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# Allostructions re-revisited

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**Abstract**

This paper critically reflects on the concept of 'allostructions' as proposed in Cappelle (2006) and further developed in Perek (2012, 2015), among others, as a crucial and influential notion for any constructionist approach to (syntactic) alternations. The main focus here is on open questions that persist regarding the specific theoretical assumptions underlying the idea of allostructions and constructemes, as well as empirical challenges that might be met when discussing alternation phenomena in allostructional terms.

## 1 Introduction

Syntactic alternations have featured centrally in most, if not all, theoretical approaches to syntax (see Pijpops 2020 for a recent discussion of alternations in different frameworks). The term 'alternation' here most basically refers to "two or more ways of saying the same thing" (Labov 1972: 271), i.e. two formally distinct patterns with equivalent or similar meaning. This is illustrated in (1) and (2), where the former exemplifies constructional variants for phrasal verbs in English (the transitive verb-particle alternation), and the latter the well-known English dative alternation. Typical points of interest regarding these alternations are to determine the precise relation between the members of an alternation and its theoretical modelling, with e.g. one pattern postulated to underlie the other in deep structure, or both patterns being represented as largely independent from each other (e.g. Green 1974; Oehrle 1977; Gropen et al. 1989; Emonds & Whitney 2006; Goldberg 1995; Rappaport Hovav & Levin 2008; among many others, on the English dative alternation). Furthermore, the factors impacting the choice between alternating variants have received ample attention, dealing with language-internal properties like semantic differences, distinct pragmatic imports, or processing-related features to sociolinguistic, external predictors such as variety or genre (cf. e.g. Gerwin 2014; Grafmiller & Szmrecsanyi 2019).

(1) a. They looked up the word in the OED.
b. They looked the word up in the OED.

(2) a. They gave me a dictionary.
b. They gave a dictionary to me.

The present paper now does not aim to provide an introduction to alternations, their treatment in different frameworks, and the range of questions pertaining to variant choice, but focusses on alternations as dealt with in one specific approach, viz. (usage-based, cognitive) construction grammar (e.g. Goldberg 2019; Diessel 2019). The paper is structured as follows: Section (2) gives more background on alternations in construction grammar, in particular the development of the concept of 'allostructions' in the last two decades.

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Section (3) then zooms into open matters in conceptualising allostructions, starting with different perspectives on defining and classifying allostructions (3.1), before discussing the connection between allostructions and vertical and horizontal links (3.2). Section (4) is concerned with operationalising the identification of allostructions, and section (5) concludes the paper.

## 2 Background: 17 years of allostructions

In construction grammar, two broad 'generations' of approaches to alternations can be distinguished: Early constructionist accounts such as Goldberg (1995) tended to shy away from attributing great relevance to alternation relationships, responding to and countering the strong emphasis on these relations in preceding formal (transformational and projectionist) approaches. Specifically, proposals like Goldberg's (1995: 89) 'surface generalisation hypothesis' prioritise connections between constructions with a shared form (and accordingly vertical connections between more schematic patterns and their more substantive instantiations) instead of generalisations over formally distinct constructions (also Goldberg 2002: 329). Importantly, these analyses do not suggest that "possible paraphrase relations play *no* role in the learning, processing, or representation of language [original emphasis]" (Goldberg 2006: 43), but rather advocate that no "one particular paraphrase should have a privileged status, nor that it is profitable to analyse one phrasal pattern solely by implicit or explicit reference to another" (Goldberg 2006: 44). That is, although alternation relations are not denied or ignored, they are also not conceded a crucial role, or are not necessarily considered to be independently, separately represented. Rather, they are viewed as more of an epiphenomenon of specific verbs and verb-classes occurring in different constructions with similar semantics. For example, in the case of the dative alternation illustrated in (2), the main questions under investigation in Goldberg (1995) are the different senses of the double object construction (2a; discussed in terms of subconstructions in Croft 2003) or the relation between different meaning types of the caused motion construction, linking clauses like (2b) to instances such as *load hay onto the wagon*. An association of semantic synonymy (S-synonymy link) between these two constructions is only thought to hold with specific semantic sub-types, precisely with events of abstract giving as in *gave them a house/ gave a house to them*, as opposed to actual transfer or caused motion as in *gave them an apple/ gave an apple to them* (Goldberg 1995: 91).[1]

By contrast, more recent construction grammar research has re-introduced a key focus on alternations as part of language users' linguistic knowledge. This second main approach, which will also be the focus of the present paper, was kickstarted by Cappelle's (2006) paper titled 'Particle placement and the case for "allostructions"' and later elaborated by Perek (2012, 2015), among others. In these and related works, the earlier constructionist conceptualisation of alternations is revisited, and alternations are restored to centre stage again. It is thus posited that paraphrasability between formally distinct constructions is part of the linguistic knowledge of language users and should accordingly be featured in the constructional inventory. Based on a discussion of the verb-particle alternation illustrated in (1), Cappelle (2006: 13) contends that "[t]he view that each such alternating idiom is stored twice (once as an instance of the continuous pattern [1a] and

[1]Note that the principle of no-synonymy as laid out in Goldberg (1995) states that if constructions are semantically synonymous, they need to be pragmatically non-synonymous, as formal contrast always implies a meaning contrast (but see Van de Velde 2014; Uhrig 2015; De Smet et al. 2018; Leclercq & Morin 2023, this issue, among others, for critical assessments of this principle).

once as an instance of the discontinuous pattern [1b]) without there being a level of representation at which the two versions are perceived to be semantically identical lacks psychological plausibility".

In Cappelle's proposed model solution, the alternative patterns are then labelled 'allostructions' in analogy to other allo-relationships (i.e. allophones, allomorphs), and taken to constitute "variant structural realizations of a construction that is left partially underspecified" (Cappelle 2006: 18). That is, the allostructions are modelled as separate constructions with distinct syntactic features; their meaning is similar, but they can also feature further semantic and/or pragmatic details which distinguish them. As shown in Fig.1, these allostructions both vertically link to an underspecified super-construction typically referred to as 'constructeme', a term which may or may not have been coined by Cappelle (cf. Cappelle et al. 2021: 277-278), but was first used in this context in Perek (2012). This meta-construction is more schematic and captures only the shared properties of the more substantive variants.[2] In a similar vein, Herbst (2014: 190) defines constructemes as "[t]he constellation of a participant pattern […] and all the valency constructions that can be seen as realisations of this participant pattern" (cf. also Herbst & Uhrig 2009, 2019). In the case of the particle placement-alternation, this means that the form of the higher-level constructeme comprises the same elements and slots present in the allostructions, but is not specified regarding the position of the particle (pre- or post-object). Furthermore, the constructeme's meaning side lacks any additional syntactic, semantic, or pragmatic information that is specific to only one of the lower-level alternatives. Notably, as discussed below, Fig.1 features vertical links between constructeme and allostructions, but the allostructions are moreover connected by a horizontal link.

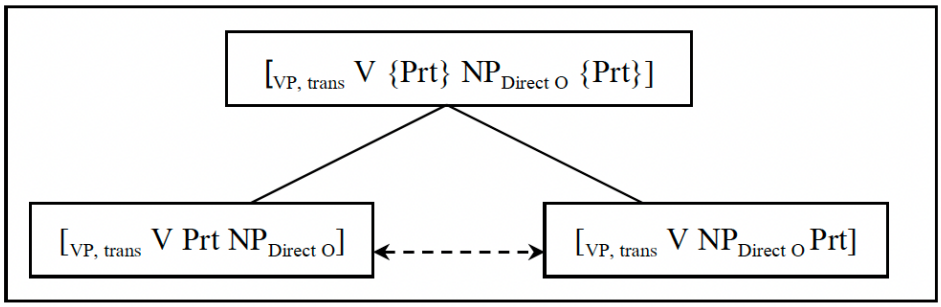


Figure 1: The transitive verb-particle constructeme and its two allostructions (Cappelle 2006: 18)

A particularly well-known adoption of Cappelle's concept is Perek (2012, 2015), who applies it to the English dative alternation illustrated in (2) above, and the locative alternation (*load hay onto the wagon* vs *load the wagon with hay*). He suggests that the two variants of these alternations likewise represent allostructions, linked by a common more abstract super-construction with underspecified constituent order and optional slots for prepositions, as well as a generalised meaning. Importantly, as dealt with in more detail below, Perek (2012, 2015) also provides empirical (experimental) support for the postulation of a

[2]While 'constructeme' seems to be the most frequently used label for alternation-based generalisations, 'meta-construction', 'meta-structure' and 'super-category' are also often found; similarly, 'alloconstructions' is sometimes employed instead of 'allostructions' (e.g. Mota 2020; for an extensive and critical assessment of the terms, see Cappelle et al. 2021: 277-284).

generalisation over alternating patterns, concluding that language users indeed seem to recognise and represent the interchangeability of the allostructions.

