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Getting at the meaning of the English *at*-construction: the case of a constructional split

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Abstracts

On the basis of a corpus-based study of the *at*-frame in English, this article evaluates Goldberg's (2006) hypothesis that constructional meaning originates with the meaning of the verbs frequently occurring in a given syntactic pattern. Our study reveals that for the *at*-construction, this hypothesis does not hold: the constructional meaning is poorly reflected by the distribution of the verbs, and is only arrived at by attending to specific aspects of the semantics of the verbs occurring in it. This suggests that a more complex learning strategy than the simple import of lexical semantics into constructions is needed, especially to account for the emergence of constructions whose meaning is not lexicalized by any verb in the language.

A partir d'une étude sur corpus de la construction en *at* en anglais, cet article évalue l'hypothèse de Goldberg (2006) selon laquelle le sens des constructions syntaxiques provient du sens des verbes fréquemment rencontrés dans un motif syntaxique donné. Notre étude révèle que cette hypothèse ne s'applique pas à la construction en *at*: la distribution verbale ne reflète que médiocrement le sens constructionnel, qui n'est déduisible qu'en retenant certains aspects spécifiques de la sémantique des verbes observés dans la construction. Cela suggère qu'une stratégie d'acquisition plus complexe que la simple importation de sémantique lexicale dans les constructions est requise, en particulier pour expliquer l'émergence de constructions dont le sens n'est lexicalisé par aucun verbe de la langue.

Full text

1. Introduction

1 This paper reports an inquiry into the origin of constructional meaning, asking what elements speakers retain from the meaning of actual utterances when they form constructional generalizations.¹ One of the hypotheses currently entertained in Construction Grammar (cf. Goldberg 2006) holds that constructional meaning originates with the meaning of the verbs frequently occurring in a given syntactic pattern. The present study of the *at*-construction reveals, however, that the connection between the verbal distribution and the semantic abstraction underlying the construction is not so straightforward. As our case study will illustrate, the central meaning of the *at*-construction is not lexicalized by any verb in the distribution (or elsewhere in the language, for that matter) and thus must emerge through a more complex operation than the simple association of the meaning of the most frequent verb with the syntactic pattern. While the lexical origin of constructional meaning may hold for some of the constructions discussed in the literature, the origin of the conative *at*-construction seems to lie elsewhere, as we will show.

2 The article is structured as follows. The theoretical and methodological underpinnings of our study are presented in Section 2. We discuss the constructional approach to argument structure, particularly emphasizing the nature of constructions and the origin of constructional meaning, which lie at the basis of Goldberg's claims mentioned above. Section 3 is concerned with a more detailed characterization of the semantics of the *at*-construction, in which one of the arguments of the verb is realized by a post-verbal prepositional phrase headed by *at*; this includes the so-called Conative construction, a classical case of transitive alternation (e.g., *John kicked the ball* vs. *John kicked **at** the ball*), as well as other uses of this syntactic frame. Drawing on the treatment of that construction in the cognitive linguistics literature, a unified constructional meaning can be distilled that would account for all its uses. We then evaluate this analysis against the use of the construction in a general corpus of English, revealing that the predictions of the lexical origin hypothesis do not hold for this particular case. In Section 4, we discuss the theoretical implications of our study and argue that the lexical origin hypothesis by itself cannot account for the distribution of the conative *at*-construction and that its meaning may have arisen through alternation patterns.

2. The lexical origin of argument structure semantics

3 It is a trivial fact that verbs can occur in several different syntactic frames, as exemplified with the verb *kick* in (1a) to (1g) below.

- (1)
- a. Bill kicked the ball.
 - b. Bill kicked at the ball.
 - c. Bill kicked the ball off the field.
 - d. Bill kicked the man unconscious.
 - e. Bill kicked the ball to Bo.
 - f. Bill kicked Bo the ball.
 - g. Bill kicked his way through the crowd.

4 These different so-called *argument structures* of a verb correspond (i) to different kinds of events, e.g., (1a) vs. (1b) vs. (1g), (ii) to constructions with different types or number of arguments, e.g., (1a) vs. (1b), vs (1c) vs. (1d), or (iii) to alternative ways of linguistically encoding the participants of the same kind of event, e.g., the dative alternation, exemplified by (1e) vs. (1f).

5 In Construction Grammar, argument structures are seen as independent pairings of form and function (i.e., constructions), which means that (i) they exist independently from verbs and (ii) they are able to convey meaning on and of their own. Argument Structure Constructions (ASCs) are defined by Goldberg (1995, 2006) as a pairing of a schematized representation of an event including a list of semantic roles specific to the construction, with morphosyntactic information as to how these roles are realized (e.g., word order, case marking). For example, the caused-motion construction (Goldberg 1995: Chapter 7), illustrated in (2) and (3) and schematically represented in (4), pairs a syntactic pattern containing a subject, a direct object and a locative oblique to a general scene of caused change of location, in which the subject is linked to the **Agent** role (the causer of the change of location), the direct object to the **Patient** role (the entity undergoing the change of location) and the locative oblique to the **Path** role (the trajectory followed by the patient). While in (2) the meaning of caused transfer is already conveyed by the verb *send*, (3) exemplifies the potential of the construction to convey meaning on and of its own, since *squeeze* does not convey an event of “caused motion”; the resulting interpretation is thus not plausibly conveyed by the verb and must be attributed to the syntax itself.

(2) John sent a package to London.

(3) John squeezed the toothpaste out of the tube.

(4) Form : **Subject** Verb **Object** **Oblique**_{Locative}
 Meaning : **Agent** CAUSE (**Patient** GO **Path**)

6 The constructional meaning serves as the basis for generalizing the argument structure to other semantically compatible verbs, even in cases where these verbs have not been observed with that syntax in the input. This is how a usage-based, constructionist theory of argument realization accounts for how speakers predict the association between verbs and their argument frames on the sole basis of the input without having to posit innate linking rules (as does Pinker 1989, for example).

7 Central indeed to Goldberg’s (2006) proposals are the mechanisms that she posits to explain how constructions come into being. Committed to a usage-based view of language, she claims that ASCs are gradually emergent generalizations over individual instances of language in use. In other words, speakers are able to learn correlations between a syntactic form and a clausal meaning and store them as constructions. The current hypothesis as formulated by Goldberg (2006) argues for a lexical origin of constructional meaning; in the case of ASCs, constructional meaning is an abstraction over the meaning of verbs that frequently occur in a given syntactic frame.² As Goldberg (2006: 92) puts it, “grammatical constructions may arise developmentally as generalizations over lexical items in particular patterns”.

8 The lexical origin of constructional meaning is evidenced by the importance of “basic purpose verbs” in the acquisition of argument structure. Goldberg (1999: 202) suggests that “the generalization to constructional meaning is based largely on the meanings of highly frequent ‘light’ verbs: verbs with very general meanings”, in line with Fillmore *et al.*’s claim that “it is possible to think of the argument structure patterns as in some sense ‘derived from’ the semantics of

their most neutral verb” (forthc.: section 3.2). She finds that for each studied ASC there is such a corresponding verb and that the distribution of each construction is severely biased towards this verb, accounting for a huge number of instances in the input to children (20 to 40%).³ Secondly, Goldberg says that these verbs are semantically basic and their meaning is very close to that of the corresponding construction. For example, for the caused-motion construction, such a verb would be *put*, for the ditransitive (the double-object pattern, as in (1f) above), *give*. Goldberg *et al.* (2004) and Goldberg & Casenhiser (2006) experimentally show that the presence of such “basic purpose verbs” facilitates the acquisition of ASCs by adult speakers as well as children, which is interpreted by Goldberg (2006: 79) as implying that “the high frequency of particular verbs in particular constructions facilitates children’s unconsciously establishing a correlation between the meaning of a particular verb in a constructional pattern and the pattern itself, giving rise to an association between meaning and form”. This view is in line with non-linguistic learning, where it has been shown that category learning is facilitated by a low-variance input (cf. Markman & Maddox 2003) and that prototypicality correlates with high token frequency (cf. Nosofsky 1988, Rosch & Mervis 1975). The facilitatory effect of a highly frequent verb semantically congruent with the construction is evidence that when speakers map meaning onto a phrasal pattern, they retrieve this meaning from that of individual verbs occurring in it. The meaning of the construction is thus to a large extent predicted by the meaning of that highly frequent verb.

9 The connection between the meaning of a construction and the meaning of the verbs occurring in it is also borne out by several corpus studies. Goldberg *et al.* (2004) report the upper part of the distributions of the intransitive-motion, caused-motion and ditransitive constructions in child-directed speech from the Bates *et al.* (1988) corpus and note that each construction is biased towards verbs that closely match the constructional meaning: respectively *go* (39%), *put* (38%) and *give* (20%). Along the same lines, Stefanowitsch & Gries’ (2003: 227-230) collocation analysis of the ditransitive construction shows that the verbs most attracted by a construction are those most closely corresponding to the core meaning of that construction. For example, among the ten strongest verbal collocates of the ditransitive, six are in some way verbs of transfer (either actual or abstract – transfer of a message or of knowledge): *give*, *tell*, *send*, *offer*, *teach* and *award*, and the attraction of *give* is particularly strong. The authors note that “[it] seems that strong collexemes of a construction provide a good indicator of its meaning” (idem: 227). In an unpublished study, Perek (2009) extracted the verbal distribution of five Argument Structure Constructions from the spoken part of the ICE-GB. Table 1 below summarizes the results of the corpus search.

