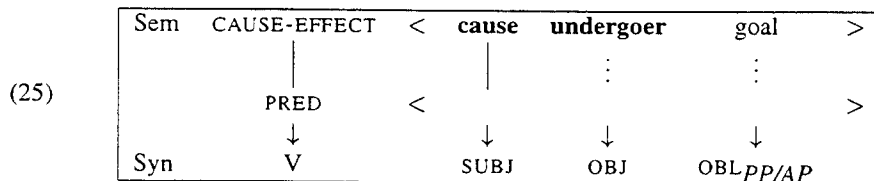
We have seen that the resultative data has both predictive and idiosyncratic aspects. We have also seen the traditional model of the lexicon cannot fully and generally account for the range of this data. What I will propose is an account which acknowledges both the predictive and idiosyncratic aspects of resultatives at the lexical level, but which gives an important constraining role to pragmatics. The proposal builds on the observations made in the previous section, and utilises a form-meaning correspondence derived from Construction Grammar (Fillmore 1988, Goldberg 1995).

5.1. HANDLING PREDICTIVITY

I assume a construction corresponding to the form of the resultatives, with an associated causative change-of-state meaning. This construction defines a basic form-meaning correspondence in which potentially any verb can be used, and thereby captures the predictive aspects of resultatives.

Specifically, *Resultatives* are defined as sentences of the form [NP_{subject} V NP_{controlled} ResP] which have the associated meaning [NP_{subject} cause NP_{controlled} to be in Result State by NP_{subject} V-ing]. I propose to treat Resultatives in terms of a Construction Grammar construction, shown in (25). This construction captures the basic syntactic form of the relevant sentences. The basic semantics of these sentences is also reflected in this

construction: NP_{subject} causes NP_{object} to change to the result location or state expressed in ResP. The main verb expresses how the causation is achieved, and its meaning is integrated into the semantics of the construction as a whole via merging between PRED and CAUSE-EFFECT.



5.2. HANDLING STIPULATIVITY

The proposal made above introduces a mechanism for licensing resultative constructions and accounting for their semantics. As with any account of the resultative construction, this account must also include an explanation of the idiosyncrasy of the phenomenon.

5.2.1. PRAGMATIC COHERENCE

It is important to bring the issue of pragmatic felicity into the discussion of the resultative construction and the restrictions which there appear to be on its use. A *pragmatic coherence constraint*, requiring a causal relation to be established between the main event expressed in the resultative construction and the result state, alone can account for much of the apparent idiosyncrasy of this construction, such as the infelicity of the examples below.

- (20e) i. They laughed John out of the room.
 iii. #They laughed John into the room/down the hall.
 iv. #They insulted John out of the room.
- (22a) John hammered *the metal* flat/*safe/*red.
- (26) *The feather tickled her silly.
- (27) The feather excited her into a frenzy.

Many constraints on the resultative construction appear to derive from general pragmatic principles. Grice's Maxim of Relevance (Grice 1975) is a heuristic governing discourse coherence which suggests that each constituent in a discourse must be as relevant as possible to the current discourse context. In the case of the resultative construction, this heuristic can be taken to mean that a rhetorical connection must exist between the elements in the construction in order for them to be felicitously combined. This maxim can be viewed not just as a constraint on attachment of discourse constituents within a discourse but also on the coherence of the semantics expressed by particular constructions, i.e. within a single constituent, and that the recruitment of this maxim to apply intrasententially can help to explain the impact of pragmatics on the felicity of resultative constructions. This approach has been demonstrated as a useful strategy for modeling the interaction of pragmatic reasoning with lexical semantics in the cases of co-predication and coordination (Lascarides *et al.* 1996).

As the resultative construction essentially conveys a cause and effect relation between the event expressed by the main predicate and the resultative phrase, it must be possible to establish a rhetorical connection between the two components in order for the cause-effect relation to be coherent. The relevant rhetorical relation in this case is *Result* (Hobbs 1985, Polanyi 1985). This causal link must be established on the basis of world knowledge inferences and reasoning about information in the discourse. Sentences like (20e.iii.)-(20e.iv.) are therefore normally ruled out because the Result relation between the cause and the effect in each case (e.g. some people laughing and John going into a room) cannot easily be supported. I argue that in a highly specific context which establishes the Result relation, these sentences would be entirely felicitous as they would satisfy the Gricean Maxim of Relevance (Grice 1975).