Since its conception almost two decades ago and Perek's later elaboration, the allostructional model has inspired a range of more theoretical (e.g. Ungerer forthc.) and more empirically inclined investigations and re-assessments of alternation phenomena in English and other languages (e.g. Groom 2019; Dux 2020; Hundt 2020; Maekelberghe 2022; also De Vaere et al. 2020, 2021, Willems et al. 2019, and Zeschel & Proost 2019 on German, Valdeson 2021 on Swedish, or Oliveira et al. 2022 on Brazilian Portuguese), has been employed to address questions in language history (e.g. Masini & Iacobini 2018; Zehentner 2019; Broccias & Torre 2020; Percillier 2020; Zehentner & Traugott 2020; Cichosz 2022; Middeke 2020; Van Linden & Brems 2022) and acquisition (e.g. Hampe 2012), and has also been extended to construction morphology (e.g. Audring 2019; Hartmann 2019), among other things. Although certainly not exhaustive, this list showcases the considerable impact of Cappelle's (2006) proposal on constructionist thinking and investigation. At the same time, many of these studies pinpoint open questions or potentially problematic issues regarding the model, which are discussed in more detail in the following sections.

# 3 Conceptualising allostructions

## 3.1 Defining allostructions: What makes an allostruction?

Although the definition of allostructions as formally distinct (syntactic) alternants is seemingly rather straightforward, in practice their conceptualisation and especially operationalisation does raise potentially problematic issues as well. Specifically, two broad questions arise when attempting to define allostructions, both of which relate to thresholds of similarity: On the one hand, the extent of formal divergence that is 'acceptable' for two patterns to still qualify as allostructions can be viewed more generously or more narrowly. On the other hand, the degree of necessary semantic-pragmatic overlap between constructions is of interest.

As to the first point, while Cappelle's case study on the transitive particle construction for example involves constructions with the same phrase types and constituent elements, differing only in order/ position of the particle, the members of the dative and locative alternations discussed in Perek (2012, 2015) differ more substantially in their structure. In addition to distinct ordering preferences of the non-subject constituents, the phrase types expressing the participant roles of the events in question are also different. In the dative alternation, the recipient is either denoted by an NP or a PP, with the former then typically interpreted as serving the syntactic (grammatical) function of an indirect object, and the latter a prepositional object. By contrast to Cappelle (2006) and Perek (2012, 2015), where the position of the relevant constituents in the allostructions may differ, equivalence in order is a defining feature of allostructions in valency grammar as discussed in e.g. Herbst (2014) or Dux (2020: 163-164). Here, patterns only count as allostructions if the constituents with the same grammatical functions appear in matching orders. Instances of variation such as the dative alternation – which involves a difference in constituent position depending on phrase/ pattern type used – would accordingly not be considered allostructions in valency grammar approaches (Dux 2020: 164). Likewise, the transitive particle constructions in Cappelle (2006) would also be excluded from the latter due to the differences in ordering between the patterns. However, in Herbst (2014) and Dux (2020), allostruction constituents can be expressed by different phrase types (cf. e.g.

constructions with an NP- versus adjective phrase predicative as in *considered us fools* vs *considered us crazy*), which is in line with (parts of) Perek's definition, but not necessarily Cappelle's case study.

Having said this, despite his example of particle placement variation illustrating a rather narrow definition of allostructions, Cappelle (2006: 21) seems to be rather flexible in this regard, stating that the allostruction concept may be extended to a range of different patterns, including e.g. canonical vs clefted or dislocated clauses or actives vs passives. This implies that the formal realisation of the elements involved may differ substantially. However, it has also been argued that the allostructional account may have (or indeed should have) its limits: Most explicitly, De Vaere et al. (2020: 107-108) contend that only constructions that are formally considerably closely related should qualify as allostructions, otherwise the concept runs the risk of becoming "trivial and useless", "empty", "vacuous", and not meaningful (De Vaere et al. 2020: 109). Similarly, Hilpert, in a recent interview mentions active-passive as "sufficiently different" to not fit the requirements of allostructions, which is to "share much of their structure" (Wiedemer et al. 2019: 38-39).

The prerequisite of 'enough' common features or overlap is arguably even more urgent in regard to semantics, as the general consensus is that allostructions need to be closely related content-wise: Allostructions should be "semantically equivalent" (Cappelle 2006: 21), with "a level of representation at which the two versions are perceived to be semantically identical" (Cappelle 2006: 13). While Cappelle's (2006) case study involves constructions with no substantial difference in semantic interpretation, in a later interview-based paper, this condition is stated as rather inclusive, with allostructions having to "share a significant portion of their function" (Cappelle et al. 2021: 193). Somewhat more specific comments are provided in De Vaere et al. (2020: 108), who posit that the overlap must be more than just rough equivalence in truth-conditional semantics, and Perek (2015: 162), claiming that allostructions are supposed to "have highly similar constructional meanings, in that […] they share the same basic event description". Nevertheless, this overlap can be a matter of degree – although both the dative alternation members and the locative alternation variants discussed in Perek (2015) can be viewed as constructional options for expressing the same events, the latter involves greater differences in construal than the former (Perek 2015: 161). Dux (2020: 163-164), in his overview of different interpretations of allostructions, adds that in valency pattern analyses such as Herbst (2014) and his own, allostructional relations are characterised by sameness "with respect to general frame semantics (i.e. the scenario defined by the interrelations among participants/ arguments)" (Dux 2020: 164) and sameness in participant/ semantic roles. For instance, *consider so. a fool* and *consider so. crazy* both evoke a 'considering' frame, with both the noun phrase and the adjective phrase expressing the role of 'predicative'. A pair like *consider so. a dog* and *give so. a dog*, on the contrary, does not indicate an allostruction relation, as they realise different frames (considering vs giving) and different participant roles of the object arguments (predicative vs theme); cf. Dux (2020: 163-164; Herbst 2014).

In sum, the decision of whether a certain set of constructions may be modelled as allostructions (with an overarching constructeme) is typically based on classifications of event type and participant roles. This has, on the one side, led to a number of re-assessments of alternation phenomena as allostructional networks. On the other side, some alternations have also been excluded from such an analysis – for example, Romain (2018: 85-86) concludes that subsuming the English causative alternation (*the vase broke* vs *they broke the vase*) in an allostructional account is not possible, as the event type in these cases differs

too substantially (cf. also e.g. Bergs 2010; Lauwers et al. 2021 on other non-allostructional phenomena). Likewise, Zeschel and Proost (2019: 157) are hesitant to classify German intransitive motion patterns and caused motion patterns, as well as related cases of transitivity variation, as allostructions, maintaining that semantic identity with these constructions is only given on a very schematic level (e.g. with both involving a motion event).