Construction	Syntax ⁴	Meaning	Most frequent verb	Other frequent verbs (>1%)
Ditransitive	Subj _x - V-Obj ₁ Y-Obj ₂ Z	X CAUSE Y TO HAVE Z	<i>give</i> (50%)	<i>tell</i> (14%), <i>show</i> (8%), <i>offer</i> (5%), <i>send</i> (4%), <i>get</i> (3%), <i>ask</i> , <i>do</i> (2% each), <i>buy</i> , <i>teach</i> (1% each)
Caused-motion	Subj _x - V-Obj _y -Obl _z	X CAUSE Y TO GO Z	<i>put</i> (24%)	<i>give</i> (12%), <i>take</i> (9%), <i>get</i> (8%), <i>send</i> (6%), <i>bring</i> (4%), <i>leave</i> (3%), <i>place</i> , <i>throw</i> (2% each), <i>impose</i> , <i>add</i> , <i>hand</i> , <i>offer</i> , <i>pay</i> , <i>sit</i> (1% each)

Intransitive-motion	Subj _X -V-Obl _Y	X GO Y	<i>go</i> (32%)	<i>come</i> (24%), <i>get</i> (7%), <i>move</i> , <i>run</i> (3% each), <i>walk</i> , <i>return</i> , <i>arrive</i> (2% each), <i>fall</i> , <i>embark</i> , <i>head</i> , <i>fly</i> (1% each)
Resultative	Subj _X - V-Obl _Y -Obl _Z	X CAUSE Y TO BECOME Z	<i>make</i> (40%)	<i>put</i> (14%), <i>get</i> , <i>leave</i> (9%), <i>bring</i> (5%), <i>turn</i> (4%), <i>drive</i> , <i>take</i> (2% each), <i>elect</i> , <i>force</i> , <i>have</i> , <i>let</i> , <i>throw</i> (1% each)
Intransitive-resultative	Subj _X -V-Obl _Y	X BECOME Y	<i>become</i> (38%)	<i>get</i> (30%), <i>go</i> (8%), <i>come</i> (4%), <i>fall</i> , <i>end up</i> (3% each), <i>prove</i> (2%), <i>grow</i> , <i>evolve</i> , <i>form</i> (1%)

Table 1: Summarized distributional properties of five Argument Structure Constructions; source: spoken part of the ICE-GB

10 These data both comply with the results in Goldberg *et al.* (2004) mentioned above and complement them by providing figures for two other constructions. They show that for each of the studied constructions there is one verb that stands out more than others (notice that for the intransitive-motion construction, both *go* and *come* are (unsurprisingly) highly frequent) and that the meaning of that verb in the given syntactic frame⁵ closely matches the meaning conveyed by the construction.

11 In the model outlined above, the relation between the meaning of frequent verbs in the distribution and the meaning of the construction is straightforward. We can posit that the cited argument structure constructions all feature the following distributional properties:

- (i) The distribution of the construction is skewed towards a single verb V.
- (ii) The central meaning of V is close (if not identical) to the meaning of the construction.
- (iii) The distribution contains many hyponyms of V.

12 These properties make the lexical origin hypothesis empirically tenable, at least for the constructions discussed. If for some other construction, these properties do not hold or make conflicting predictions along the lines of the lexical origin hypothesis, then an alternative account will be needed.

13 An additional comment is in order. A key proposal in Goldberg’s seminal work is that there can be extensions from a construction’s prototype which account for verbs which are seemingly at odds with the prototypical meaning. For example, the ditransitive construction, with its central meaning ‘X CAUSE Y TO HAVE Z’, is the basis for extensions to meanings such as ‘X ENABLES Y TO HAVE Z’ and ‘X CAUSE Y NOT TO HAVE Z’, which accounts for the occurrence in the ditransitive syntax of verbs such as *permit* and *allow* for the former and *refuse* and *deny* for the latter. In fact, these cases may well be accounted for by the lexical origin hypothesis, since these semantic extensions are likely to be motivated by the relevant parts of the verbal distribution. As Croft points out, the classes of verbs that instantiate each of these subconstructions are mutually exclusive, so that “the variation in the ditransitive construction’s meaning is not true polysemy. Each verbal semantic class is associated with only one sense of the ditransitive construction” (2003: 55); instead the alleged extensions of the ditransitive should better be considered as what he terms “verb-class-specific constructions” (idem: 56). Whatever the actual mental representation looks like

(this is largely an empirical question), it seems that at least some of these subconstructions can plausibly get their meaning not from extension from the constructional prototype but directly from lexical abstraction. Whether the verb-class-specific constructions might be biased towards one single verb from which they would get their extended meaning is unclear but not unlikely; this is, however, not an issue dealt with here.

14 In this paper, we leave the domain of the “typical” ASCs which have been dealt with quite extensively in the literature, such as the ditransitive, the caused-motion or the intransitive-motion constructions, and focus on a lesser studied syntactic pattern, the *at*-frame,⁶ which we define as a complementation pattern that realizes one argument of a verb as a (directly) post-verbal⁷ prepositional phrase headed by the preposition *at* (NP-Subj Vb *at*-PP). If we take a constructional approach to argument structure, we have no *a priori* reason to think that this argument realization pattern is not licensed by a construction, i.e., that it does not convey a meaning that serves as a basis to predict which verbs can or cannot occur with that argument structure.

15 In the next section, we present such a construction grammar account of the instances of the *at*-frame. Putting together the various analyses that have been presented in the literature, we will present a conceivable account of the constructional meaning that emerges from these analyses. We then present our survey of this construction in the ICE-GB, revealing a contrast between what the lexical origin of constructional meaning predicts and the actual distribution of the construction in the corpus. This discrepancy suggests that the connection between constructional meaning and lexical meaning may not be as straightforward as it is usually assumed. The implications of this finding are discussed in Section 4.

3. A cognitive account of the *at*-construction

16 In this section, we describe the various uses of the *at*-frame. We first deal with the conative frame, commonly known in the linguistic literature as one of the variants in the conative alternation (cf. Levin 1993: 41-42). Most verbs occurring on the conative frame alternate with the transitive construction. We describe the semantics of the conative variant in contrast to the transitive variant, mainly drawing on Broccias’ (2001) analysis. In the second part of this section, we relate the conative frame to the other instances of the *at*-frame, basing ourselves on Goldberg’s construction grammar account and subsequently introducing a plausible schematic meaning of the *at*-construction. Finally, we examine how the *at*-frame is used in the ICE-GB corpus.

3.1 The conative alternation

17 The conative frame, named after Latin *conor/conari* ‘to try’, is most often treated with reference to the conative alternation, a transitivity alternation that modifies the interpretation of a transitive verb towards denoting “an ‘attempted action’ without specifying whether the action was actually carried out” (Levin 1993: 42). The transitive variant, in contrast, specifies that the action has indeed been carried out. For example, notice the contrast between the following pairs of examples:

- (5) a. I shot the sheriff.
 b. I shot at the sheriff.
- (6) a. Bill kicked the ball.
 b. Bill kicked at the ball.

18 (5a) entails that the bullet actually reached the target (the sheriff) but such an entailment does not hold in (5b). Similarly, (6a) necessarily entails that Bill's foot actually entered in contact with the ball, whereas in (6b), Bill may have missed. In each of the conative counterparts of the alternation, the action is thus described as an attempt and nothing is said about the success of that attempt.

19 Levin suggests that the conative alternation is restricted to transitive verbs involving contact and motion, but later studies point out that it is an oversimplification of the actual distribution, and that Levin's analysis in terms of "attempted action" (or Goldberg's (1995) fairly similar idea of "intended result") does not account for the resulting semantics of all alternating verbs, which leads Van der Leek (1996) and Broccias (2001) to refine the semantics of the construction. Broccias distinguishes at least two cases, one case "where the action denoted by the (transitive use) of the verb does not necessarily take place" and one case "where the verbal event does take place, though in a bit-by-bit fashion" (2001: 69). Broccias' cognitive analysis describes the semantics of conative clauses in terms of two scenarios.

20 First, the **allative schema** corresponds to the above analysis of the conative as an "attempted action", exemplified by (5b) and (6b). It denotes the emission of a force (which may be metaphorically construed) towards a goal, but with forceful contact not being linguistically encoded and thus backgrounded and merely implied. The transitive counterpart, in contrast, linguistically encodes both emission and contact.⁸ The allative schema thus includes the lack of necessary affectedness of the prepositional object referent, which "correlates with notions such as randomness, attack, and difficulty, which are often associated with the allative construction" (Broccias 2001: 74-75). Note that the notion "emission of a force" is broadly construed and can correspond to different types of physical manifestation, such as a fired weapon in (5b), a body part set in motion (a leg in (6b), an arm in (7) below), or even the moving agent itself in (8).