Consider again the discourse presented in (24):

- (24) a. The slide at the park had a section which had come loose.
 b. Several children had hurt themselves on the protruding edge.
 c. In order to prevent further injuries, John hammered the metal safe.

Under normal circumstances, hammering metal does not cause the metal to become safe. The context preceding (24c) in this discourse, however, establishes the basis for the causal relation — the metal is unsafe because an edge is protruding, so it follows that an event which stops the edge from protruding (e.g. hammering it) will cause the metal to be safe. Once this basis is established, the constraint on the resultative construction is met and the sentence will be judged felicitous in context.

The requirement of a pragmatically identifiable causal relation means that pragmatics can restrict the generativity of the Resultative Construction: any instantiation of this Construction is subject to contextually-based evaluation in the pragmatic component. Few instances of resultatives will be ruled out at the lexical level (due to the unrestrictive nature of the construction definition), but any attempted use of a resultative must be determined to be felicitous in context. The pragmatic constraint therefore acts as a filter on the instantiation of the Construction, and will rule out many potential uses in context.

5.2.2. CONVENTIONALITY

Even after the influence of the pragmatic coherence constraint is considered, however, there is still much idiosyncrasy left unaccounted for in the resultative data, specifically cases in which syntactic and semantic substitutions lead to infelicity.

I mentioned in Section 2.2 that some mechanism for encoding conventional constraints is needed in order to capture the idiosyncrasy associated with resultative construction. The framework provided by the Construction Grammar approach to this phenomenon points to a solution. Constructions can be viewed as specifying form-meaning pairs which are part of a language. However, constructions are, like many other linguistic phenomena, governed by conventional usage.

Goldberg (1995, p. 192) suggests there can be lexicalised instances of Constructions — instances in which the form and the meaning specified in the Construction will be preserved, but which will define more precisely the particular words or class of words which can appear in a readily acceptable instantiation. These instances are analogous to idioms in that the structure, meaning and the lexical items which instantiate the construction are fixed, but they differ from idioms because they derive from a more generally available form-meaning pair.

The Resultative Construction can therefore be viewed as defining a semi-productive sense extension mechanism: verbs can be used in sentences with the form and meaning reflected in the Construction (as long as their semantics are compatible with the Construction and any other constraints are satisfied), but some of these sense extensions become lexicalised due to the conventions of language use in particular linguistic communities. In some cases these lexicalised instances are truly idiomatic. They may acquire a meaning which cannot entirely be predicted on the basis of the Construction: Does *John laughed himself silly* really mean that John became *silly* as a result of laughing? In *You scared the daylight out of me*, what are *the daylight* (Jackendoff 1997)? Once there is a lexicalised instance of a construction involving a particular verb, it becomes difficult to use that verb in a different instance of the same construction because that use would conflict with the conventionalised form. Hence the oddness of examples like *John laughed himself tired*.

I suggest that the idiosyncrasy of the resultative construction is a reflection of the high degree of conventionalisation governing the construction. Speakers prefer instances of this construction which conform to their lexicalised instances. Many, if not most, occurrences of this construction which speakers use and come across reflect a lexicalised form. This fact accounts for the idiosyncrasy — variations from lexicalised forms are in theory perfectly acceptable as they can be licensed by the existence of the Construction in the grammar but in practice they are viewed as anomalous or ungrammatical because they don't conform to the "standard" forms in use. Variations (i.e. syntactic and semantic substitutions) of entirely novel instances of the construction are therefore tolerated much more easily than variations of highly colloquial instances. So I can easily accept all variants in (28), but the variants of the colloquial (29a) in (29b-d) are less felicitous.