A more nuanced and potentially more realistic approach, most well-fitting with usage-based principles is briefly mentioned in Hilpert (in Wiedemer et al. 2019: 38-39), who views allostructional relationships as a matter of degree: Relating to the conceptualisation of allostructions as involving horizontal links (Section 3.2), greater strength of associations between two formally and functionally connected constructions is taken to correlate with an increased likelihood of language users generalising over these constructions (also Hartmann 2019: 318-319). Variants may accordingly count as weak allostructions as soon as they are perceived by individual speakers as overlapping to some extent, and strong allostructions the more entrenched and salient their equivalence relation is (in individual speaker minds as well as a speaker population). Nevertheless, these discussions also point to an important issue in allostruction research, viz. the fact that not all alternation phenomena necessarily qualify as involving allostructions.

Presuming (rough or full) semantic synonymy between allostructions, the alternant constructions are then typically nevertheless seen as differing in crucial ways in pragmatic meaning and other discourse-related or external features, which largely correspond to the factors commonly investigated as influencing the choice of one construction over the other in variationist studies. For instance, as shown in e.g. Bresnan et al. (2007), in the English dative alternation, constituent length has a significant impact on which construction is used, with short recipients increasing the likelihood of the double object construction, whereas long recipients tend to be used in the prepositional pattern. Such results often suggest that alternating constructions stand in complementary distribution, which is in line with the analogy to allophones and allomorphs indicated by the *allo*-prefix in 'allostructions' (though note that complementariness is not always given in those cases either, with e.g. certain allophones occurring in free variation). While this view of allostructions also implicitly and explicitly forms part of many allostructional accounts (e.g. Willems et al. 2019; Zehentner 2019; De Vaere et al. 2020), complementary distribution is not stated as a necessary criterion in Cappelle (2006). Hampe (2012: 10, fn7) goes even further by criticising the choice of term as misleading, claiming that complementariness is not (never?) given in allostructions. In general, complementary distribution is presumably not a categorical requirement for allostruction status, but probabilistic factors impacting the choice between constructions in a way that more or less translates into complementariness are nevertheless arguably a highly common feature of allostruction relationships.

The representation of such pragmatic (and other) distinctions between allostructions is a further point of debate: Cappelle (2006) seems to remain rather agnostic about the role, or rather, the precise status of pragmatic features in the allostructions model. In a more recent critical reflection on pragmatics in construction grammar, however, Cappelle (2017: 145) claims that "[t]here is much pragmatics that is conventionally linked to constructions", suggesting that "[s]emantics and pragmatics can live peacefully side by side in a single construction". Applying this statement to allostructions would then mean that the pragmatic properties commonly associated with one or the other allostruction, respectively, would be part of these constructions, i.e. stored as part of their meaning side. For instance, the double object construction would encode a semantic meaning of 'transfer' alongside a pragmatic association with information-structurally given (short) recipients

and/or new (long) themes, whereas the prepositional construction would have the same semantics but specify the reverse associations. These characteristics are not part of the constructeme's meaning, which is left underspecified both in its precise formal attributes and regarding subtler semantic and pragmatic distinctions.

This view likely underlies many of the extant allostruction accounts, but is rejected in De Vaere et al. (2020: 99), who assign a qualitatively different status to allostructions versus the constructeme. Specifically, it is argued that the pragmatic differences between the allostructional variants, despite being partly conventionalised, are not represented as part of the constructions. Even more so, allostructions are not considered to be "constructions in their own right with their own encoded semantics but […] variants of one and the same general […] construction" (De Vaere et al. 2020: 103; also Belligh & Willems 2022). This approach is seen as preferable, as "it avoids the need to stipulate […] semantically distinct constructions" (De Vaere et al. 2020: 107). While the role of pragmatics in construction grammar certainly requires more detailed attention and elaboration still (cf. also Finkbeiner 2019; Leclerq 2020), this model can be debated: First, it is unclear whether the proposal is applicable beyond their case study of the German dative alternation (with three specific verbs). Second, it can be argued that allostructions may express subtle semantic differences even if they overlap in many features, which are taken to be encoded with them, and would lead to separate constructions in the strictest sense. Finally, I maintain that even if the semantics of allostructions are identical, and even if pragmatic (and other) differences between the allostructions are probabilistic in nature rather than categorical, any features strongly associated with a construction should be viewed as stored with it (cf. also Cappelle 2017). That is, assuming pragmatic differences to be at least partly conventionalised but not represented seems contradictory and thus unconvincing. Also, parsimony in representation as implied by the value of 'circumventing the need for separate constructions' is not necessarily beneficial, as usage-based construction grammar as commonly advocated should allow for redundant (or non-economical) representation (cf. e.g. Goldberg 1995: 73-74; also Croft & Cruse 2004: 275-278; Diessel 2011: 834; Patten 2012: 19-21).

Before moving on to discussions on the role of horizontal links in allostruction models, let us finally zoom in to a point of interest that has recently been investigated at length in regard to alternations in construction grammar in Pijpops et al. (2021) and has also come up in allostruction accounts, viz. the problem of determining the appropriate level of alternation in a multi-layered constructional network. Specifically, Hampe (2012), and more recently Zeschel & Proost (2019) as well as Percillier (2020), comment on the level of schematicity or abstractness an allostructional relationship plays out on. Revisiting the transitive phrasal verb constructions investigated in Cappelle (2006), the former concludes that allostructions "at the most generic level are highly implausible and could in a way also be labelled 'extreme'", arguing that they should rather be located at lower, phrasal-verb-specific levels (Hampe 2012: 9; also Gilquin 2015: 54; Cappelle 2022). This is based on the assumption that language users are likely to recognise variant uses of a specific verb and abstract over these, but are much less likely to store highly general constructemes with greatly underspecified semantics. Similarly, both Zeschel & Proost (2019: 162) and Percillier (2020: 220), dealing with prepositional object constructions in German, and secondary predicate constructions in Middle English, respectively, identify allostructions on an intermediate, preposition-specific level, but are (to some extent) hesitant to posit more schematic constructemes and allostructions in these cases.

These issues are clearly of relevance to discussions of allostructional relationships. However, they also go beyond such phenomena: "Insofar as constructions vary in their degree of schematicity, which is one of the basic tenets of Construction Grammar, we shouldn't be surprised to find allostructions at different levels of schematicity" (Cappelle et al. 2021: 269). That is, the extent of schematicity that should be assumed for a particular construction or relation, and potential limits to such schematicity, is a more general question in construction grammar. For example, the psychological reality of highly abstract, 'meaning-less' constructions like a 'clause'-construction or 'active' constructions have been called into doubt (e.g. Hilpert 2014: 57), and the plausibility of generalisations over formally related constructions has been disregarded or even denied in favour of lower-level representations in various places (e.g. Zehentner 2020). In all such cases, identifying the most plausible schematicity level would seem to be dependent on the specific phenomenon, and to be an empirical issue before anything else (cf. also Cappelle et al. 2021: 271). At the same time, as also pointed out in Cappelle et al. (2021: 270), the usage-based constructionist tolerance of redundancy in the network suggests that "the existence of an allostructional link between two items at one level doesn't mean that there can't be an allostructional link at any other level". Allostruction connections (and constructemes) may thus redundantly hold on varying levels in the network, yielding a complex, multi-layered architecture. The following section briefly discusses the make-up of such networks, specifically the relevance of horizontal versus vertical links for allostruction models.

## 3.2 Allostructions between horizontal and vertical links

As mentioned, in earlier constructionist accounts, connections between constructions were mainly thought to be vertical, viz. taxonomic, e.g. linking more schematic constructions with their more specific, lower-level instantiations. In later construction grammar explorations, this network was extended to also include horizontal links between constructions on the same level of schematicity. These horizontal links may capture functional overlap between formally related or formally distinct constructions, but may also be based on formal association only. Most frequently, they have been discussed with regard to allostructional as well as paradigmatic relations (cf. Diessel 2015, 2019; Traugott 2016, 2018; Zehentner & Traugott 2020; Ungerer forthc.; among others). Importantly, talking about horizontal links accordingly does not equate to talking about allostructions, asthe former covers a much broader range of other phenomena. For example, horizontal links have also been posited to hold between formally and functionally (at least slightly or partly) different members of syntactic or constructional paradigms, as in Van de Velde's (2014) account of variation in verb-position in Dutch. Here, verb-initial, verb-second, and verb-final clause types are taken to be connected horizontally, thereby forming a paradigm. What follows from these different uses approaches is that distinguishing between allostructional relationships and other types of horizontally linked constructions is crucial, but it can also be non-trivial (e.g. Smirnova 2021).