- (7) He clutched desperately at the branch as he fell. (from Broccias 2001: 73)
- (8) Sally ran at Chris. (ibid.)

21 The **ablative schema** is associated with continuous actions, either because it is repeated (i.e., in a "bit-by-bit" manner) or because one single instance of the action is prolonged. This schema bears some connection to the allative schema, in that it also incorporates a notion of attempt, which, however, does not apply to the verbal event itself but rather to its expected or desired consequences. In other words, some action is performed upon an entity in an attempt to bring about some result, which can belong to one of the following three categories: (i) *removal* of a substance or an entity (e.g., caused motion of an entity as in (9)), (ii) *release* (the coming about of a perceptual state predicated of either the subject referent or the object referent, e.g., sensation as in (10), attention as in (11) and information as in (12)) and (iii) *creation/destruction* (e.g., ingestion as in (13) and (14)).

- (9) The horse pulled at the cart. (idem:75)
- (10) ... and tears stung at her eyes. (idem:77; from BNC, HGK 2219)
- (11) The child pulled at his mother's coat, wanting to be lifted up. (idem:78; from LDELC)

(12) Cardiff nudged at that swollen head with his shoe. (idem:78; from BNC, G0E 3258)

(13) Pat ate at her sandwich.

(14) James Bond sipped at his Martini.

22 (9) contrasts with its transitive variant not by entailing that the action of pulling has not been carried out, but rather by leaving unspecified the consequence of that action (whereas the transitive *The horse pulled the cart* does entail the motion of the cart as a result of the pulling). Similarly, (13) and (14) contrast with their transitive counterparts (*Pat ate her sandwich* and *James Bond sipped his Martini*) in that they entail that the substance has not been fully ingested; they also contrast with examples of the allative schema such as (5b) and (6b) in that they do not feature the same notion of attempt: some of the sandwich and some of the Martini has indeed been successfully eaten/drunk.

23 In some cases, as in examples (15) and (16) below, the two schemata are combined, i.e., they involve both (i) the emission of a force (which may be metaphorical) directed towards a target, and (ii) a continuous action in an attempt to bring about some (future) result, not necessarily successfully.

(15) Sam sprayed at the trees with insecticide. (from Broccias 2001: 79)

(16) He was working at his painting. (ibid.)

3.2 A construction grammar account

24 In addition to the verbs entering the conative alternation, many other verbs realize one of their arguments with an *at*-phrase, without there being a transitive variant realizing the same argument with a direct object. Verbs of volitional visual perception, exemplified by (17a) below, are typically used in this syntactic frame, but are ungrammatical in the transitive construction (cf. (17b)).

(17) a. Bill looked/peered/glanced/stared at the girl next to him.

b. *Bill looked/peered/glanced/stared the girl next to him.

25 These instances of the *at*-frame usually receive a lexically-based treatment, distinguished from the conative frame. It is listed as one of the complementation options for verbs of visual perception (*peer*-verbs in Levin's (1993: 187) classification). Van der Leek (1996) and Broccias (2001) do not even mention visual perception in their examples. Goldberg (1995: 64), however, notes that such cases "bear an **obvious similarity** to [instances of the allative schema]" (our emphasis) and explicitly considers them licensed by one and the same construction. She briefly outlines a construction grammar account of the *at*-frame (1995: 63-64; see Figure 1 below), in which the construction receives a central meaning of 'directed action' which is further paraphrased by 'Agent DIRECTS ACTION AT Target'.⁹

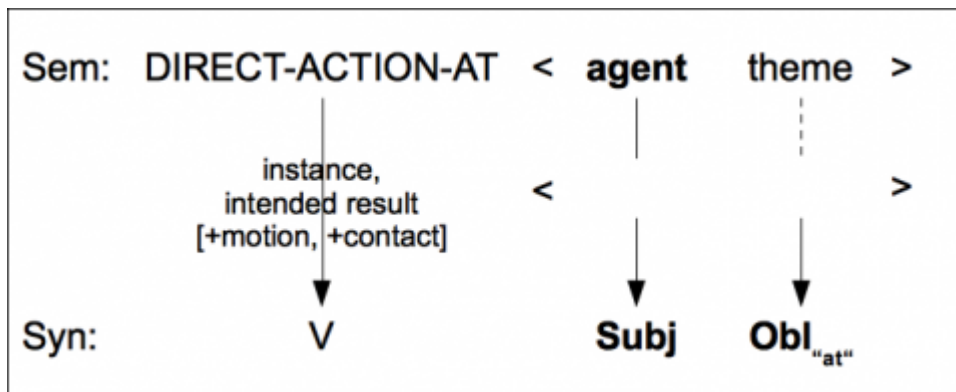


Figure 1: Goldberg's representation of the *at*-construction (taken from Goldberg 1995: 64)

26 In Goldberg's (1995) model, a construction is compatible at least with verbs whose meaning elaborates in some way the constructional meaning. This semantic relation makes the *at*-construction compatible with verbs that denote types of directed action. Goldberg argues that the occurrence of verbs of visual perception such as *look* and *aim* in the *at*-construction is motivated by their categorization as directed actions (direction of the gaze); hence, by enlarging the scope of the construction, she can coherently account for a syntactic fact that was previously not related to the conative frame but rather considered as an idiosyncrasy of a lexical class. Similarly, verbs of sound emission such as *scream* and *shout*, as well as other verbs such as *fire* and *shoot* can be considered as directed actions, which also motivates their occurrence in the construction. The occurrence of *smile* and *laugh* (among others) is predicted by their conceptualization as directed actions of a more abstract kind.

27 This schematic meaning 'directed action' can be decomposed into two components: an orientational component, corresponding to some entity being oriented in the direction of a target, and a directional component, corresponding to an unbounded trajectory defined by the orientational component. A verb is compatible with this constructional meaning under the essential condition that its frame semantics refer to an entity whose properties allows to be oriented. Verbs of volitional visual perception are compatible by this construction as the eye is an entity which can be oriented; the gaze follows the trajectory defined by this orientation. Similarly, facial expressions (such as a smile) can be oriented in a given direction through different orientations of the head. Another typical example of directed action is *point*, which in its basic concrete sense provides as an orientational component the hand set in such a given spatial configuration that it defines a direction. The orientational component (and hence the directional component that it defines) can also be construed in non-physical fields. For instance, with verbs of sound emission such as *shout* and *scream*, the orientational component is not always purely physical but corresponds more broadly to the production of a sound for a target "recipient", which is orientational in an abstract sense.

28 While Goldberg's model does not exclude there to be constructional polysemy, her account of the *at*-construction outlined above is still essentially monosemic: the construction conveys a single maximally abstract (hence vague) meaning shared by all instances of the construction, which is by itself insufficient to predict the meaning of all uses of the *at*-frame on the basis of *strict* compositionality: meaning construction must still go a long way from the meaning of the parts (the construction, the verb and the argument role fillers) to a fully integrated semantic representation of the event. In Goldberg's model, on-line coercion operations bear this burden: in case of type mismatch between

the verbal meaning and the constructional meaning, the latter overrides the former and speakers must find a way to integrate the verbal meaning into the constructional meaning.

29 Some of these coercion operations can be conventionalized and rule-like, in that they explicitly specify how the meaning of the verb and the meaning of the construction are integrated into a coherent interpretation and thus yield a predictable output in terms of semantic relations established between the two meanings. In this case, Goldberg's model falls into what Croft (1998b: 153) terms the "derivational model", viz. one which "involves a conventional rule applying to the particular grammatical element, operation or construction" (idem: 155). This is what is argued to happen with the semantic relation "intended result": when a verb including the semantic components of motion and contact fuses with the construction, it "designates the intended result of the act denoted by the construction" (Goldberg 1995: 63). For example, the sentence *Ethel strikes at Fred*, given by Goldberg, is posited to mean that "Ethel does not necessarily strike Fred, but striking him is the intended result of the directed action" (ibid.). Thus, in Goldberg's approach, the "attempted action" reading does not come from an intrinsic part of the construction, but rather emerges from the coercion of the verbal meaning into the constructional meaning.

30 Yet not all coercion operations need be conventional and rule-like, in which case the model tends towards what Croft (1998b: 154) terms a "pragmatic model", that is one in which "the hearer is expected to figure out the semantics of the combination from the context and general cognitive principles". Actually, even the putatively conventional relation "intended result" does not accurately apply to all cases as posited in Goldberg's account. For example, a verb like *kick* falls into this relation, as it entails both motion and contact; however, a sentence like *He kicked at the door* does certainly entail in most contexts that contact was made with the door; the intended result which does not obtain, however, is the actual opening of the door, which is not *a priori* given by the semantics of the verb alone but the situation as a whole. Goldberg does not mention examples of the ablative schema in her data and they cannot be accounted for by the relation of "intended result"; it remains to be examined whether and how the schema can be accounted for by another, more complex coercion operation and whether this operation should be conventionalized.