- (28) a. Sue brushed her hair smooth.
 b. Sue brushed her hair shiny/straight/flat/out of her eyes/...
- (29) a. Sue cried herself to sleep.
 b. ?Sue cried herself sick.
 c. ??Sue cried herself asleep.
 d. #Sue cried herself sleepy.

This conventionalisation is itself a result of the fact that the resultative constructions are licensed by a form-meaning pair in the grammar. These constructions are very different from constructions which are interpreted strictly compositionally, in that they don't result from generative mechanisms in the grammar and in that their

meaning is essentially fixed. These properties indicate that Constructions are “special” in grammatical terms — that is, they do not follow from the normal principles of grammar. That they are subject to a much higher degree of conventionalisation than other constructions seems natural given that their existence in the grammar can be viewed as a result of conventionalisation.

This perspective on the Resultative Construction is in line with observations made about the semi-productivity of many other lexical processes, e.g. the generation of denominal verbs (Jackendoff 1997), and blocking by exceptional forms in sense extensions (Briscoe *et al.* 1995, Copestake and Briscoe 1995). The property of semi-productivity has been argued to require lexicalisation of the forms output by the lexical rule. Furthermore, *pre-emption by synonymy* (Copestake 1995), in which an extended meaning will not be conventionalised if a common synonym exists, has been shown to be overridable in context in that a blocked form can be interpreted. Both of these characteristics surface in resultative constructions, indicating that it is a generative process constrained by conventionality.

In sum, I assume that there are lexicalised instances of this Construction represented in the lexicon, and that these instances limit the acceptability of sentences which vary from the conventionalised patterns, further accounting for some of the idiosyncrasy associated with resultatives.

6. CONCLUSIONS

Resultatives are defined by a form-meaning correspondence, the Resultative Construction, in the grammar of a language which can be used to generate potential new uses of a verb, with a particular associated meaning. The predictivity of this Construction is, however, limited in two ways: (1) through the requirement of pragmatic coherence of the generated form, and (2) through the existence of instantiations of the Construction in the lexicon, reflecting conventionally accepted uses of the Construction. The latter limiting factor stems from stipulativity in the lexicon: individual uses of words, as well as generalisations over word classes, can be represented in the lexicon in order to reflect common but potentially idiosyncratic usages of a particular word. The former moves some of the apparent stipulativity of the resultative construction out of the lexicon and into the control of pragmatic reasoning: not every valid instantiation of the Construction needs to be explicitly represented in the lexicon, because all instantiations can be considered lexically valid but subject to pragmatic validation. Given the context-dependent nature of the felicity of many instances of this construction, this approach results in a more adequate model of the data. The role of the conventionalised forms, then, is to obviate the need for explicit pragmatic validation in certain cases — these instantiations will always be considered felicitous.

The broader implication of the analysis of resultatives presented in this paper is that it is not adequate to assume that all information relevant to the grammatical and felicitous use of words is explicitly encoded in the lexicon. Nor is it enough to assume that all constraints on generative processes can derive from semantic constraints, or even entirely from a pragmatic coherence constraint. A naive approach to lexicon construction — explicit representation of every possible behaviour of every word — or even an approach which utilises generative mechanisms but relies solely on lexical semantic constraints, ignores the influence of context on the acceptability of particular sentences. There are different sources of information which interact to determine the felicity of any given sentence, and the decision as to what information to represent in the lexicon (a productive generalisation, specific subcategorisations for individual words, or a combination of the two) must be taken after those sources and the interactions between them have been identified. Once this has been done, and the lexicon has been structured in terms of its interactions with other linguistic modules which impact on interpretation, it is possible to more accurately model the full range of word use — both the predictive and the stipulative aspects.

ACKNOWLEDGEMENTS

Part of this work was completed with the support of an EPSRC studentship award to the author while at the University of Edinburgh. The initial ideas for this paper came from discussions with Ray Jackendoff, Vittorio Di Tomaso and Bhuvana Narasimhan while the author was a visiting scholar at Brandeis University. Thanks are also due to Alex Lascarides and an anonymous reviewer for helpful comments on previous drafts of this paper.

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