With respect to allostructions, Cappelle's (2006) proposal included both vertical links between the allostructions and the higher-level constructeme, and some sort of horizontal connection between the allostructions (indicated by a dashed arrow in Fig.1 above). The precise theoretical status of the horizontal connection and the relation between the two types of links is, however, left largely unexplored in Cappelle (2006). Perek's (2015) account of the English dative alternation interestingly does not feature such a horizontal link, but focuses on vertical links to the underspecified super-category. Yet other accounts give priority to horizontal connections, arguing that the existence of horizontal links more

or less obliterates the need for vertical relations and an abstraction, as information on the shared features would already be captured by the former (e.g. Colleman 2020; Smirnova & Sommerer 2020; also Audring 2019). This is also implicit in Hilpert's comment on allostructions in Wiedemer et al. (2019: 38-39), defining them as an epiphenomenon of very strong associations, and relates to Hilpert's (2018) discussion of information storage in association links versus constructional nodes. Zehentner (2019) combines both types of links to model the dative alternation in the history of English, postulating horizontal links between the more specific allostructions, which are in turn both vertically linked to the more schematic generalisation, resulting in a triangle-shaped structure of the allostruction network (also Percillier 2020; Zehentner & Traugott 2020). In this midway-solution, horizontal links are taken to constitute a prerequisite for the emergence of a constructeme, in that a perceived association between the allostructions, conceptualised as a horizontal link, is primary, while a more abstract generalisation only follows if this link is particularly (sufficiently) strong: "horizontal connections may hold between many constructions, but only very strong, systematic and pervasive links will lead to abstractions forming in the minds of at least large parts of the speaker population" (Zehentner 2019: 324).

In vertical-plus-horizontal models, information is redundantly encoded on different levels, once in the content of the constructeme, and once in the horizontal link itself. This is also pointed out in Ungerer (forthc.: 7), who comments that "the distinction between the two linking types is blurred: while the superordinate schema is assumed to store the shared features of the allostructions, those similarities can be simultaneously encoded by a horizontal relation between the subconstructions, suggesting that the two linking types may potentially represent the same information". Although redundant representation is not necessarily a problem for construction grammar approaches, as already mentioned above, this nevertheless raises the question whether it is warranted to posit both types of links, or whether there is any qualitative difference between the information present in these links after all (also Audring 2019: 281). In terms of psychological plausibility and in line with emergent, usage-based principles, horizontal links may take precedence, as these correspond better to the perspective of constructional networks as neuronal association systems (Ungerer forthc.: 20; Schmid 2016, 2020). However, and crucially, a major problem here is that distinguishing between vertical and horizontal analyses of allostructional relationships (or combinations of both) and falsifying the existence of either horizontal links or constructemes is empirically difficult if not impossible, as both models would make the same predictions, and any schematic construction can only be empirically observed via its more concrete substantiation (Hoffmann 2020: 150).

Ungerer (forthc.) suggests that this lack of testability may reflect the absence of an actual difference between the types of links, at least in respect to the cognitive mechanisms they represent. The distinction should therefore be abandoned, or rather, both link types should be viewed as merely "notational variants for representing a common notion of constructional similarity", which both serve different purposes for linguistic analyses but are cognitively two sides of the same coin (Ungerer forthc.: 30). In this approach, gradience in the entrenchment of relations is easily incorporated, as connections of any type can vary in strength. As Ungerer (forthc.: 29) states, this also allows us to avoid the problem implicit to Zehentner's (2019) model, where only horizontal links may differ in degree of entrenchment, but vertical links to a constructeme are categorically present or absent (cf. also Ungerer 2023, this issue, for an in-depth discussion of gradient constructionhood). Although Ungerer's (forthc.) argument is convincing, and may well represent the most plausible perspective on constructional links in general, the discussion on vertical versus

horizontal links in the case of alternations should nevertheless not be abandoned quite yet. Specifically, whether the schematic constructeme and allostructional, horizontal links differ at least slightly in their roles and content needs further discussion. For instance, horizontal links may be viewed as encoding the overlap between allostructions, viz. the shared features that associate them with each other. By contrast, the schematic constructeme may be defined more suitably via its underspecified slots or properties, emphasising the openness and lack of detailed information rather than the shared information. Potential ways to empirically assess distinctions between such types of representations still deserve more exploration, as usage-based construction grammar should ultimately always aim for empirical corroboration of its models, even if it may prove problematic in this case.

The following section remains largely agnostic about the specifics of allostructional networks, but merely assumes allostructions to be connected (either horizontally, vertically by means of a schematic constructeme, or both). Rather than attempting to distinguish empirically between these analyses, the section hones in on possible methods of operationalising the identification of allostructional relationships in different kinds of data in the first place.

# 4 Operationalising allostructions

## 4.1 Operationalising allostructions in contemporary language

One major shortcoming in allostruction accounts is a certain lack of fool-proof criteria for establishing allostruction-hood that can be tested by means of empirical evidence, whether experimental or textual. One of the only experimental assessments of the allostruction model to date (to my knowledge) is Perek (2012, 2015), re-evaluated and further developed in Ungerer (2022). In Perek's studies, the author uses a sorting task asking participants to group four different construction types into two sets, specifically the two members of the dative alternation, viz. the double object construction (3a) and a *to*-prepositional pattern (3b), as well as the two variants of the locative alternation, viz. the caused motion construction (3c) and a *with*-applicative (3d). The results indicate that participants tended to prioritise the functional overlap between the instances (clustering 3a with 3b, and 3c with 3d) over the formal similarity between (3b) and (3c). This is taken as evidence that language users do indeed recognise alternating patterns as linked, and that this link is stronger than other potential connections (Perek 2012: 612-617; also Perek 2015: 164).

(3) a. Paula passed Liz something.
b. Rachel tossed something to Anna.
c. Linda sprayed something on Jessica.
d. Meg brushed Shannon with something.
(Perek 2012: 610)

Further support for such perceived links comes from priming experiments on the dative alternation in English (Goldwater et al. 2011) and active-passive variation in Russian (Vasilyeva & Waterfall 2011) – while not specifically aiming to test the allostruction model, these studies confirm that priming effects can hold between semantically similar but formally different constructions. According to Perek (2015: 167), this backs the idea that alternating constructions "are indeed related at some level of representation in the mental grammar of speakers" and that "the linguistic knowledge of speakers might well contain

a higher level of generalizations composed of highly abstract constructional meanings detached from any particular form, which is tantamount to the notion of a constructeme". However, it should also be noted that these results may be less robust and subject to more complex factors than previously presumed: Ungerer (2022: 120-139) takes a detailed look at prior evidence on priming effects between members of the dative alternation (specifically Goldwater et al. 2011 as well as Pickering 2002), and finds that cross-constructional priming between the double object construction and the prepositional pattern may be impacted by age. While data from younger children seem to support the assumption of a strong connection between the patterns, the evidence from older age groups, including adults, is in fact much weaker. As Ungerer (2022: 138) points out, this "still allows for the existence of (potentially weak) functional similarity links between alternating constructions", but nevertheless calls for a more nuanced, qualified view of the psychological plausibility of alternations (and accordingly the allostructional model).

Ungerer's (2022) discussion also highlights the need for further methodological considerations. Interestingly enough, though, very little additional experimental research into such associations – with a specific focus on evaluating the allostruction model – has been carried out since Perek's (2012, 2015) studies. The reasons behind this lack are not entirely clear or persuasive: For example, Cappelle et al. (2021: 296) asserts that they "haven't felt the need to prove by experimental means what is already clear beyond doubt". That is, with two constructions that overlap to a great extent both formally and functionally such as the English verb-particle constructions, the idea that there is a need to test the plausibility of them being associated (or the idea that they would not be linked) is called absurd. Still, even in cases in which a connection seems obvious, empirical (experimental and other) confirmation should evidently be desirable nevertheless; this holds even more so with alternation phenomena where the formal and/or semantic overlap is perhaps weaker.