31 As we mentioned in Section 2, Goldberg (2006) suggests that constructional meaning emerges from schematization of the meaning of individual verbs. Any lexical bias should be viewed as providing prototypical instances and should be a strong predictor of what the constructional meaning looks like. As we will see in the next section, an examination of usage data as provided by a corpus leads to a different conclusion than the above introspective account.

3.3 The *at*-construction in use

32 To our knowledge, there is no in depth corpus study of the *at*-frame (and the conative frame in particular) comparable to those that have been performed on other, more typical constructions. The studies mentioned in the previous section are based on individual examples, either invented or collected from corpora, and are aimed at uncovering the full semantic potential of the construction, regardless of the frequency of the interpretations at hand. Apart from some probably vague intuitions, we do not really have a clear picture of how the *at*-frame is distributed over different verbs in actual usage. This study makes a first modest step towards mending this gap, even though we immediately

acknowledge that a study on a bigger corpus would be even more beneficial.

33 On the basis of the analysis of the *at*-construction outlined above, we manually identified the instances of the *at*-construction in the corpus. We first queried the corpus for the pattern [NP_{Subject} V *at* NP]¹⁰ and selected the citations corresponding to the cases described in Section 3, which yielded 319 instances. The distribution of verbs in the *at*-construction is reported in Table 2.

Verb	Frequency (<i>at</i>-construction:all)	Collostructional strength
<i>look</i>	(338:1201)	∞
<i>glance</i>	(8:12)	17.18
<i>shout</i>	(5:24)	7.81
<i>stare</i>	(4:18)	6.46
<i>point</i>	(4:112)	3.26
<i>scream</i>	(2:11)	3.23
<i>aim</i>	(3:57)	3.04
<i>pick</i>	(4:167)	2.62
<i>swing</i>	(2:23)	2.58
<i>work</i>	(8:704)	2.58
<i>smile</i>	(2:24)	2.54
<i>fire</i>	(2:28)	2.41
<i>clutch</i>	(1:4)	1.88
<i>dive</i>	(1:4)	1.88
<i>tug</i>	(1:4)	1.88
<i>gaze</i>	(1:5)	1.78
<i>sniff</i>	(1:5)	1.78
<i>suck</i>	(1:5)	1.78
<i>hint</i>	(1:7)	1.64
<i>leap</i>	(1:7)	1.64
<i>pluck</i>	(1:7)	1.64
<i>peer</i>	(1:10)	1.49
<i>flick</i>	(1:14)	1.34
<i>laugh</i>	(1:25)	1.1
<i>complain</i>	(1:39)	0.92
<i>recall</i>	(1:51)	0.81
<i>shoot</i>	(1:53)	0.79
<i>knock</i>	(1:63)	0.73
<i>strike</i>	(1:62)	0.73
<i>guess</i>	(1:67)	0.7
<i>act</i>	(1:91)	0.58
<i>pull</i>	(1:92)	0.58
<i>hit</i>	(1:116)	0.5

<i>run</i>	(2:368)	0.46
<i>wonder</i>	(1:129)	0.46
<i>get</i>	(5:2806)	-1.01
<i>come</i>	(1:1817)	-1.78
Total	(423:8247)	

Table 2: Verbal distribution of the *at*-construction in the ICE-GB corpus

34 In addition to the raw frequencies, we calculated the collocation strength, following Stefanowitsch & Gries' (2003) collexeme analysis (implemented with the Fisher exact test), and ranked the distribution according to these values. Such a measure has been shown to be superior to raw or relative frequencies (cf. Gries *et al.* 2005), since it takes into account the overall frequency of the construction and the frequency with which each verb occurs elsewhere in the corpus. The rationale is that the occurrence of a verb in a construction is all the more statistically significant if the verb is less common in other constructions. The benefit of using collexeme analysis for our study is that it ranks the more significant verbs higher in the list, even if these verbs may not be among the most frequent in the *at*-construction (e.g., *scream* and *swing* occur only twice in the construction but are nonetheless in the top ten of most attracted collexemes). Some other verbs that happen to be more common than some of the significant collexemes (like *get*) are less significant because they have a high overall frequency in the corpus. A collostructional strength over 1.301 signals that the verb is significantly attracted to the construction: in statistical terms, there is less than 5% chance that the occurrence of the verb in that construction is due to chance. Conversely, a collostructional strength under -1.301 signifies that the verb is repelled by the construction and stands out as dispreferred vis-à-vis other verbs. It does not always mean that the occurrence of this verb in the construction is odd or ill-formed, neither that it is perceived as atypical, but simply that, since the verb occurs in many other syntactic contexts, its occurrence in this one does not tell us much about the construction's meaning governing the lexical compatibility. Any value between these two thresholds corresponds to a verb that is neither significantly attracted nor repelled to the construction as it appears in the corpus, and is thus inconclusive. The lines in Table 2 separate the three levels of significance and the grey background marks the verbs that are significantly attracted/repulsed. We removed from Table 2 eleven significantly attracted verbs which occur less than three times in the whole corpus; those are: *gawp*, *glare*, *glower*, *marvel*, *quail*, *snigger* and *waggle* (occurring only once) and *batter*, *carp*, *pound* and *probe* (occurring only twice).

35 Concerning these low-frequency verbs, one of the reviewers remarked that the ranking yielded by collostructional analysis sometimes seems counter-intuitive, in that it may poorly reflect intuitions about which verbs make typical examples of the conative construction. For example, even if not presented in the table above for the sake of clarity, *carp* (with a collostructional strength of 2.18) ranks higher in the list than *get* which according to the Fisher exact test is non-significantly repelled by the construction. However, *carp at* seems to be a rare use of the construction, while *get at* sounds more familiar and typical and hence seems to be more cognitively accessible (i.e., more entrenched). While this is intuitively appealing, some comments are in order. First, this seemingly odd result is probably to be attributed to the relatively small size of our sample, the appearance of *carp* in the most significantly attracted collexemes being probably an artefact of the corpus. The verb *carp*, even if rare in English altogether,¹¹

occurs only twice in the one-million words corpus, and, as it turns out, once in combination with the *at*-construction. It is very likely that in a bigger corpus, *carp* would be ranked lower in significance. Second, we would like to stress that *carp* and *get* instantiate different aspects of the *at*-construction (metaphorically construed directed action for the former and the allative schema for the latter), so their relative prototypicality vis-à-vis a general, overarching abstraction over all uses of the construction does not make much sense in our analysis, since we do not *a priori* acknowledge such a construction. Third, this raises again the puzzling question of the relation between frequencies extracted from corpus data and cognitive representation, which is largely yet to be addressed. It seems that in this case, the ranking yielded by colostruational analysis does not always reflect degrees of prototypicality, while ranking by raw frequency would be more intuitively correct. Clearly, there is more to entrenchment than frequency of use, either raw or statistically corrected by a significance test as in the context of colostruational analysis. The fact that raw frequencies make better predictions on the intuitive prototypicality of *get* vs. *carp* thus seems purely coincidental, and irrelevant to any attempt at making a corpus-based statement about cognitive representations. Finally, the difference in raw frequency should not be overrated either; the difference for *get* versus *carp* in the *at*-frame is 5:1 on a total of 423.¹² The strength of a colostruational analysis is that it more adequately reveals general trends in the lexical distribution, by bringing in the necessary statistical correction for any bias relative to the verb or the construction.

36 The significantly attracted verbs can be grouped according to the facet of the *at*-construction they evoke:

- (i) Instantiation of the constructional meaning 'directed action'
 - Visual perception (*look, glance, stare, gaze, peer*) especially represented by *look*, by far the most frequent verb in the distribution.
 - Sound emission, readily construable as directed actions: *shout, scream*.
 - A verb denoting an attitude or a reaction towards the referent of the *at*-phrase, *smile*.
 - Inherently directed actions: *point, aim, and fire*.¹³
- (ii) Allative schema: *pick* (here in the sense of "scratch"), *clutch, pluck, flick*, plus motion verbs such as *swing, dive and leap*;
- (iii) Ablative schema: *tug, suck*;
- (iv) Allative/ablative schema: *work* (cited as such by Broccias 2001).
- (v) Miscellaneous verbs which do not fall under any of the above categories and probably elude the constructional generalization: *sniff, hint*.¹⁴

37 The most striking fact in this distribution is the preponderance of visual perception: verbs of visual perception account for the lion's share of the distribution (80%), especially *look*, which is also the most frequent and the most attracted verb in the distribution, and even though the other verbs of visual perception are far less frequent, they are still among the ones most attracted by the construction; suffice it to say that **all** verbs of visual perception in the distribution are significantly attracted by the construction. If we collapse all verbs of visual perception into one category and all others into another to evaluate the colostruational strength of the semantic feature of visual perception in general, we obtain a very high attraction of visual perception (243.44) and, conversely, a high repulsion of the other category (-193.55).

38 In comparison, instances of the allative schema are rare in the corpus, and instances of the ablative schema even more so. The verbs exemplifying these

schemata are generally less significantly attracted than the verbs of visual perception. This fact contrasts with the treatment of the construction in the literature. As said earlier, the meaning of “attempted action” is usually mentioned as a typical use of the *at*-construction, to the exclusion of more basic and common uses.