With respect to corpus data, allostruction status of variant constructions has been addressed both in more qualitative ways and more quantitatively; regarding the latter, 'overlap' is most frequently measured indirectly by means of collostructional analyses (Stefanowitsch & Gries 2003; Gries & Stefanowitsch 2004). Such studies aim to show that despite verb-specific preferences, many verbs or other elements are indeed used interchangeably in both patterns (cf. e.g. Hartmann 2019; Zehentner 2019; Zehentner & Traugott 2020; Cichosz 2022, Maekelberghe 2022). Percillier (2020) takes a slightly different approach, essentially elaborating on basic collostructional analyses by making use of distributional semantics techniques (e.g. Perek & Hilpert 2017). More precisely, this study investigates structures involving *as*, *for*, *into*, and *to*, which can either express resultativeness, as in e.g. *crowned so. as/to king*, or indicate a depictive relation, as in *take so. for a fool*. The author defines constructions as combinations of such predication relations (resultative vs depictive) with different types of prepositions (among other things), and derives semantic vectors for each of these constructions based on co-occurrence frequencies of the elements occurring in them. Each vector then ultimately represents "a semantic average of the construction at hand" (Percillier 2020: 227). In a final step, a (hierarchical agglomerative) clustering algorithm is used to determine which constructions are semantically most similar to each other. Most strikingly, Percillier (2020: 232-234) finds that constructions with the greatest semantic similarity either (a) share the same preposition – meaning that form is a strong determinant – or (b) have the same type of predication, with resultative patterns being similar to other resultatives, and depictives semantically overlapping with other depictives, regardless of preposition type. The latter option is interpreted as evidencing more

schematic, predication-based constructemes with underspecified preposition slots, both linking to preposition-specific (and thus formally different) allostructions.

In addition to lexical and semantic overlap, similarities in the proportional distribution of various other features of alternating patterns in corpora are often compared and used to test the assumption of an allostructional relationship: For instance, Cichosz (2022) investigates the extent of functional similarity between declarative main clause patterns with the conjunction *þa* 'then' and verb-second order (4a) vs a construction with verb-initial order and no conjunction (4b) in Old English.

(4) a. Ða wearð Moyses micclum astyred
then became Moses very agitated
'Then Moses became very agitated'
(coaelhom, Æhom_21:89.3129; taken from Cichosz 2022: 302)

b. Comon þa syððan sona þa cristenan, eawfæste weras
came then later soon the Christian pious men
'Soon afterwards the pious Christians came'
(coaelive, ÆLS_[Mark]:97.3271; taken from Cichosz 2022: 302)

On the one hand, this study zooms into the semantic range of both constructions, viz. their intersection in collostructional preferences. Collostructional analyses here indicate that there is little significant overlap in the verb types appearing with either construction, as the conjunction-less pattern mainly occurs with durative verbs, whereas *þa*-clauses prefer punctual verbs such as *begin* (Cichosz 2022: 321). On the other hand, Cichosz (2022) draws on associations of the two constructions with properties such as the ratio of pronominal vs nominal subjects, or the ratio of absent or present intervening adverbs (cf. also Hampe 2012; Van Linden & Brems 2022 for a comparable approach). Again, the findings indicate little commonality between the constructions, with e.g. pronominal subjects being generally avoided in the verb-initial construction, but readily used in the conjunction-bearing construction. A more qualitative analysis moreover shows that the former pattern is typically used to present qualities of characters, by contrast to the latter, which is typically used for introducing events and characters (Cichosz 2022: 331). This leads the author to conclude that 'sufficient' overlap may only be given in limited contexts, and an allostructional relationship between the two broad clause types cannot be posited on a more general level and across texts. De Vaere et al. (2020, 2021) similarly discuss a range of semantic-pragmatic characteristics of alternations, specifically the dative alternation, i.e. nominal vs prepositional patterns with *schicken* and *senden* 'send' as well as *geben* 'give', in addition to the English genitive alternation (*the book's pages* vs *the pages of the book*). They assess the impact of features such as animacy, definiteness, givenness or length on the choice of construction as well as the constructions' commonalities by means of qualitative analyses and regression models, and find support for an allostructional model of these relations, while remaining critical of the details of such models (see also Section 3.1 above).

Zehentner (2021, 2022), among others, employs the exploratory tool of multiple correspondence analysis (MCA) to detect changes in the degree of overlap or rather, complementary distribution, between various dispossessive constructions and ditransitive patterns, respectively. This technique allows to identify (groups of) individuals with similar profiles in terms of specified variables and can also be used to determine systematic associations between such variables. In the case of Zehentner (2021), individuals are instances

of prepositional patterns with either *from* (*steal a book from so.*) or *of* (*rob so. of a book*), and the formal and functional variables include e.g. verb type, object order, or again animacy and definiteness. Carrying out separate correspondence analyses for Middle, Early Modern, and Late Modern English, it is shown that the two prepositional patterns increasingly diverge from each other, coming to be associated with different verbs, constituent order preferences, and other features. This is interpreted as indicating an increasing loss of a schematic constructeme with underspecified preposition lemma and order, and a stronger entrenchment of the lower-level constructions. However, the preposition-specific constructions are still taken to remain linked to each other horizontally – the theoretical implications of this assumption for the allostructional model are left open in this study.

Finally, in Maekelberghe's (2022) study on types of gerund constructions in Present Day English, hierarchical configural frequency analysis (HCFA) is used to detect zones of potential functional overlap, in addition to overlap in lexical profiles. Comparable to MCA, HCFA is an explorative method that can help to detect statistically significant combinations of formal and semantic characteristics with different patterns. Here, it is used to identify overlaps or non-overlaps in configurations of features between nominal gerunds (e.g. *the climbing of trees is dangerous*) and verbal gerunds (*climbing trees is dangerous*), suggestive of intersections or differences in the constructions' profiles. The findings of the HCFA show a substantial degree of overlap; at the same time, there are also functional differences and significantly distinct lexical preferences, which Maekelberghe views as revealing horizontal links without an abstract construction representing the common features of both patterns in a similar way to Zehentner (2021). On a more methodological note, Maekelberghe (2022: 162) concludes that techniques such as HCFA "offer[] a way of empirically verifying the actual interchangeability of two or more constructions before examining the factors that constrain their variation", but nevertheless points out the need for more objective measures as well as a clearer definition of what 'systematic' overlap really means.

While these (and related) corpus-studies on alternations are certainly useful in establishing relations between construction pairs (or sets), it is noticeable that with some exceptions, they mostly define semantic/ functional similarity as intersections in verb use only, and are often focussed on pragmatic contrasts, rather than investigating semantic-pragmatic equivalence as such. In addition to general questions of conceptual status and ability to be investigated, an open issue for operationalisation in this regard is determining a similarity threshold value, viz. defining when two constructions are similar enough to qualify as allostructions (also Ungerer forthc.: 29). However, specifying such a threshold value suffers from the same problems as establishing a frequency threshold for construction-hood, which are often discussed in relation to Goldberg's (2006: 5) updated definition of constructions as including patterns as stored entities "even if they are fully predictable as long as they occur with **sufficient frequency** [added emphasis]". While intuitively appealing, however, the need for such categorical thresholds can be abandoned in line with usage-based, emergentist principles, in favour of a gradient conceptualisation of allostruction status (cf. also Hilpert in Wiedemer et al. 2019; Ungerer forthc.). That is, greater similarity and overlap, assessable by various methods, may be interpreted as indicating stronger links between constructions and thus stronger allostructional status. This approach also more readily incorporates individual variation regarding the perception (and strength of representation) of allostructional relations. At the same time, this view does not allow us to distinguish between allostruction interpretations of two constructions and potential other types of links, which can only be investigated through contrast with

other (sets of) constructions: For instance, as seen in Perek's (2012, 2015) experiment, the question remains whether clustering preferences are really indicative of stored connections, or whether the constructions are merely perceived as more similar than others, without any generalisation taking place. Likewise, as discussed at length in Hoffmann (2020) and Ungerer (forthc.), these methods do not serve to distinguish between horizontal and vertical models of allostruction relationships. Additional experimental studies as well as explorations of more conclusive ways for investigating such questions with corpus data remain to be conducted, and would seem to be a clear desideratum for future alternation/allostruction studies.