39 Let us now return to the typical distributional features of argument structure constructions listed in Section 2, repeated below:

- (i) The distribution of the construction is skewed towards a single verb V.
- (ii) The central meaning of V is close (if not identical) to the meaning of the construction.
- (iii) The distribution contains many hyponyms of V.

40 Do these properties hold for the *at*-construction? Property (i) clearly holds: the construction is biased towards *look*. Property (iii) also holds: the distribution contains a number of hyponyms of *look* (*gaze, gawp, glance, glare, glower, peer* and *stare*). As to property (ii), it appears not to hold if we accept the analysis presented in Section 3.2 that the central meaning of the construction is ‘directed action’, since the basic semantics of *look* is saliently concerned with visual perception which is more than just directed action.

41 Under this view, the *at*-construction contrasts with more typical examples, such as the ditransitive or the intransitive-motion constructions, in that while its distribution is indeed biased towards one single verb, this verb does not straightforwardly determine the constructional meaning. In the case of the *at*-construction, there is evidently much more delexicalized semantic material than in the case of typical ASCs, since the verb loses its semantic essence (notion of visual perception). This is most clearly seen if we compare sentences with ASCs combined with a verb that does not elaborate the meaning of the construction, such as the following:

(18) The truck rumbled through the tunnel (#without moving). (intransitive-motion)

(19) Billy shot at the sheriff (without looking at him). (*at*-construction)

42 (18) conveys a meaning (MOTION) sufficiently similar to that of *go*, the most frequent and prototypical verb of the intransitive-motion construction, but (19) clearly does not convey the meaning of *look*, as the addition between brackets shows. Note that adding an equivalent comment to (18) (*without moving*) gives rise to a semantic anomaly.

43 The theory of the lexical origin of constructional meaning holds that the semantic material stored in constructions originates in the meaning of lexical item through a process of abstraction. Some lexical material can be lost in the process and only a “schematized” part of the original meaning is carried over to the construction. In the case of the *at*-construction, there is evidently much more delexicalized semantic material than in the case of typical ASCs, since the verb loses its semantic essence (notion of visual perception). If the *at*-construction had the same configuration as the typical ASCs, its constructional meaning would include the concept of visual perception. Since such is not the case, the *at*-construction turns out to be a counter-example to the lexical origin hypothesis.

4. Lexical origin and alternations

44 As noted in the previous section, the lexical origin of constructional meaning predicts that the *at*-construction should convey ‘visual perception’ as its central

meaning (and not ‘directed action’), since *look* seems to be its prototypical instance in **actual usage**. In other words, unlike with what one finds with other ASCs, there is a discrepancy between the lexical bias displayed by the *at*-construction and the schematic meaning that has to be generalized over the meaning of individual verbs in order to account for instances of the *at*-frame in terms of a productive generalization (cf. Section 3.2). In the following section, we try to provide a coherent explanation suggesting that:

- (i) despite the empirical result according to which ‘look’ should be the central meaning of the construction, ‘directed action’ makes a better choice if we are to give a plausible account of how the construction is used and generalized, and that mechanisms of meaning extensions are not a plausible solution to resolve the discrepancy;
- (ii) the lexical meaning is only one source of constructional meaning which, however, does not account for *all* cases of productive generalizations, and that a more general learning strategy need to be at work, of which the facilitating effect of lexical biases is a mere byproduct.

45 We conclude our study by returning to the case of the conative *at*-constructions, which even more likely than the directional *at*-construction do not have a clear lexical origin. Our suggestion is that alternations themselves might play a greater role in the acquisition of constructional meaning than is commonly assumed in the cognitive linguistic literature.

4.1 The *at*-construction and the lexical origin hypothesis

46 As we noted in the previous section, if the analysis of Section 3.2 is correct, the *at*-construction seems to be a counter-example to the lexical origin hypothesis. However, it may not make much sense to expect the *at*-construction to conform to the hypothesis to the same extent as more typical constructions, since there is no verb in English that directly lexicalizes the meaning ‘directed action’. Actually, in most cases, the semantic structure of the verbs only incorporates reference to an entity that *can* be directed (but need not be so in all instances of the verb) and the construction profiles this aspect. So whatever the most prototypical instances may be, they are necessarily more specific than the meaning of the construction, and there is thus no way in which the lexical origin hypothesis can straightforwardly apply.

47 At the same time, a constructional schema may plausibly emerge on the basis of shared commonalities between a number of instances, even if there is no single verb that lexicalizes this exact schematic meaning. As Goldberg (2006: 89), talking about the transitive construction, notes, “the correlation between form and meaning can be learned by noting their association across several distinct verbs, each with relatively low frequency”. The meaning ‘directed action’ may well emerge through a similar process. One problem with this account is that it ignores the role of frequency and lexical bias and is thus only explanatory for constructions whose distribution does not strikingly favor any particular verb, which is clearly not the case of the *at*-construction. In line with the correlation between token frequency and prototypicality pervasive in general category learning (a point on which Goldberg *et al.* 2004 insist strongly themselves), the lexical origin hypothesis predicts that if the distribution of a syntactic construction is biased towards a given verb, the meaning of that verb should be recognized as the prototypical meaning of that construction. This prediction follows directly from the principles of categorization and category learning,

which prompt learners to identify the prototypical features of the category on the basis of their frequency. In our case, since an overwhelming proportion of the instances of the *at*-construction convey visual perception, it follows that visual perception should be a component of the central meaning of the construction. Arguing that it might in fact not be the case, and thus taking the *at*-construction as a counter-example to the lexical origin hypothesis only relies on the assumption that the introspective analysis given in Section 3.2 is correct; yet conclusions based on empirical data are more robust than introspective speculations about the nature of grammatical generalizations. Thus, if we keep the lexical origin hypothesis as our starting assumption, by virtue of its empirical support, the inevitable conclusion suggested by our corpus study is that there must indeed be a construction whose central sense is “visual perception”, imposed by the lexical bias towards *look*. In addition, there might be an independent experiential motivation: looking, i.e., directing one’s gaze towards a target, is probably one of the most simple and basic kind of directed actions that humans perform, observe and conceive of, and developmentally one of the first directed actions. However, can this central meaning of “visual perception” account for the distributional facts?

48 One typical feature of ASCs is that they attract verbs which elaborate their central meaning. A central meaning “look” would license this feature, since the construction is commonly used with all kinds of verbs of volitional visual perception. Recall that all verbs of visual perception are among the most significantly verbal collocates of the *at*-construction in Table 2. This list (*look, glance, glare, glower*) does not exhaust the possibilities of the construction: *goggle, leer, peep* are other verbs of visual perception used with the *at*-frame, even if not attested in the ICE-GB corpus. However, we did not find any indication that this construction is productive outside of the domain of verbs of looking, which seems to indicate that there is no construction able to convey the meaning of “look at” by itself (and can thus trigger coercion effects with verbs that do not have this meaning component, as was the case for *squeeze* in the caused-motion construction). It might be suggested that some instances of the directional *at*-construction integrate a visual component, notably with verbs of shouting (*shout, scream*), verbs of laughing (*laugh, snigger*) or verbs of facial expressions (*smile*). In other words, *shout/smile/laugh at X* can in many contexts be understood as ‘look at X while smiling/shouting/laughing’. However, it is not at all clear that this visual component is not a mere pragmatic inference, since it is possible to construe contexts in which similar uses of the same verbs do not entail visual perception at all. For example, one can shout at someone without seeing them, while in the other room or behind a door; what the construction conveys is only that the referent of the *at*-phrase is the intended ‘recipient’ of the shouting.

49 It is thus clear that the central meaning “look at” would account for only a limited portion of the distribution. Other cases do not instantiate the central meaning itself, since they conflict with it in some of their specifications (no visual perception), but they may be partially categorized by the central meaning through a relation of extension. As already indicated, the semantic similarity required for these extensions is fairly straightforward: it is the orientational component common to all directional uses. Extensions from the visual meaning are thus at least plausible and possibly motivated by this schema it shares with the other uses. Thus, under this view, there is no a priori reason why ‘look at’ could not be the central meaning since it occurs so frequently in the construction: all instances which do not convey this meaning could be accounted for by polysemic extensions.

50 However, the weight that we need to lend to extensions under this account is overwhelming: while the purely visual meaning accounts for a huge number of tokens (355, i.e., 84%), it accounts for only a limited number of types (8, i.e., 17%). This would imply that the remaining 40 types (83%) would have to rely on extensions from the visual meaning. In comparison, the extensions from the central meaning of the caused-motion and the ditransitive constructions account for much fewer types: we evaluated this to 49% for the former and a mere 17% for the latter in the ICE-GB corpus,¹⁵ following Goldberg's (1995) criteria. While this contrast might not be decisive evidence that the visual meaning is not the central one (in fact our figures also show that the relative type frequency of the central meaning can highly vary between different constructions), it remains true that the directional meaning is a more useful generalization than the visual meaning because it has a higher type frequency.¹⁶ In addition, the lack of productivity of the visual *at*-construction suggests that it is not an independent construction, since the generalization of argument structure to other verbs may more straightforwardly rely on the more general meaning 'directed action' than on polysemic extensions. It could be argued on the same grounds that the visual *at*-construction should be discarded altogether, as its instances can be accounted for by the directional *at*-construction.

51 Moreover, the directional *at*-construction possesses one characteristic feature of central meanings: it can be used metaphorically. In the case of *shout at*, the directedness of the action may be understood abstractly: the referent of the *at*-phrase can be the abstract target of the action without necessarily being concretely in the trajectory of an emitted entity (here a shout). The same analysis applies to instances of *laugh at* (in the sense of *mock*), since they can describe events in which the person being laughed at is absent from the scene. Finally, in the most abstract case the referent of the *at*-phrase can even be an abstract entity denoting the cause or circumstance occasioning a reaction from the subject (*carp, complain, laugh*) or the bringing about of a psychological state (*marvel, quail, wonder*). The abstract entity can refer to state of affairs that cannot be physically perceived, let alone visually. A possible motivation for this use would be to see mental entities as objects in the mind with which the individual can interact; in this mental scene, the reaction caused by a mental stimulus is directed towards this stimulus. All these cases are metaphorical uses of the directional *at*-construction, not of the visual *at*-construction: the metaphor involves aspects of directionality (especially the target role), not of vision proper. At the very least, it is necessary to extract the meaning 'directed action' from the more specific meaning 'look at' in order to account for these cases.

52 All in all, it seems that a more reasonable position is to exclude visual perception from the central meaning of the construction. In construction grammar, the constructional meaning is the basis for extending the construction to verbs not observed in the input. To put it simply, determining the meaning of a construction boils down to figuring out why the verbs observed with a given construction in the input are allowed in that construction, i.e., what parts of their semantics make them compatible with the construction. In the case of the *at*-construction, only the orientational component of *look* is relevant to the question of why this verb is allowed in the construction, as opposed to the visual component. While both components could be integrated in the representation, what is grammatically relevant is the presence of an "orientable" entity, but the exact nature of that entity is irrelevant. It is possible that the *at*-construction is first centered on visual perception, but it is unlikely that speakers adhere to this abstraction for long, as they are gradually exposed to more exemplars which do not convey the idea of visual perception. More plausibly, speakers constantly

adjust the form-meaning mapping, i.e., revise their hypotheses about which tokens of meaning are conveyed by either the verb or the construction.

53 In short, our study sheds some new light on the complex nature of constructional generalizations. Our investigation of the *at*-construction refutes an *extreme* interpretation of the lexical origin hypothesis, according to which the constructional meaning assigned to a syntactic frame emerges *only* from abstraction of lexical material from the verbs most frequently occurring in that frame and that the statistical structure of the verbal distribution determines constructional meaning.¹⁷ This extreme interpretation would entail that the more biased the distribution is towards a single verb, the more likely it is that the meaning of that verb will be carried over to the construction. This is clearly not the case for the *at*-construction. Instead, there is a discrepancy between the most frequent instantiation of the frame in actual usage and the more abstract generalization which is more likely to act as the central meaning of the construction.

54 The *at*-construction differs in several ways from more well-studied constructions, especially regarding how its meaning relates to usage. These ASCs have: (i) a central meaning which denote a concrete and basic “humanly relevant scene” Goldberg (1995: 39-40), (ii) several extensions from this central meaning based on one or more shared feature(s), (iii) a distribution which reflects this organization, with the instances of the central meaning as the most frequent ones and with one single verb, the most basic of its kind, dominating the construction and closely matching the central meaning of the construction.

55 The *at*-construction is very different from this model: its central meaning is much more abstract than Goldberg’s “humanly relevant scenes” and, more importantly, in connection with its abstractness, it is not lexicalized by any particular verb. It follows that the central meaning is not, and probably can never be, directly instantiated in actual language use. However, the distribution of the *at*-construction is nonetheless biased towards a single verb (*look*). Goldberg’s (2006: 92) claim that “the input is structured in such a way as to make the generalization of argument structure constructions straightforward” thus turns out not to be true for the *at*-construction in particular, and for constructions whose meaning is not lexicalized in general. This does not entirely counters the view that the lexical semantics of verbs provides the ‘fabric’ of constructional meaning: indeed the meaning of the *at*-construction can be arrived at by noticing the “orientable” component in the meaning of its typical verbs. But this raises a number of developmental issues: if “the dominance of a single verb in the construction facilitates the association of the meaning of the verb in the construction with the construction itself, allowing learners to get a ‘fix’ on the construction’s meaning”, as Goldberg (2006: 92) claims, what is the effect of such a misleading bias towards a verb whose meaning is too specific vis-à-vis the more general meaning necessary to account for the full productivity of the construction? Is that an impeding effect, as opposed to the facilitating effect of biases towards general purpose verbs? Do young language learners first associate this pattern with looking, as the lexical origin hypothesis would predict? If so, when and how do they recover from this “wrong” generalization to a more abstract meaning?

56 In sum, the lexical origin hypothesis does not tell us the whole story about what drives constructional generalization; while it undoubtedly acts as a facilitating factor and makes accurate predictions for many constructions, it is by itself insufficient. It is probably a by-product of a more general process of abstraction over the wholeclausal meaning, which thus remains the default hypothesis explaining the origin of constructional meaning.

4.2 A tale of two constructions: remarks on the conative uses

57 In this last section, we return to the status of conative uses. In the account outlined in Section 3.2, the conative uses instantiate the meaning ‘directed action’ and the verb meaning is coerced into this interpretation, according to more or less conventionalized integration principles.

58 However, we would like to argue that the cognitive plausibility of this account is questionable. First, it can be regarded as a case of what Croft (1998b: 157) calls the “generality fallacy”, whereby it is assumed that the most general model is psychologically correct by virtue of its simplicity, which is however no relevant argument for psychological plausibility. Second, the semantics of conative uses are not as unpredictable as this account might suggest, and more commonalities can certainly be ascribed to them than a mere highly abstract ‘directed action’, if such an abstraction is adequate at all. Indeed, while many instances of the allative schema *at*-frame arguably share the meaning ‘directed action’ with the directional uses, it is less straightforwardly so for instances of the ablative schema (e.g., *eat at an apple*). In the case of verbs of ingestion, construing the action of the jaws on ingested food as a directed action is at least far-fetched. Many other instances with verbs such as *work* can only be construed as directed actions of a very abstract kind. As Broccias’ (2001) study reveals, conative uses of the *at*-construction fall into at least two distinguishable classes which follow some semantic regularity. Adams (2001) goes even further by suggesting four distinct cases of conative uses (further divided into nine verb classes) which trigger slightly different semantic interpretations. If polysemy in language is the rule and not the exception, as is widely assumed in cognitive linguistics, then a more appropriate account would subdivide the constructional meaning into more specific subcases.

59 Third, the “directed-action”-model might be too powerful by relying too much on processes of coercion. While it is certainly true that meaning construction in language is only partially compositional and relies to a large extent on emergent structure arising from flexible conceptual integration in context, one must be careful not to overrate this flexibility. An account taking such a general meaning as basis runs the risk of being too permissive and overgeneralizing by allotting too much power to coercion processes, while the actual productivity of the conative *at*-construction(s) is well constrained.¹⁸ It seems that simple restrictions on the verb’s meaning are not sufficient to constrain this productivity, and we suggest that a more reasonable proposal (and more in line with the spirit of construction grammar) would be to let a more specific constructional meaning bear the burden. We therefore suggest that conative uses should constitute their own constructional generalization.

60 The conative uses of the abstract schema ‘directed action’ cannot, however, be explained by lexical abstraction over verb classes (as might be the case for the constructional extensions of the ditransitive discussed in Section 2), since there is nothing in the usual meaning of the verbs occurring in the conative uses that would give speakers a hint of what the construction means, and hence allow them to generalize the construction to other compatible verbs. In our corpus, the conative uses of the construction are indeed instantiated by a very wide and diverse range of verbs: *pick*, *clutch*, *swing*, *waggle*, *batter*, *pound*, *pluck*, *flick*, *dive* and *leap* for the allative schema, and *tug*, *suck* and *work* for the ablative schema. So, if it is not the result of lexical abstraction, where does the constructional meaning of the conative uses come from? Goldberg (1995)

suggested the intuitive observation that conative uses of the *at*-frame “bear an obvious similarity” to uses of the same frame to encode directed actions in order to justify her account in which all uses are subsumed under the same constructional meaning. However, it might well be interpreted as suggesting that the two uses instantiate two distinct yet related subsenses of the same construction, which would be a case of constructional polysemy. Under this view, the allative *at*-construction appears not only to be a mere instantiation of the direction-action construction, but an extension of it, which can be motivated by a metaphor construing causal events as motion events.