## 4.2 Operationalising allostructions in diachrony

Finding ways to establish allostruction-hood by means of corpus data is especially relevant for research into the (earlier) diachronic development of allostruction phenomena: As seen in the discussion above, a number of studies explicitly analysing constructions from an allostructional perspective are historical, with both synchronic and more diachronic foci. Such studies typically rely heavily on corpus data and methods due to a lack of availability of other options. One of the most interesting and potentially most enlightening questions in this regard is accounting for changes in the constructional network, such as the emergence but also loss of allostruction relationships, viz. a (gradually) emerging and increasing overlap between formerly more distinct constructions, which can be modelled as the establishment and strengthening of allostructional links between the patterns. This is indirectly explored in Zehentner's (2021) account of the disappearance of dispossessive double object constructions in the history of English, which goes hand in hand with a growing association and ultimately complementary distribution of prepositional dispossession constructions, modelled as an emerging horizontal (but not necessarily allostructional) relation. Likewise, Cichosz (2022: 333) comments on the possibility of allostructions acquiring new functions which differentiate them from their alternant, but also the option of two previously independent constructions coming to overlap and be perceived as allostructions. Percillier's results on secondary predicate constructions furthermore illustrate what he calls a temporary "allostructional phase" (2020: 235, 239): Although not included in the discussion above, his study has a diachronic dimension in that there is a shift over time from one option for similarity grouping to the other, viz. a move from formally equivalent patterns overlapping greatly in semantics to a more abstract meaning-based clustering of (formally distinct) constructions in his data, which is again subject to change later on. This as well suggests that allostructional relationships may be quite dynamic and passing, rather than historically stable.

Investigating the history of alternation phenomena can provide valuable insights for modelling the specifics of allostructional relationships as well as the mechanisms and processes involved in such connections. That is, by closely and systematically investigating how alternations come about on the one hand, but on the other hand also looking into loss or maintenance of alternations over time, we may gain additional understanding of what (schematic or lower-level) associations and connections language users are likely to store, which factors may play a role in alternation relationships, and which factors may be more or less relevant. This can supplement evidence from present day stages of languages and other types of data and ideally lead to a more informed and more realistic (allostructional) model of alternation networks. Nevertheless, as already pointed out, it is obvious that diachronic treatments of such phenomena are subject to the same shortcomings as present day accounts, in that a more systematic and more objective way of

determining allostruction-hood is still lacking. Most pressingly, the diachronic question of when a situation is reached where two or more patterns come to qualify as allostructions (or cease to count as allostructions), even if this is conceptualised not as a categorical but a fuzzy border, has not been answered satisfactorily yet. This also holds for the question of how to determine when a more schematic constructeme, viz. a generalisation over allostructions, can be assumed to emerge or disappear, and what conditions have to be met for a horizontal connection between two allostructions without a shared abstraction level to be better supported by data. In addition, long-standing issues regarding the representativeness of historical data, as well as questions surrounding change in individuals versus change on the population level, and what this means for the cognitive reality of constructions, and specifically allostructions, are relevant points to address in future research. In sum, both from diachronic, historical and synchronic, present day viewpoints, ample room for further theoretical discussion and empirical specification remains.

# 5 Conclusions

The present paper has aimed to provide an overview of research relating to the concept of 'allostructions' and 'constructemes' since its original introduction by Cappelle (2006). The paper has first introduced the key points of Cappelle's proposal as well as Perek's (2012, 2015) model as one of the most well-known adaptation of these ideas. It has then also been shown that in recent years the notion has been fruitfully applied in studies covering a range of different phenomena across languages, varieties, and timeframes, and has been addressed with regard to different ontological and linguistic levels, e.g. being extended from syntactic to morphological patterns, and being applied to variation and change as well as acquisition, among other perspectives. The allostructional model has furthermore been debated with respect to a number of pervasive, important issues in recent construction grammar approaches, such as the notion of horizontal links, or the question of information storage in associative links versus constructional nodes.

While the extant accounts and applications of the allostructional model have certainly allowed us to refine and further develop it, however, it is at the same time evident that open questions remain. These questions concern both the conceptualisation and the operationalisation of allostructions and constructemes. Regarding the former, the paper has first focussed on persisting challenges in defining allostructions: This includes different views on the formal (distinguishing) features of allostructions, but also different perspectives on what counts as semantic overlap, and what the precise role of pragmatic information is in allostructional models. In this discussion, it has also been stressed that although often used roughly synonymously, allostructions do not necessarily correspond to alternations. Second, the present paper has pinpointed specific points of debate relating to proposed network analyses of allostructions, specifically allostructional network models as mainly involving either vertical links, horizontal links, or both. This section has also highlighted the differences between horizontal links between allostructions and other horizontal relations, viz. paradigmatic connections. As to the operationalisation of allostructions in linguistic data, the paper has briefly presented various methods through which allostructions have been identified in recent empirical studies, experimental or corpus-based. With particular attention given to corpus data (and especially historical corpus data), it has been demonstrated that a range of techniques for assessing functional overlap between constructions, among other things, have been used with considerable success so far. Nevertheless, many of these methods are not fully convincing or still lack systematicity

or objectivity to some extent. To address these methodological concerns but also the theoretical challenges discussed (and other issues not dealt with in this paper) is a key task for future constructionist research.

## 6 References


Audring, Jenny. 2019. Mothers or sisters? The encoding of morphological knowledge. *Word Structure* 12(3). 274-296. https://doi.org/10.3366/word.2019.0150.

Belligh, Thomas & Klaas Willems. 2022. Epistemological challenges in the study of alternating constructions. *Lingua* 280. 103425. https://doi.org/10.1016/j.lingua.2022.103425.

Bergs, Alexander. 2010. Expressions of futurity in contemporary English: A Construction Grammar perspective. *English Language & Linguistics* 14(2). 217-238. https://doi.org/10.1017/S1360674310000067.

Bresnan, Joan. 2007. Is syntactic knowledge probabilistic? Experiments with the English dative alternation. In Sam Featherston & Wolfgang Sternefeld (eds.), *Roots: Linguistics in search of its evidential base*, 75-96. Berlin: Mouton de Gruyter.

Broccias, Cristiano & Enrico Torre. 2020. Attraction and differentiation in the history of the English dative and benefactive alternations. In Chiara Fedriani & Maria Napoli (eds.), *The diachrony of ditransitives*, 169-196. Berlin: De Gruyter Mouton. https://doi.org/10.1515/9783110701371-006.

Cappelle, Bert. 2006. Particle placement and the case for "allostructions". *Constructions* 1. 1-28. https://doi.org/10.24338/cons-381.

Cappelle, Bert. 2017. What's pragmatics doing outside constructions?. In Ilse Depraetere & Raphael Salkie (eds.), *Semantics and pragmatics: Drawing a line*, 115-151. Cham: Springer. https://doi.org/10.1007/978-3-319-32247-6_8.

Cappelle, Bert. 2022. Lexical Integrity: A mere construct or more a construction?. *Yearbook of the German Cognitive Linguistics Association* 10(1). 183-216. https://doi.org/10.1515/gcla-2022-0009.