61 As first argued by Talmy (1985) and further developed by *inter alia* Halliday (1985) and Langacker (1991), causal events are apprehended as a motion to a goal (the so-called billiard-ball model): the motion is seen as the causal force manifested by the agent, and reaching the goal entails the affectedness of the patient entity. Along the same lines, if the action is ineffective, the metaphor predicts that the goal is not reached, thus the motion is merely directional and unbounded. By analogy, the meaning ‘directed action’, which does indeed not forcefully entail contact with the target, thus seems appropriate to describe the event. Similarly, the ablative schema might be viewed as an extension of the allative *at*-construction. As opposed to the allative schema, the ablative schema does entail contact with the target; it however bears some resemblance to the allative schema, in that it includes the notion that some goal is not (fully) attained.

62 However, such intuitive observations are, strictly speaking, insufficient evidence that the conative constructions are indeed related to the other uses of the *at*-frame by polysemic links in the minds of speakers; it casts again the ever-returning question of which grammar we are dealing with: that of the speakers or that of the linguist. Similar comments can be leveled at (cognitive) analyses of **lexical** polysemy, where semantic links are often posited between different subsenses of the (radial) network without sufficient evidence that these links are actually cognitively real (see, for instance, Sandra & Rice 1995 or Rice 1996 for an interesting discussion). Besides, the notion of “directedness” as it has been proposed in the literature for the conative *at*-constructions may very well be a case of in-reading attributing to the preposition a notion of directionality that it most likely does not carry on its own. As it has been suggested elsewhere (e.g., Adams 2001), one possible explanation for the source of directionality in the *at*-construction would be that it is contributed by the preposition *at*. While a detailed semantic analysis of this preposition largely exceeds the scope of the present paper, some critical comments against this explanation are in order. Even though, etymologically, directionality may have been a part of the meaning of *at* (but only one: O.E. *æt*, common P.Gmc. [cf. O.N., Goth. *at*, O.Fris. *et*, O.H.G. *az*], from PIE **ad-* “to, near, at” [cf. L. *ad* “to, toward” Skt. *adhi* “near”]), this no longer holds for contemporary *at* which basically means “in the close neighborhood of” (e.g., *at home*, *at the swimming pool*, etc.). Even in cases involving motion, such as *run at* or *throw NP at*, the directional component may well be inferred from the meaning of the verb, similar to what happens with other static locative prepositions such as *in* and *on* when used with verbs of motion.¹⁹ On the other hand, it is perfectly conceivable that the uses of *at* with *look* and its hyponyms may have arisen through a conceptualization of looking as involving a kind of metaphorical motion of the gaze towards a target. As Gruber (1967) notes, *look* behaves like a verb of motion in terms of the prepositions it combines with and of the corresponding resulting semantic interpretation. Miller (2003: 119) presents evidence that, in the *at*-frame, *look* and its hyponyms indeed “conceptualize the gaze as an entity in motion, directed towards a target but that

does not reach it” (our translation).²⁰ In other words, for the directional *at*-construction, the etymologically possible meaning “movement towards goal” may have become frozen, even though it is not clear whether there is any notion of direction still to be attributed to the preposition.²¹

63 Rather than attributing the notion of directedness to the preposition *at*, we suggest that it is derived from inferencing about transitive events and causal chains, that are often given a (very abstract) directional representation, with the Agent conceived as directing his action towards the Patient. In such a “billiard-ball” model of causation, as described above, **both** the transitive and the conative have an aspect of “directedness” to them: what really distinguishes them is that, as opposed to the direct impact on the Patient implied by the transitive, the conative situates the event “in the neighbourhood of the Patient”, thus deprofiling the end of the causal chain and the necessary contact with the patient, which is more felicitously described as a mere target (see Croft 1998a for a similar analysis).²² Thus, the choice of the preposition *at* to encode such semantic effects, appears not to be related to any notion of directedness that the preposition might convey (and is unlikely to) and the intended semantic effects can easily be explained by the more usual (static) meaning of the preposition. The origin of the – intuitively accessible – aspect of “directedness” that underlies the two *at*-constructions is thus constructed from different semantic operations: in the **conative** *at*-construction, it is the inference about the causal action chain; in the **directional** *at*-construction it is the (etymologically possible yet now frozen) semantics of *at* as referring to the goal of a motion event. We might actually be dealing with constructional homonymy as a result of historical evolution, rather than constructional polysemy, as it is not at all clear that contemporary speakers perceive the tenuous link between the two uses. While taken for granted in the polysemy account, this essentially remains an empirical question still to be verified.

64 Thus, instead of trying to force a polysemic network analysis, we would like to elaborate on an alternative account of the meaning of the conative. Following Lemmens (1998), we suggest that syntactic alternations are another potential source for meaning abstraction along with lexical semantics, especially in cases where such alternations feature a (systematic) semantic contrast between the two variants. In generative transformational approaches, alternations are used to motivate transformation relations between syntactic configurations, but in constructional approaches they are often viewed as surface phenomena irrelevant to linguistic structure: Goldberg’s (2002) surface generalization hypothesis states that constructional generalizations are stronger than those between different forms that are semantically or syntactically related. This is probably why in constructional approaches the role of alternations has been under-estimated in the emergence of constructions.²³

65 However, maybe not all alternations should be rejected on the grounds of the surface generalization hypothesis. The conative **alternation** is actually what distinguishes the verbs instantiating the Visual *at*-construction and those instantiating the Conative *at*-construction, since the latter allow the transitive variant (e.g., *kick the ball* vs. *kick at the ball*), whereas the former do not (e.g., *look at me* vs. **look me*).²⁴ In the case of the conative *at*-construction, the alternation is thus more important than the verbal distribution for the emerging constructional meaning. The contrast with the transitive variant can be explained as a Gricean implicature: given its frequency, the transitive construction is assumed to be the most “natural” choice for a given verb expressing the (transitive) event at hand; using a prepositional construction with *at* negates the (prototypical) contact between Agent and Patient (given the semantics of *at*) and

thus downplays the transitivity. The conative frame is syntactically intransitive, but it probably stands out more markedly *negatively*, that is, as “not transitive”, than other intransitive constructions (such as with *die*), precisely because of the systematic contrast with the more frequent transitive counterpart. Phylogenetically, this pragmatic reasoning might explain how the alternation came to be; ontogenetically, speakers are undoubtedly able to notice such systematic semantic differences between uses of verbs in different syntactic environments. In fact, this kind of opposition is not unlike that which occurs in other contexts where a more typical prepositional construction expressing location (e.g., *row on the lake, climb on the mountain*, etc.) alternates with a (usually more marked) transitive variant (*row the lake, climb the mountain*). The “promotion” to a full-fledged Patient in the latter variant implies a notion of affectedness or completeness (cf. Schlesinger 1995) that is clearly absent from the prepositional phrase, where the entity merely functions as the location where the activity takes place.

66 We suggest, therefore, that a usage-based account should incorporate the fact that speakers are able to record more general information about alternations and use it to build productive generalizations. In this view, the meaning of the conative *at*-construction, which is often described as a mere shifting of the verbal profile (see Croft 1998a), would emerge from the systematic semantic contrast between uses of the same verbs in the transitive frame and in the *at*-frame. We still acknowledge that the more regular meaning ‘directed action’ can sometimes contribute to the interpretation (or might have contributed diachronically to the emergence of the conative use), as some instances might be ambiguously categorized both as a directed action and as a conative. However, the explicit semantic opposition with the transitive construction is more informative and certainly plays a greater role than previously assumed to make speakers arrive at the meaning of conative sentences. In fact, the conative alternation (or any other alternation for that matter), can be regarded as a variation in syntactic form (demoting a direct object to an oblique phrase) that is systematically associated to a variation in meaning (deprofiling the patient in the transitive schema). As such, the alternation could be viewed as a higher-level contrastive form-meaning pair.

67 While this suggestion seems plausible, the question of whether alternations are indeed a factor that can, in some cases at least, drive constructional generalizations needs to be taken seriously, also in the cognitive linguistic literature (which usually puts more emphasis on surface generalizations than on alternations), and is one that should be empirically verified.

4.3 Conclusion

68 In this paper we presented (i) a refinement of the lexical origin hypothesis for the *at*-construction in general, and (ii) a reassessment of the role of alternations for the conative construction in particular.

69 We presented evidence against an extreme interpretation of the lexical origin hypothesis, according to which the central meaning of constructions is a mere copy of the meaning of the verb most frequently occurring in it. The problem that we identified with this interpretation is (i) that it implies that constructional meanings are limited by the range of lexical meanings, and (ii) that it puts strong empirical expectations on the distributional properties of constructions which are not borne out, especially for constructions whose meaning is not lexicalized by any verb. Taken under the lexical origin hypothesis, our corpus results suggest

that the *at*-construction conveys the meaning of *look*. We argued that such an account is far-fetched: that particular meaning cannot accurately predict to which verbs the construction can be generalized, unless one relies extensively on mechanisms of meaning extension. We argued that generalizations are more plausibly and straightforwardly made on the basis of a more abstract yet more useful schema, ‘directed action’ (which moreover had already been suggested in the literature); this schema, however, is not lexicalized as such by any verb in the distribution. Hence, our example conflicts with the aforementioned interpretation of the lexical origin hypothesis. While our study does not rule out the possibility that the lexical semantics of verbs might be one important source of constructional meaning, it suggests that learners must attend to specific aspects of lexical semantics if they are to make optimally useful generalizations.

70 Lastly, concerning the conative construction (whose instances constitute only a tiny fraction of the whole distribution of the *at*-construction), we argued against a lexical origin account, since the verbal distribution does not tell us much about the semantic contribution of the construction. It remains possible that the meaning of the conative construction is an extension of the central meaning of the *at*-construction; however, we questioned the plausibility of this account by pointing out that the similarity necessary for the extension to be plausible is (i) highly variable from verb to verb and for some verbs quite far-fetched, and (ii) possibly comes from an effect of in-reading attributing to the preposition *at* a sense of directionality that it does not convey on its own. What all instances of the conative construction have in common, however, is their contrast with the transitive use of the same verb; we therefore suggest that the alternation with the transitive construction might be more informative to interpret conative sentences and might be in this case a factor participating in constructional generalizations. While the importance of alternations are generally downplayed in the cognitive literature (if not dismissed explicitly altogether), we suggest that they can be considered more general form-meaning pairs that do play an important role in grammar. This hypothesis deserves to be studied more elaborately.

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Notes

1 The authors would like to thank Adele Goldberg, Martin Hilpert, Karin Madlener and the two anonymous reviewers for their comments on a preliminary version of this paper.

2 Of course that view only holds with the provision that the meaning of the verb is already known by the hearer at the time the instantiating utterance is heard, which is problematic in the context of language acquisition by children, where lexical and syntactic learning occur concomitantly. There is some evidence that knowledge of words and knowledge of constructions interact and reinforce each other in the emergent grammatical system of the language learner (see Goodman & Sethuraman 2006), so a simple one-way relation from lexemes to construction is too simple an account. However, for the time being, we can still hold the claim that lexical knowledge is at least one of the potential sources from which constructional meaning emerges.

3 Such biases should not be taken as a specific property of child-directed speech even though this result have been obtained from such data. Biases for some constructions towards some verbs can be observed in all kinds of adult language too, but they are indeed even stronger in child directed speech. The explanation put forward by Sethuraman (2004) is that mothers and caregivers intentionally "simplify" their speech when addressing to children, thus using a reduced and more basic vocabulary, including verbs.

4 Notation: V: verb; Subj: Subject; Obj: direct object; Obj1: first direct object; Obj2: second direct object; Obl: Oblique.

5 This is an important precision, especially for polysemous verbs such as *make*: the sense which matters to characterize the meaning of the resultative construction is 'cause to become' and occurs only in the Subj-V-Obj-Obl syntactic frame; the meaning 'create', occurring in the transitive construction, is irrelevant vis-à-vis the meaning of the construction.

6 Throughout this article, we use the term 'frame' as a neutral indicator to refer to a particular syntactic structure, while we reserve the term 'construction' for the Construction Grammar representations pairing a syntactic form with a schematic meaning.

7 That is, without an intervening direct object. Even though this option is syntactically possible and without any doubt semantically related to the cases we deal with here (as in *throw mud at* or *fire a weapon at*), we restrict this study to the intransitive *at*-frame.

8 Note that this analysis concurs with Croft's (1998a) causal approach to argument structure, where alternations are analyzed as differences in what portion of the causal chain is profiled by the verb. See Croft (1998a:44-45) for a causal approach to the "attempted action" scenario of the conative.

9 Goldberg (1995:64) actually uses the label "Theme" instead of "Target", which however seems infelicitous here, since this argument does not undergo a change of location (which, next to change of state, is usually the definitional property of themes). The possibility that this label may *a priori* bespecific to the *at*-construction and not occur in other argument structure constructions is not at odds with Goldberg's theory, where argument roles are construction-specific concepts.

10 Thanks to ICE-GB's structural annotations, we could query for this pattern regardless of word order. We included all kinds of clausal configurations (actives, passives, questions, relatives ...) except clefts and *there*-sentences; we excluded these because it was not

possible to extract them automatically.

11 For example, the verb *carp* occurs 80 times in the BNC (in 45 different texts on a total of 4,048 texts; normalised frequency of 0.81 instances per million words); *get* has 213,376 hits (in 3,661 different texts; normalised frequency: 2170.36 instances per million words (queries done via BNCWeb interface at <http://bncweb.lancs.ac.uk>).

12 The deceptive nature of the intuitive evaluation can be revealed by turning things around and considering whether speakers, when asked to produce a sentence with these verbs, would produce an *at*-frame more readily than another construction.

13 As one of our reviewers notes, it may seem surprising that we classified *shoot* but not *fire* as instantiating the allative schema, although their uses in the *at*-frame are semantically very similar: they can both refer to the triggering of a firearm in the direction of a target, without mentioning whether the projectile actually reaches the target. Clearly, both are directed actions, but only *shoot* qualifies for the allative schema since it can entail contact while *fire* never does. Indeed, in the transitive construction, the direct object of *shoot* can be a patient with which a projectile makes contact (cf. example (5a)) while that of *fire* is always a weapon, and no use of this verb entails contact on a patient. As mentioned earlier, the allative schema backgrounds the notion of contact and merely implies it, which means that this notion must still be available in the semantic structure of the verb for it to be compatible with the construction; this is why we conclude that *fire* does not instantiate the allative schema.

14 *Hint at* may be more felicitously described as an idiomatic verb-preposition sequence in which the motivation for using this preposition is no longer clearly identifiable. In the case of *sniff at*, the contrast with its transitive counterpart resembles that between other conative/transitive variants in that in many instances the latter somehow entails a higher degree of affectedness of the non-subject argument than the former.

15 Figures taken from Perek (2010).

16 The exact type frequency of the directional meaning depends on what we accept as instances of ‘directed action’. Under the most restrictive definition (i.e., verbs that license directionality in the concrete sense), the type frequency would be 16 (including the eight verbs of looking). In Broccias’ (2001) analysis, many verbs instantiating the allative schema also license a concrete directional component (e.g., *clutch*, *run*, *shoot*, *strike*); including these would increase the type frequency to 26. The productivity of the directional meaning in our corpus is thus twice to three times higher than that of the visual meaning, and possibly even more if directionality is understood abstractly.

17 This point was already noted concerning the transitive construction (Sethuraman and Goodman 2004). We thank Adele Goldberg (p.c.) for bringing this to our attention.

18 Boas (2008) makes similar comments on Goldberg’s (1995) treatment of the resultative construction.

19 Interestingly, for many ‘basic’ motion verbs, such as *go*, *come*, *walk*, etc. *at* is impossible **go at home*, **walk at the park* (meaning “in the direction of”); instead the ‘true’ directional preposition *to* is to be used.

20 See also Wade & Swanston (2001) for a discussion from a psychological point of view.

21 This construal of looking as motion can also be found in other languages than English, as the translations of the following English example to Dutch and Polish show:

- (20) a. He is looking at his brother.
b. Dutch: Hij kijkt naar zijn broer
he look.PRES.3SG toward his brother
c. Polish: Patrze na jego brata.
look.PRES.3SG on his brother.ACC.

Dutch encodes looking with a purely directional preposition, *naar* ‘toward’. Polish uses a locative preposition and an accusative NP, a combination which yields a motion interpretation in this language, even though the preposition is normally static (but a static interpretation would require the locative case). Many other expressions further support this cross-linguistic construal of looking as involving motion: Dutch *een blik werpen op* ‘throw a look on’, Swedish *kasta ett öga på* and French *jeter un oeil sur* ‘throw an eye on’.

22 In similar vein, in systemic grammar, the inert patient of a transitive event is called a “Goal”; see Lemmens (1998) for some discussion.

23 One of our reviewers notes that this claim is perhaps overstated and takes the example of statistical preemption. The basic rationale of the latter is that if there are two roughly equivalent ways A and B to convey a message but learners never hear B in contexts where B would have been *a priori* possible, they will deduce that B is ungrammatical. In the realm of argument structure, this mechanism is meant to provide learners with a form of

negative evidence to inform them about which verbs are allowed in which constructions. It is certainly true that the idea of alternations (i.e., pairs of functionally related constructions) is implicit in the concept of statistical preemption; however, statistical preemption only applies when the constructions are in competition, i.e., functionally equivalent, which is not the case of the conative and transitive constructions (except perhaps in some instances, where the semantic difference between the two variants is not evident; compare for example *to rub the counter* vs. *to rub at the counter*). While mainstream construction grammar implicitly assumes that speakers perceive functional equivalence (or at least relatedness), to our knowledge functionally divergent constructions are always considered in their own right, in that the syntax and semantics of one construction should be considered independently of those of others, even if some constructions may be related to some degree; this is the basic argument against derivations that Goldberg (2002) makes, in favor of the surface generalizations hypothesis.

24 There is only one specific construction where this alternation is possible *to look someone in the eye(s)/face*. Strikingly, only *look* and *stare* can occur in this construction, but not the other verbs of perception (cf. Miller 2003: 119).

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