Cappelle, Bert, Pâmela Fagundes Travassos, Nahendi Almeida Mota, Mariana Gonçalves da Costa, Letícia Freitas Nunes, Gabriel Lucas Martins & Marcia dos Santos Machado Vieira. 2021. Constructional variation - unveiling aspects of linguistic knowledge: Interview with Bert Cappelle. *Revista Da Anpoll* 52. 258-306. https://doi.org/10.18309/ranpoll.v52iesp.1596.

Cichosz, Anna. 2022. Old English V-initial and Þa-VS main clauses: Independent constructions or allostructions?. *Constructions and Frames* 14(2). 301-336. https://doi.org/10.1075/cf.21002.cic.

Colleman, Timothy. 2020. The emergence of the dative alternation in Dutch: Towards the establishment of a horizontal link. In Chiara Fedriani & Maria Napoli (eds.), *The diachrony of ditransitives*, 137-168. Berlin: De Gruyter Mouton. https://doi.org/10.1515/9783110701371-005.

Croft, William. 2003. Lexical rules vs. constructions: A false dichotomy. In Hubert Cuyckens, Thomas Berg, René Dirven, & Klaus-Uwe Panther (eds.), *Motivation in language: Studies in honor of Günter Radden*, 49-68. Amsterdam: Benjamins. https://doi.org/10.1075/cilt.243.07cro.

De Smet, Hendrik, Frauke D'hoedt, Lauren Fonteyn & Kristel Van Goethem. 2018. The changing functions of competing forms: Attraction and differentiation. *Cognitive Linguistics* 29(2). 197-234. https://doi.org/10.1515/cog-2016-0025.

De Vaere, Hilde, Ludovic De Cuypere & Klaas Willems. 2021. Constructional variation with two near-synonymous verbs: The case of *schicken* and *senden* in Present-Day German. *Language Sciences* 83. 101313. https://doi.org/10.1016/j.langsci.2020.101313.
De Vaere, Hilde, Julia Kolkmann & Thomas Belligh. 2020. Allostructions revisited. *Journal of Pragmatics* 170. 96-111. https://doi.org/10.1016/j.pragma.2020.08.016.
Diessel, Holger. 2015. Usage-based construction grammar. In Ewa Dąbrowska & Dagmar Divjak (eds.), *Handbook of cognitive linguistics*, 295-321. Berlin: Mouton de Gruyter.
https://doi.org/10.1515/9783110292022.
Diessel, Holger. 2019. *The grammar network: How linguistic structure is shaped by language use*. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108671040.
Dux, Ryan. 2020. *Frame-constructional verb classes: Change and theft verbs in English and German*. Amsterdam: Benjamins. https://doi.org/10.1075/cal.28.
Finkbeiner, Rita. 2019. Reflections on the role of pragmatics in Construction Grammar. *Constructions and Frames* 11(2). 171-192. https://doi.org/10.1075/cf.00027.fin.
Gilquin, Gaëtanelle. 2015. The use of phrasal verbs by French-Speaking EFL learners. A constructional and collostructional corpus-based approach. *Corpus Linguistics and Linguistic Theory* 11(1). 51-88. https://doi.org/10.1515/cllt-2014-0005.
Goldberg, Adele. 1995. *Constructions: A construction grammar approach to argument structure*.
Chicago, IL: University of Chicago Press.
Goldberg, Adele. 2002. Surface generalizations: An alternative to alternations. *Cognitive Linguistics* 13(4). 327-356. https://doi.org/10.1515/cogl.2002.022.
Goldberg, Adele. 2006. Constructions at work: The nature of generalization in language. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199268511.001.0001.
Goldwater, Micah, Marc Tomlinson, Catharine Echols & Bradley Love. 2011. Structural priming as structure-mapping: Children use analogies from previous utterances to guide sentence production. *Cognitive Science* 35. 156-170. https://doi.org/10.1111/j.1551-6709.2010.01150.x.
Gries, Stefan & Anatol Stefanowitsch. 2004. Extending collostructional analysis: A corpus-based perspective on 'alternations'. *International Journal of Corpus Linguistics* 9(1). 97-129. https://doi.org/10.1075/ijcl.9.1.06gri.
Groom, Nicholas. 2019. Construction Grammar and the corpus-based analysis of discourses: The case of the WAY IN WHICH construction. *International Journal of Corpus Linguistics* 24(3). 291-323. https://doi.org/10.1075/ijcl.00014.gro.
Hampe, Beate. 2012. Transitive phrasal verbs in acquisition and use: A view from construction grammar. *Language Value* 4(1). 1-32. https://doi.org/10.6035/LANGUAGEV.2012.4.2.
Hartmann, Stefan. 2019. Compound worlds and metaphor landscapes: Affixoids, allostructions, and higher-order generalizations. *Word Structure* 12(3). 297-333. https://doi.org/10.3366/word.2019.0151.
Herbst, Thomas. 2014. The valency approach to argument structure constructions. In Thomas Herbst, Hans-Jörg Schmid & Susen Faulhaber (eds.), *Constructions – collocations – patterns*, 167-216. Berlin: de Gruyter Mouton. https://doi.org/10.1515/9783110356854.
Herbst, Thomas & Peter Uhrig. 2009. Erlangen Valency Patternbank. A corpus-based research tool for work on valency and argument structure constructions. http://www.patternbank.fau.de.

Herbst, Thomas & Peter Uhrig. 2019. Towards a valency and argument structure constructicon of English: Turning the valency patternbank into a constructicon. *Lexicographica* 35. 87-104. https://doi.org/10.1515/lex-2019-0006.

Hilpert, Martin. 2014. *Construction Grammar and its application to English*. Edinburgh: Edinburgh University Press.

Hilpert, Martin. 2018. Three open questions in Diachronic Construction Grammar. In Evie Coussé, Peter Andersson & Joel Olofsson (eds.), *Grammaticalization meets Construction Grammar*, 21-39. Amsterdam: Benjamins. https://doi.org/10.1075/cal.21.

Hoffmann, Thomas. 2020. What would it take for us to abandon Construction Grammar?: Falsifiability, confirmation bias and the future of the constructionist enterprise. *Belgian Journal of Linguistics* 34. 148-160. https://doi.org/10.1075/bjl.00042.hof.

Hundt, Marianne. 2020. It is important that mandatives (should) be studied across different World Englishes and from a construction grammar perspective. In Paloma Núñez Pertejo, María José López Couso, Belén Méndez Naya and Ignacio Palacios Martínez (eds.), *Crossing linguistic boundaries: Systemic, synchronic and diachronic variation in English*, 211-238. London: Bloomsbury, 211-238.

Labov, William. 1972. *Sociolinguistic patterns*. Philadelphia, PA: University of Pennsylvania Press.

Lauwers, Peter, Miriam Taverniers, Renata Enghels & Justine Métairy. 2021. The (?) superfluous marking of the resultative phrase with verbs of chromatic change in Dutch. In Peter Lauwers, Katia Paykin, Mihaela Ilioaia, Machteld Meulleman & Pascale Hadermann, Pascale (eds.), *Quand le syntagme nominal prend ses marques: Du prédicat à l'argument*, 77-97. Reims: EPURE. https://doi.org/10.34929/c0tb-cb62.

Leclercq, Benoît. 2020. Semantics and pragmatics in Construction Grammar. In Timothy Colleman, Frank Brisard, Astrid De Wit, Renata Enghels, Nikos Koutsoukos, Tanja Mortelmans & María Sol Sansiñena (eds.), The wealth and breadth of construction-based research, 225-234. Amsterdam: Benjamins. https://doi.org/10.1075/bjl.00048.lec.

Leclercq, Benoît & Cameron Morin. 2023. No equivalence: A new principle of no synonymy. *Constructions* 15(1) [Special Issue '35 years of constructions']. 1-16. https://doi.org/10.24338/cons-535.

Maekelberghe, Charlotte. 2022. From noun to verb: Modeling variation in the English gerund system. In Lotte Sommerer & Evelien Keizer (eds.), *English noun phrases from a functional-cognitive perspective: Current issues*, 135-168. Amsterdam: Benjamins. https://doi.org/10.1075/slcs.221.04mae.

Masini, Francesa & Claudio Iacobini. 2018. Schemas and discontinuity in Italian: The view from Construction Morphology. In Geert Booij (ed.), *The construction of words: Advances in Construction Morphology*, 81-109. Cham: Springer. https://doi.org/10.1007/978-3-319-74394-3_4.

Middeke, Kirsten. 2022. Sōþes ne wanda. The avoidance is separation metaphor in West-Germanic argument structure. *Zeitschrift Für Anglistik Und Amerikanistik* 70(3). 223-262. https://doi.org/10.1515/zaa-2022-2069.

Mota, Nahendi Almeida. 2020. Thoughts and research on variation, change and stability from the constructional perspective. *Revista da Abralin* 19(2). 1-6.

Oliveira, Manuela Correa de & Karen Sampaio Braga Alonso. 2022. Variation and Construction Grammar: Investigating Brazilian double-object constructions. *ReVEL* 20(39). 173-188.

Percillier, Michael. 2020. Allostructions, homostructions or a constructional family?: Changes in the network of secondary predicate constructions in Middle English. In Lotte Sommerer & Elena Smirnova (eds.), *Constructional approaches to language*, 214-242. Amsterdam: Benjamins. https://doi.org/10.1075/cal.27.06per.

Perek, Florent. 2012. Alternation-based generalizations are stored in the mental grammar: Evidence from a sorting task experiment. *Cognitive Linguistics* 23(3). 601-635. https://doi.org/10.1515/cog-2012-0018.

Perek, Florent. 2015. *Argument structure in usage-based Construction Grammar: Experimental and corpus-based perspectives*. Amsterdam: Benjamins. https://doi.org/10.1075/cal.17.

Perek, Florent & Martin Hilpert. 2017. A distributional semantic approach to the periodization of change in the productivity of constructions. *International Journal of Corpus Linguistics* 22(4). 490-520. https://doi.org/10.1075/ijcl.16128.per.

Pijpops, Dirk. 2020. What is an alternation? Six answers. *Belgian Journal of Linguistics* 34. 283-294.

Romain, Laurence. 2018. A corpus-based study of the causative alternation in English. Université de Lille: PhD thesis.

Schmid, Hans-Jörg. 2016. A framework for understanding linguistic entrenchment and its psychological foundations. In Hans-Jörg Schmid (ed.), *Entrenchment and the psychology of language learning: How we reorganize and adapt linguistic knowledge*, 9-36. Berlin: De Gruyter Mouton. https://doi.org/10.1515/9783110341423-002.

Schmid, Hans-Jörg. 2020. *The dynamics of the linguistic system: Usage, conventionalization, and entrenchment*. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198814771.001.0001.

Smirnova, Elena. 2021. Horizontal links within and between paradigms: The constructional network of reported directives in German. In Martin Hilpert, Bert Cappelle & Ilse Depraetere (eds.), *Modality and Diachronic Construction Grammar*, 185-218. Amsterdam: Benjamins. https://doi.org/10.1075/cal.32.07smi.

Sommerer, Lotte & Elena Smirnova (eds). 2020. *Nodes and networks in Diachronic Construction Grammar*. Amsterdam: Benjamins. https://doi.org/10.1075/cal.27.

Stefanowitsch, Anatol & Stefan Gries. 2003. Collostructions: Investigating the interaction of words and constructions. *International Journal of Corpus Linguistics* 8(2). 209-243. https://doi.org/10.1075/ijcl.8.2.03ste.

Traugott, Elizabeth C. 2016. Do semantic modal maps have a role in a constructionalization approach to modals? *Constructions and Frames* 8(1). 98-125. https://doi.org/10.1075/cf.8.1.07tra.

Traugott, Elizabeth C. 2018. Modeling language change with constructional networks. In Salvador Pons Bordería, & Óscar Loureda (eds.), *Beyond grammaticalization and discourse markers: New issues in the study of language change*, 17-50. Leiden: Brill. https://doi.org/10.1163/9789004375420_003.

Uhrig, Peter. 2015. Why the principle of no Synonymy is overrated. *Zeitschrift für Anglistik und Amerikanistik* 63(3). 323-337. https://dx.doi.org/10.1515/zaa-2015-0030.

Ungerer, Tobias. 2022. Structural priming in the grammatical network: A study of English argument structure constructions. University of Edinburgh, PhD thesis.

Ungerer, Tobias. 2023. A gradient notion of constructionhood. *Constructions* 15(1) [Special Issue '35 years of constructions']. 1-20. https://doi.org/10.24338/cons-543.

Ungerer, Tobias. forthc. Vertical and horizontal links in constructional networks: Two sides of the same coin? *Constructions and Frames*.

Valdeson, Frederik. 2021. Ditransitives in Swedish: A usage-based study of the double object construction and semantically equivalent prepositional object constructions 1800-2016. Stockholm University: PhD thesis.

Van de Velde, Freek. 2014. Degeneracy: The maintenance of constructional networks. In Ronny Boogaart, Timothy Colleman & Gijsbert Rutten (eds.), *Extending the scope of Construction Grammar*, 141–179. Berlin: De Gruyter Mouton. https://doi.org/10.1515/9783110366273.141.

Van linden, An & Lieselotte Brems. 2022. "Wonder" nouns and the development of a mirative constructional network: An exercise in semiotic Diachronic Construction Grammar. *Zeitschrift Für Anglistik Und Amerikanistik* 70(3). 263-299. https://doi.org/10.1515/zaa-2022-2067.

Vasilyeva, Marina & Heidi Waterfall. 2011. Beyond syntactic priming: Evidence for activation of alternative syntactic structures. *Journal of Child Language* 39(2). 1-26. https://doi.org/10.1017/S0305000911000055.

Wiedemer, Luiz, Marcia Machado Vieira & Maria Maura Cezario. 2019. A discussion on the relationship between variation and change in Construction Grammar: Interview with Martin Hilpert. *Diadorim* 21(2). 30-43. http://dx.doi.org/10.31513/linguistica.2019.v21n2a30979.

Willems, Klaas, Ludovic De Cuypere & Hilde De Vaere. 2019. Recording and explaining: Exploring the German ditransitive alternation. In Metin Bagriacik, Anne Breitbarth & Karen De Clercq (eds.), *Mapping linguistic data: Essays in honour of Liliane Haegeman*, 313-322. Ghent: Linguistics Department Ghent University.

Zehentner, Eva. 2019. Competition in language change. Berlin: De Gruyter. https://doi.org/10.1515/9783110633856-002.

Zehentner, Eva. 2020. Cognitive reality of constructions as a theoretical and methodological challenge in historical linguistics. In Timothy Colleman, Frank Brisard, Astrid De Wit, Renata Enghels, Nikos Koutsoukos, Tanja Mortelmans and María Sol Sansiñena (eds.), *The wealth and breadth of construction-based research*, 378-389. Amsterdam: Benjamins. https://doi.org/10.1075/bjl.00060.zeh.

Zehentner, Eva. 2021. Alternations emerge and disappear: The network of dispossession constructions in the history of English. *Corpus Linguistics and Linguistic Theory* 17(3). 525-561. https://doi.org/10.1515/cllt-2020-0074.

Zehentner, Eva. 2022. Competing constructions construct complementary niches: a diachronic view on the English dative alternation. *Language Dynamics and Change* 13. 34-73. https://doi.org/10.1163/22105832-bja10021.

Zehentner, Eva & Elizabeth C. Traugott. 2020. Constructional networks and the development of benefactive ditransitives in English. In Lotte Sommerer & Elena Smirnova (eds.), *Constructional approaches to language*, 168-211. Amsterdam: Benjamins. https://doi.org/10.1075/cal.27.05zeh.

Zeschel, Arne & Kristel Proost. 2019. Grain size issues in constructicon building – and how to address them. *Lexicographica* 35. 169-215. https://doi.org/10.1515/lex-2019-0005.